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**Practice School Division**  
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**BITS Pilani**  
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## Table of Contents

PS-I station: 24/7 - I Labs , Bengaluru .....	57
<b>Student</b> .....	<b>57</b>
Name: NACHIKETH S SHASTRY .(2021A7PS2686P) .....	57
PS-I station: 24/7 - I Labs , Bengaluru .....	57
<b>Student</b> .....	<b>57</b>
Name: RAGHAV SARDA .(2021A7PS2765H).....	58
PS-I station: 24/7 - I Labs , Bengaluru .....	59
<b>Student</b> .....	<b>59</b>
Name: OJAS PUNGALIA .(2021B4A71552P) .....	59
PS-I station: 24/7 - I Labs , Bengaluru .....	60
<b>Student</b> .....	<b>60</b>
Name: SNEHAL YUTIKA .(2021B4A72322H) .....	60
PS-I station: Agnext Technologies Pvt Ltd , Sahibzada Ajit Singh Nagar .....	61
<b>Student</b> .....	<b>61</b>
Name: GOVIND TULI .(2021A3PS0130P).....	61
PS-I station: Agnext Technologies Pvt Ltd , Sahibzada Ajit Singh Nagar .....	62
<b>Student</b> .....	<b>62</b>
Name: SAKSHAM GARG(2021A7PS2083G) .....	63
PS-I station: Agnext Technologies Pvt Ltd , Sahibzada Ajit Singh Nagar .....	63
<b>Student</b> .....	<b>64</b>
Name: AYUSH KALRA(2021A7PS2222H) .....	64
PS-I station: Agnext Technologies Pvt Ltd , Sahibzada Ajit Singh Nagar .....	65
<b>Student</b> .....	<b>65</b>
Name: ANIRUDH BAGALKOTKER .(2021A7PS2682H) .....	65
PS-I station: Agnext Technologies Pvt Ltd , Sahibzada Ajit Singh Nagar .....	66
<b>Student</b> .....	<b>66</b>
Name: SATYAM SHARAN(2021A8PS2985G) .....	66
PS-I station: Agnext Technologies Pvt Ltd , Sahibzada Ajit Singh Nagar .....	67

<b>Student.....</b>	<b>67</b>
Name: RAHUL JHA .(2021A8PS3005H).....	67
PS-I station: Agnext Technologies Pvt Ltd , Sahibzada Ajit Singh Nagar .....	68
<b>Student.....</b>	<b>68</b>
Name: RISHABH JAIN(2021AAPS2763G).....	68
PS-I station: Agnext Technologies Pvt Ltd , Sahibzada Ajit Singh Nagar .....	69
<b>Student.....</b>	<b>69</b>
Name: ANIMESH JAWLA(2021B1A30816G).....	69
PS-I station: Agnext Technologies Pvt Ltd , Sahibzada Ajit Singh Nagar .....	71
<b>Student.....</b>	<b>71</b>
Name: ARIHANT RAI .(2021B3A72507H) .....	71
PS-I station: Agrix Agrotech Pvt. Ltd. , New delhi .....	72
<b>Student.....</b>	<b>72</b>
Name: ROHAN GARG .(2021A3PS2864H) .....	72
PS-I station: Agrix Agrotech Pvt. Ltd. , New delhi .....	73
<b>Student.....</b>	<b>73</b>
Name: SHARWIN NEEMA(2021A7PS1442G).....	73
PS-I station: Agrix Agrotech Pvt. Ltd. , New delhi .....	74
<b>Student.....</b>	<b>74</b>
Name: ISHAAN KAPOOR(2021A7PS2091G) .....	74
PS-I station: Agrix Agrotech Pvt. Ltd. , New delhi .....	74
<b>Student.....</b>	<b>74</b>
Name: KARTIK PANDEY .(2021A7PS2574H) .....	74
PS-I station: Agrix Agrotech Pvt. Ltd. , New delhi .....	75
<b>Student.....</b>	<b>76</b>
Name: ADITYA NARAYAN MALLIK(2021AAPS2767G) .....	76
PS-I station: AlotBlocks Pvt. Ltd. , Faridabad .....	76
<b>Student.....</b>	<b>76</b>
Name: VIDHI CHETAN SHAH .(2021A3PS2645H) .....	76
PS-I station: AlotBlocks Pvt. Ltd. , Faridabad .....	77
<b>Student.....</b>	<b>77</b>
Name: DESHPANDE HARSH SWAPNIL .(2021A7PS2225P) .....	77

PS-I station: AlotBlocks Pvt. Ltd. , Faridabad .....	78
<b>Student</b> .....	<b>78</b>
Name: SHAUNAK SUNIL DAMLE(2021A7PS2607G) .....	78
PS-I station: AlotBlocks Pvt. Ltd. , Faridabad .....	80
<b>Student</b> .....	<b>80</b>
Name: SANSHRAV ARORA .(2021A7PS2690P).....	80
PS-I station: AlotBlocks Pvt. Ltd. , Faridabad .....	81
<b>Student</b> .....	<b>81</b>
Name: ROHAN CHAVAN .(2021A7PS2739H).....	81
PS-I station: AlotBlocks Pvt. Ltd. , Faridabad .....	82
<b>Student</b> .....	<b>83</b>
Name: SIMRAN MOORJANI .(2021A8PS2697P) .....	83
PS-I station: AlotBlocks Pvt. Ltd. , Faridabad .....	83
<b>Student</b> .....	<b>83</b>
Name: NISHANT ABHIJEET KONDEKAR .(2021AAPS0326P) .....	84
PS-I station: AlotBlocks Pvt. Ltd. , Faridabad .....	84
<b>Student</b> .....	<b>84</b>
Name: UNNAT OMER .(2021B3A70896H) .....	84
PS-I station: AlgoUniversity (YC-S21) , Hyderabad.....	87
<b>Student</b> .....	<b>87</b>
Name: JEET LOHIYA(2021B1A33003G) .....	87
PS-I station: AlgoUniversity (YC-S21) , Hyderabad.....	88
<b>Student</b> .....	<b>88</b>
Name: ABHILASH KALYANAKRISHNAN PARAMESWARAN(2021B1A42297H) .....	88
PS-I station: AlgoUniversity (YC-S21) , Hyderabad.....	89
<b>Student</b> .....	<b>89</b>
Name: PRANAVI MANNAVA .(2021B1AA1913H).....	89
PS-I station: AlgoUniversity (YC-S21) , Hyderabad.....	90
<b>Student</b> .....	<b>90</b>
Name: BASUVULA KRISHNA CHAITANYA .(2021B3A81119P).....	90
PS-I station: Allos AI Limited - Market Research , London .....	91
<b>Student</b> .....	<b>91</b>

Name: KISLAY RANJAN NEE TANDON(2021A7PS2627G) .....	91
PS-I station: Allos AI Limited - Market Research , London .....	92
<b>Student</b> .....	<b>92</b>
Name: HARSHAVARDHAN GALI .(2021AAPS0691H) .....	92
PS-I station: Allos AI Limited - Web Development , London .....	93
<b>Student</b> .....	<b>93</b>
Name: GUDEPU RAJESWARI ANANYA(2021A3PS2642P).....	93
PS-I station: Allos AI Limited - Web Development , London .....	94
<b>Student</b> .....	<b>94</b>
Name: JASON AARON GOVEAS .(2021A7PS0237H) .....	94
PS-I station: Allos AI Limited - Web Development , London .....	95
<b>Student</b> .....	<b>95</b>
Name: HARDIK GUPTA .(2021A7PS2421P) .....	96
PS-I station: Allos AI Limited - Web Development , London .....	96
<b>Student</b> .....	<b>96</b>
Name: AYUSH BHARDWAJ(2021A7PS2634G).....	96
PS-I station: Allos AI Limited - Web Development , London .....	98
<b>Student</b> .....	<b>98</b>
Name: ARNAV ARVIND .(2021A7PS2709H) .....	98
PS-I station: Allos AI Limited - Web Development , London .....	99
<b>Student</b> .....	<b>99</b>
Name: RUPESH YARLAGADDA(2021B3A70839G) .....	99
PS-I station: Allos AI Limited - Web Development , London .....	100
<b>Student</b> .....	<b>100</b>
Name: PRIYANSHU DHARIWAL .(2021B5AA3167H) .....	100
PS-I station: Amazon - Applied Science - Shipping Tech , Hyderabad.....	101
<b>Student</b> .....	<b>101</b>
Name: ARNAV GOYAL(2021A7PS2596G) .....	101
PS-I station: Amazon - Applied Science - Shipping Tech , Hyderabad.....	102
<b>Student</b> .....	<b>102</b>
Name: SIDDHARTH YAYAVARAM .(2021A7PS3116H).....	103
PS-I station: Amazon Applied Science - Amazon Stores , Hyderabad.....	104

<b>Student.....</b>	<b>104</b>
Name: AYUSH BHAWWALA .(2021A7PS0180H) .....	104
PS-I station: Amazon Applied Science - Amazon Stores , Hyderabad.....	105
<b>Student.....</b>	<b>105</b>
Name: TARIMALA VIGNESH REDDY .(2021A7PS0234H) .....	105
PS-I station: Amazon Applied Science - Amazon Stores , Hyderabad.....	106
<b>Student.....</b>	<b>107</b>
Name: KULKARNI DEV SHREE .(2021A7PS2430P).....	107
PS-I station: Amazon Applied Science - Amazon Stores , Hyderabad.....	107
<b>Student.....</b>	<b>107</b>
Name: ARNAV YAYAVARAM .(2021A7PS3117H) .....	107
PS-I station: Amazon Software - Amazon Stores , Hyderabad.....	109
<b>Student.....</b>	<b>109</b>
Name: ARYAN GUPTA .(2021A7PS0162H) .....	109
PS-I station: Amazon Software - Amazon Stores , Hyderabad.....	110
<b>Student.....</b>	<b>110</b>
Name: REVANTH NALLA(2021A7PS0236H) .....	110
PS-I station: Amazon Software - Amazon Stores , Hyderabad.....	111
<b>Student.....</b>	<b>111</b>
Name: AASHISH CHANDRA K .(2021A7PS0467H) .....	111
PS-I station: Amazon Software - Amazon Stores , Hyderabad.....	113
<b>Student.....</b>	<b>113</b>
Name: YASH PANDEY .(2021A7PS0661P) .....	113
PS-I station: Amazon Software - Amazon Stores , Hyderabad.....	115
<b>Student.....</b>	<b>115</b>
Name: RADHEY KANADE .(2021A7PS2534P) .....	115
PS-I station: Amazon Software - Amazon Stores , Hyderabad.....	116
<b>Student.....</b>	<b>116</b>
Name: ANUJ NETHWEWALA(2021A7PS2716G).....	116
PS-I station: Apisero - An NTT Data Company , Pune .....	117
<b>Student.....</b>	<b>117</b>
Name: PATHAPATI SUBBU VARUN SAI .(2021A3PS2487H) .....	117

PS-I station: Apisero - An NTT Data Company , Pune .....	118
<b>Student</b> .....	<b>118</b>
Name: KUMARASAMY CHELLIAH .(2021A7PS0096H).....	118
PS-I station: Apisero - An NTT Data Company , Pune .....	119
<b>Student</b> .....	<b>119</b>
Name: AMBEKAR SHANTANU NILESH .(2021A7PS2540P).....	119
PS-I station: Apisero - An NTT Data Company , Pune .....	120
<b>Student</b> .....	<b>120</b>
Name: NISHIT PODDAR .(2021A7PS2626H).....	120
PS-I station: Apisero - An NTT Data Company , Pune .....	121
<b>Student</b> .....	<b>121</b>
Name: YATHARTH NANDA(2021AAPS1291G).....	121
PS-I station: Apisero - An NTT Data Company , Pune .....	122
<b>Student</b> .....	<b>122</b>
Name: UNMESH SANDIPANI BHOLE(2021B1A71949G).....	122
PS-I station: Apisero - An NTT Data Company , Pune .....	124
<b>Student</b> .....	<b>124</b>
Name: NISHCHAY DEEP .(2021B4A73144H) .....	124
PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi .....	125
<b>Student</b> .....	<b>125</b>
Name: UDDAYA GUPTA .(2021A2PS2621P).....	125
PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi .....	126
<b>Student</b> .....	<b>126</b>
Name: ROHAN KAPUR .(2021A3PS2228P).....	126
PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi .....	127
<b>Student</b> .....	<b>127</b>
Name: MAYANK BHADAURIA .(2021A3PS2843H) .....	127
PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi .....	128
<b>Student</b> .....	<b>128</b>
Name: SARTHAK AGARWAL .(2021A4PS3087H).....	128
PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi .....	128
<b>Student</b> .....	<b>128</b>

Name: SOURABH GUPTA .(2021A8PS0843P).....	128
PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi .....	130
<b>Student.....</b>	<b>130</b>
Name: PRIYANSH SHRIVASTAVA .(2021A8PS1466H).....	130
PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi .....	131
<b>Student.....</b>	<b>131</b>
Name: KRTIN KHEMKA .(2021B1A32732P).....	131
PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi .....	132
<b>Student.....</b>	<b>132</b>
Name: SARTHAK SINGHAL(2021B2A82348G).....	132
PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi .....	133
<b>Student.....</b>	<b>133</b>
Name: ANKITA BEHERA .(2021B2A83133H) .....	133
PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi .....	134
<b>Student.....</b>	<b>134</b>
Name: NAMISH CHHABRA .(2021B4A30865P) .....	134
PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi .....	134
<b>Student.....</b>	<b>135</b>
Name: SETHIA HARDIK SUBHASH .(2021B4A82321P) .....	135
PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi .....	136
<b>Student.....</b>	<b>136</b>
Name: HARSH SHARMA .(2021B5A11519P) .....	136
PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi .....	137
<b>Student.....</b>	<b>137</b>
Name: AADITYA PRASAD .(2021B5A41209P).....	137
PS-I station: Asanify Technologies Pvt Ltd - Nontech , Kolkata.....	138
<b>Student.....</b>	<b>138</b>
Name: KUNDAN DAS .(2021A5PS0392P) .....	138
PS-I station: Asanify Technologies Pvt Ltd - Nontech , Kolkata.....	138
<b>Student.....</b>	<b>138</b>
Name: SIDDHARTH SAMBHARIA .(2021A8PS2547P) .....	138
PS-I station: Asanify Technologies Pvt Ltd - Nontech , Kolkata.....	139



<b>Student.....</b>	<b>139</b>
Name: AAYUSH KUMAR SINGH(2021A8PS2751G) .....	139
PS-I station: Asanify Technologies Pvt Ltd - Nontech , Kolkata.....	140
<b>Student.....</b>	<b>140</b>
Name: JYOTIRADITYA SATPATHY(2021A8PS2760G) .....	140
PS-I station: Asanify Technologies Pvt Ltd - Nontech , Kolkata.....	141
<b>Student.....</b>	<b>141</b>
Name: DEBRUP PAUL(2021B4A42946G) .....	141
PS-I station: Asanify Technologies Pvt Ltd - Nontech , Kolkata.....	142
<b>Student.....</b>	<b>142</b>
Name: SANJANNA AGARWAL(2021B4A82780G).....	142
PS-I station: Asanify Technologies Pvt Ltd - Tech , Kolkata.....	143
<b>Student.....</b>	<b>143</b>
Name: TAUQEER AKTHAR .(2021A7PS1628P) .....	143
PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune .....	143
<b>Student.....</b>	<b>143</b>
Name: ANISH KARAR .(2021A3PS0970H).....	143
PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune .....	144
<b>Student.....</b>	<b>144</b>
Name: UTKARSH SINHA(2021A3PS2938H) .....	144
PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune .....	145
<b>Student.....</b>	<b>145</b>
Name: DEVARSH KUMBHARE(2021A3PS2975G) .....	145
PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune .....	146
<b>Student.....</b>	<b>146</b>
Name: VEDANT MAKARAND SHETE(2021A7PS0002G).....	146
PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune .....	147
<b>Student.....</b>	<b>147</b>
Name: SUYASH PATIL .(2021A7PS2078H).....	147
PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune .....	148
<b>Student.....</b>	<b>148</b>
Name: MEET CHIRAG PATEL .(2021A7PS2692H) .....	148

PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune .....	149
<b>Student</b> .....	<b>149</b>
Name: YUVRAJ SINGH BAIS` (2021A7PS2910G) .....	149
PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune .....	150
<b>Student</b> .....	<b>150</b>
Name: TANMAY SRIVASTAVA .(2021A7PS3196H) .....	150
PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune .....	150
<b>Student</b> .....	<b>150</b>
Name: VIGNAV Sripatham RAMKUMAR(2021AAPS0533H).....	151
PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune .....	151
<b>Student</b> .....	<b>151</b>
Name: SAI CHARAN VIHARI KATLAMUDI .(2021AAPS0564H).....	152
PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune .....	152
<b>Student</b> .....	<b>152</b>
Name: ATHARVA DAVE .(2021AAPS2044H).....	152
PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune .....	153
<b>Student</b> .....	<b>153</b>
Name: YASH RAJENDRA BHOLE(2021AAPS2936G).....	153
PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune .....	154
<b>Student</b> .....	<b>154</b>
Name: PARITOSH RAJEEV MATHAD(2021B5A31890G) .....	155
PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune .....	155
<b>Student</b> .....	<b>156</b>
Name: ADITYA PRAKASH SHUKLA .(2021B5AA2304H) .....	156
PS-I station: Avidia Labs , Bengaluru.....	156
<b>Student</b> .....	<b>156</b>
Name: SUBHAM CHAKRAVORTY(2021A3PS2702G) .....	157
PS-I station: Avidia Labs , Bengaluru.....	157
<b>Student</b> .....	<b>157</b>
Name: POOJAN MEHTA .(2021A7PS0093H) .....	157
PS-I station: Avidia Labs , Bengaluru.....	158
<b>Student</b> .....	<b>158</b>

Name: ABHINAV MISHRA(2021A8PS0833G) .....	158
PS-I station: Avidia Labs , Bengaluru .....	159
<b>Student.....</b>	<b>159</b>
Name: AMARJEET MOHANTY .(2021AAPS0560H) .....	159
PS-I station: Avidia Labs , Bengaluru .....	160
<b>Student.....</b>	<b>160</b>
Name: YOGESH AGARWAL(2021AAPS0982G) .....	160
PS-I station: Avidia Labs , Bengaluru .....	161
<b>Student.....</b>	<b>161</b>
Name: PRAKHAR SINGH JADAUN .(2021AAPS2750H) .....	161
PS-I station: Avidia Labs , Bengaluru .....	162
<b>Student.....</b>	<b>162</b>
Name: RAHUL AVASTHI .(2021AAPS2825H) .....	162
PS-I station: Avidia Labs , Bengaluru .....	163
<b>Student.....</b>	<b>163</b>
Name: Parth Jha(2021B3A71042P).....	163
PS-I station: Avidia Labs , Bengaluru .....	164
<b>Student.....</b>	<b>164</b>
Name: SIDHARTH SAXENA .(2021B4A72488H).....	164
PS-I station: Avidia Labs , Bengaluru .....	165
<b>Student.....</b>	<b>165</b>
Name: SAKSHI SINGH .(2021B5AA2480H) .....	165
PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar.....	166
<b>Student.....</b>	<b>166</b>
Name: PRAKHAR GURUNANI .(2021A2PS2620P) .....	166
PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar.....	167
<b>Student.....</b>	<b>167</b>
Name: KAIRAV DILIP PARIKH .(2021A3PS1108P).....	167
PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar.....	168
<b>Student.....</b>	<b>168</b>
Name: VIDIT SHAH(2021A3PS2094G).....	168
PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar.....	169

<b>Student.....</b>	<b>169</b>
Name: C NIRANJAN .(2021A3PS2452P) .....	169
PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar.....	170
<b>Student.....</b>	<b>170</b>
Name: HITARTH KANKAR .(2021A7PS0320H) .....	170
PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar.....	172
<b>Student.....</b>	<b>172</b>
Name: VAMSHI KRISHNA MANCHALA .(2021A7PS0453H) .....	172
PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar.....	173
<b>Student.....</b>	<b>173</b>
Name: BHATT URAV HITESHKUMAR(2021A7PS3057G) .....	173
PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar.....	174
<b>Student.....</b>	<b>174</b>
Name: SHILPEE CHETAN MADHANI(2021A8PS0821G) .....	174
PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar.....	175
<b>Student.....</b>	<b>175</b>
Name: PRAROOP GARG(2021A8PS2699P).....	175
PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar.....	176
<b>Student.....</b>	<b>176</b>
Name: DOSHI ARJAV PARAS(2021A8PS2848G) .....	176
PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar.....	177
<b>Student.....</b>	<b>177</b>
Name: ASHMIT GOEL(2021A8PS2991G).....	177
PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar.....	178
<b>Student.....</b>	<b>178</b>
Name: SHOTARUPA BANERJEE(2021AAPS0015G).....	178
PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar.....	179
<b>Student.....</b>	<b>179</b>
Name: TANISHQ KEKRE .(2021AAPS0770H) .....	179
PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar.....	180
<b>Student.....</b>	<b>180</b>
Name: RIA TYAGI(2021B2A83015G) .....	180

PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar.....	182
<b>Student.....</b>	<b>182</b>
Name: ISHITA RAJ .(2021B4A32275H) .....	182
PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar.....	183
<b>Student.....</b>	<b>183</b>
Name: BUDDU NAGASIVA SAITEJA .(2021B5A32301P) .....	183
PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar.....	184
<b>Student.....</b>	<b>184</b>
Name: KAVAN THAKKAR .(2021B5A81540P) .....	184
PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar.....	185
<b>Student.....</b>	<b>185</b>
Name: SHIKHAR AGARWAL(2021B5A83029G) .....	185
PS-I station: Bitcomm Technolo ies Pvt.Ltd , Nagpur.....	187
<b>Student.....</b>	<b>187</b>
Name: SUDARSHAN ALOK NABIRA(2021A3PS2882G) .....	187
PS-I station: Bitcomm Technolo ies Pvt.Ltd , Nagpur.....	188
<b>Student.....</b>	<b>188</b>
Name: PRAJWAL JITENDRA BORKUTE(2021AAPS2854G) .....	188
PS-I station: Bitcomm Technolo ies Pvt.Ltd , Noida .....	189
<b>Student.....</b>	<b>189</b>
Name: ANSH VARDHAN SRIVASTAVA .(2021A3PS0314P) .....	189
PS-I station: Bitcomm Technolo ies Pvt.Ltd , Noida .....	190
<b>Student.....</b>	<b>190</b>
Name: ABHISHEK GANGWAR(2021AAPS3052G) .....	190
PS-I station: Blu Feather Innovations Pvt. Ltd. (ONLINE) , Bengaluru.....	190
<b>Student.....</b>	<b>190</b>
Name: AVANEESH SANDEEP KULKARNI .(2021A4PS2560H).....	190
PS-I station: Blu Feather Innovations Pvt. Ltd. (ONLINE) , Bengaluru.....	191
<b>Student.....</b>	<b>191</b>
Name: ANEESH AGGARWAL .(2021A7PS2859H) .....	191
PS-I station: Blu Feather Innovations Pvt. Ltd. (ONLINE) , Bengaluru.....	192
<b>Student.....</b>	<b>192</b>

Name: SARANSH KASLIWAL(2021A7PS2944H).....	192
PS-I station: Blu Feather Innovations Pvt. Ltd. (ONLINE) , Bengaluru.....	193
<b>Student.....</b>	<b>193</b>
Name: ADITYA BHADOURIA(2021AAPS2442G) .....	193
PS-I station: Blu Feather Innovations Pvt. Ltd. (ONLINE) , Bengaluru.....	194
<b>Student.....</b>	<b>194</b>
Name: ADITYA CHANDRA ,(2021AAPS2958H) .....	194
PS-I station: Blu Feather Innovations Pvt. Ltd. (ONLINE) , Bengaluru.....	195
<b>Student.....</b>	<b>195</b>
Name: ASHESH VERMA ,(2021AAPS3021H).....	195
PS-I station: Blu Feather Innovations Pvt. Ltd. (ONLINE) , Bengaluru.....	196
<b>Student.....</b>	<b>196</b>
Name: AADARSH LABHSHETWAR ,(2021AAPS3023H).....	196
PS-I station: Blu Feather Innovations Pvt. Ltd. (ONLINE) , Bengaluru.....	197
<b>Student.....</b>	<b>197</b>
Name: SATYA SHREYAS KUSUMANCHI ,(2021B3A70723H).....	197
PS-I station: Blu Feather Innovations Pvt. Ltd. (ONLINE) , Bengaluru.....	198
<b>Student.....</b>	<b>198</b>
Name: AYUSHI SHARMA ,(2021B3A71737H).....	198
PS-I station: Blu Feather Innovations Pvt. Ltd. (ONLINE) , Bengaluru.....	198
<b>Student.....</b>	<b>199</b>
Name: ARNAV JAIN ,(2021B5AA2542H) .....	199
PS-I station: Blu Feather Innovations Pvt. Ltd. (ONLINE) , Bengaluru.....	200
<b>Student.....</b>	<b>200</b>
Name: SYED AMEEN ,(2021B5AA3046H).....	200
PS-I station: Blu Feather Innovations Pvt. Ltd. (ONSITE) , Bengaluru .....	200
<b>Student.....</b>	<b>200</b>
Name: TEJAS AGRAWAL(2021A3PS2789G).....	201
PS-I station: CDAC- Web Deveopment , Pune.....	201
<b>Student.....</b>	<b>201</b>
Name: MEHUL KOCHAR ,(2021B3A73032H).....	201
PS-I station: CDAC- Web Deveopment , Pune.....	202

<b>Student</b> .....	<b>202</b>
Name: DHRUV CHOUDHARY .(2021B3A73142H) .....	202
PS-I station: Centre for Railway Information Systems - Data Analytics , New delhi.....	203
<b>Student</b> .....	<b>203</b>
Name: SAMARTH KHANDELWAL .(2021A3PS0051P).....	203
PS-I station: Centre for Railway Information Systems - Data Analytics , New delhi.....	205
<b>Student</b> .....	<b>205</b>
Name: ARUSH SUKESH SHETTY .(2021A3PS2661P) .....	205
PS-I station: Centre for Railway Information Systems - Data Analytics , New delhi.....	206
<b>Student</b> .....	<b>206</b>
Name: HARSHIT AGARWAL(2021A7PS2073G).....	206
PS-I station: Centre for Railway Information Systems - Data Analytics , New delhi.....	207
<b>Student</b> .....	<b>207</b>
Name: ADITYA KHANDELWAL .(2021A7PS2422P) .....	207
PS-I station: Centre for Railway Information Systems - Data Analytics , New delhi.....	208
<b>Student</b> .....	<b>208</b>
Name: AVI VERMA .(2021AAPS3016H).....	208
PS-I station: Centre for Railway Information Systems - Data Analytics , New delhi.....	209
<b>Student</b> .....	<b>209</b>
Name: SWAPNIL YADAV(2021B3A72770P).....	209
PS-I station: Centre for Railway Information Systems - Information Security Group , New delhi .....	210
<b>Student</b> .....	<b>210</b>
Name: RISHI GUPTA .(2021A7PS0690P) .....	210
PS-I station: Centre for Railway Information Systems - Information Security Group , New delhi .....	211
<b>Student</b> .....	<b>211</b>
Name: UJJWAL AGGARWAL(2021A7PS2427P) .....	211
PS-I station: Centre for Railway Information Systems - Information Security Group , New delhi .....	212
<b>Student</b> .....	<b>212</b>
Name: SHIVAM AGARWAL(2021A7PS2909G).....	212
PS-I station: Centre for Railway Information Systems (CIRIS) - Crew Management Systems group , New delhi .....	213
<b>Student</b> .....	<b>213</b>

Name: Prateek Kashyap(2021A7PS1449P) .....	213
PS-I station: Centre for Railway Information Systems (CIRIS) - Crew Management Systems group , New delhi .....	214
<b>Student.....</b>	<b>214</b>
Name: NISHANT ATUL BHANDARI(2021A7PS2046G) .....	214
PS-I station: Centre for Railway Information Systems (CIRIS) - Crew Management Systems group , New delhi .....	215
<b>Student.....</b>	<b>215</b>
Name: APURVA PATIL(2021A7PS2068G) .....	215
PS-I station: Centre for Railway Information Systems (CIRIS) - Crew Management Systems group , New delhi .....	216
<b>Student.....</b>	<b>216</b>
Name: SPARSH GOENKA .(2021A7PS2413P) .....	216
PS-I station: Centre for Railway Information Systems (CIRIS) - Crew Management Systems group , New delhi .....	217
<b>Student.....</b>	<b>217</b>
Name: ARUSH BANSAL(2021A7PS2458G) .....	217
PS-I station: Centre for Railway Information Systems (CIRIS) - Crew Management Systems group , New delhi .....	219
<b>Student.....</b>	<b>219</b>
Name: HARDAV HITESH RAVAL(2021A7PS3041G) .....	219
PS-I station: Chaob Technologies Pvt. Ltd (Carscan) , Pune.....	220
<b>Student.....</b>	<b>220</b>
Name: RAGURAM VENKATESAN .(2021A7PS0150H).....	220
PS-I station: Chaob Technologies Pvt. Ltd (Carscan) , Pune.....	221
<b>Student.....</b>	<b>221</b>
Name: KAMALESH RAM R .(2021A7PS0286H).....	221
PS-I station: Chaob Technologies Pvt. Ltd (Carscan) , Pune.....	222
<b>Student.....</b>	<b>222</b>
Name: VEMURI PHANI SAI SREE GANESH .(2021A7PS1631P) .....	222
PS-I station: Chaob Technologies Pvt. Ltd (Carscan) , Pune.....	223
<b>Student.....</b>	<b>223</b>
Name: DIVYAROOP SAHOO(2021A7PS2093G) .....	223



PS-I station: Chaob Technologies Pvt. Ltd (Carscan) , Pune.....	224
<b>Student.....</b>	<b>224</b>
Name: DARSH BHAVIN DOSHI(2021A7PS2836G) .....	224
PS-I station: Chaob Technologies Pvt. Ltd (Carscan) , Pune.....	224
<b>Student.....</b>	<b>225</b>
Name: DAKSH YOGESH SHAH(2021AAPS0962G).....	225
PS-I station: Chaob Technologies Pvt. Ltd (Carscan) , Pune.....	226
<b>Student.....</b>	<b>226</b>
Name: RAJ PATEL .(2021AAPS2882H).....	226
PS-I station: Chaob Technologies Pvt. Ltd (Carscan) , Pune.....	227
<b>Student.....</b>	<b>227</b>
Name: SHUBHAM BIRLA .(2021B3A72965H).....	227
PS-I station: Cleareye.ai India Pvt. Ltd. , Thiruvananthapuram .....	228
<b>Student.....</b>	<b>228</b>
Name: D NIRUPAM KRISHNAN(2021AAPS2416G).....	228
PS-I station: Coditation Systems Pvt Ltd , Pune .....	230
<b>Student.....</b>	<b>230</b>
Name: AAYUSH KUMAR SINGH .(2021A7PS0430H).....	230
PS-I station: Coditation Systems Pvt Ltd , Pune .....	231
<b>Student.....</b>	<b>231</b>
Name: OHIDUZ ZAMAN .(2021A7PS2005P).....	231
PS-I station: Coditation Systems Pvt Ltd , Pune .....	233
<b>Student.....</b>	<b>233</b>
Name: JOEL TONY(2021A7PS2077G) .....	233
PS-I station: Coditation Systems Pvt Ltd , Pune .....	235
<b>Student.....</b>	<b>235</b>
Name: PATHIK SHAH(2021A7PS2085G).....	235
PS-I station: Coditation Systems Pvt Ltd , Pune .....	236
<b>Student.....</b>	<b>236</b>
Name: PRATEEK SAURABH CHITRE(2021A7PS2841G).....	236
PS-I station: Coditation Systems Pvt Ltd , Pune .....	237
<b>Student.....</b>	<b>238</b>

Name: PRITHVINANDAN KUNJITHAYA(2021A7PS3051G) .....	238
PS-I station: Coditation Systems Pvt Ltd , Pune .....	239
<b>Student.....</b>	<b>239</b>
Name: SARANSH AGARWAL .(2021B4A71306P).....	239
PS-I station: Coditation Systems Pvt Ltd , Pune .....	240
<b>Student.....</b>	<b>240</b>
Name: PIYUSH JAJRA .(2021B4A72969H) .....	240
PS-I station: Cognix Technologies , Pilani.....	241
<b>Student.....</b>	<b>241</b>
Name: DEEPAK AGARWAL .(2021A3PS2239P).....	241
PS-I station: Cognix Technologies , Pilani.....	242
<b>Student.....</b>	<b>242</b>
Name: AKSHITI GARG .(2021A3PS2499H).....	242
PS-I station: Cognix Technologies , Pilani.....	243
<b>Student.....</b>	<b>243</b>
Name: TIMOTHY ZACHARIAH BINESH .(2021A3PS2978H) .....	243
PS-I station: Cognix Technologies , Pilani.....	245
<b>Student.....</b>	<b>245</b>
Name: HARSH GROVER .(2021A8PS2557P) .....	245
PS-I station: Cognix Technologies , Pilani.....	246
<b>Student.....</b>	<b>246</b>
Name: NISHIL BHAVSAR .(2021AAPS2959H) .....	246
PS-I station: Cognix Technologies , Pilani.....	248
<b>Student.....</b>	<b>248</b>
Name: NACHIKETA NALIN .(2021B1A82273P) .....	249
PS-I station: Cognix Technologies , Pilani.....	249
<b>Student.....</b>	<b>249</b>
Name: ABHINAV LAMBA .(2021B4A70913P).....	250
PS-I station: Commvault Systems , Bengaluru .....	250
<b>Student.....</b>	<b>250</b>
Name: THOMAS THYVELIKKAKATH SABU(2021A7PS0011G).....	250
PS-I station: Commvault Systems , Bengaluru .....	251

<b>Student</b> .....	<b>251</b>
Name: DANAI ADITYA DHANANJAY(2021A7PS2509G) .....	251
PS-I station: Commvault Systems , Bengaluru .....	252
<b>Student</b> .....	<b>252</b>
Name: SAI PRAJEET CH V V .(2021AAPS3014H).....	253
PS-I station: Commvault Systems , Bengaluru .....	254
<b>Student</b> .....	<b>254</b>
Name: ROHAN TIWARI .(2021B2AA2748P) .....	254
PS-I station: Commvault Systems , Bengaluru .....	255
<b>Student</b> .....	<b>255</b>
Name: SURYASHASHANK VENKATA GUDIPUDI .(2021B3AA0866H).....	255
PS-I station: Commvault Systems , Bengaluru .....	256
<b>Student</b> .....	<b>257</b>
Name: ANANYA AGRAWAL .(2021B3AA1935H) .....	257
PS-I station: Contenterra Software Private Limited , Hyderabad .....	258
<b>Student</b> .....	<b>258</b>
Name: HARSHIT AGARWAL .(2021A7PS0247H).....	258
PS-I station: Contenterra Software Private Limited , Hyderabad .....	259
<b>Student</b> .....	<b>259</b>
Name: SPARSH KHANDELWAL .(2021A7PS1320H) .....	259
PS-I station: Contenterra Software Private Limited , Hyderabad .....	260
<b>Student</b> .....	<b>260</b>
Name: AJEY MALIK(2021A7PS2542P) .....	260
PS-I station: Contenterra Software Private Limited , Hyderabad .....	261
<b>Student</b> .....	<b>261</b>
Name: YATEE SINGH(2021A8PS2534G) .....	261
PS-I station: Contenterra Software Private Limited , Hyderabad .....	262
<b>Student</b> .....	<b>262</b>
Name: VAIBHAV SINGH .(2021AAPS3011H) .....	262
PS-I station: Contenterra Software Private Limited , Hyderabad .....	262
<b>Student</b> .....	<b>262</b>
Name: SABHAYA JAY GIRISHBHAI(2021B5A72172G).....	262

PS-I station: COUTURE AI PVT LTD. , Bengaluru.....	263
<b>Student.....</b>	<b>263</b>
Name: AMEYA RAJESH KASTURE(2021A7PS2058G) .....	263
PS-I station: COUTURE AI PVT LTD. , Bengaluru.....	264
<b>Student.....</b>	<b>264</b>
Name: SHAILESH CHANDRA RAO .(2021A7PS2064H).....	264
PS-I station: COUTURE AI PVT LTD. , Bengaluru.....	265
<b>Student.....</b>	<b>265</b>
Name: SANAATAN R .(2021A7PS2902H) .....	265
PS-I station: COUTURE AI PVT LTD. , Bengaluru.....	267
<b>Student.....</b>	<b>267</b>
Name: DHRUV RAVI KRISHNAN .(2021B3A70995P) .....	267
PS-I station: COUTURE AI PVT LTD. , Bengaluru.....	268
<b>Student.....</b>	<b>268</b>
Name: RIDDHI AGARWAL .(2021B3A71117P).....	268
PS-I station: COUTURE AI PVT LTD. , Bengaluru.....	269
<b>Student.....</b>	<b>269</b>
Name: KESHAV SARAIYA .(2021B3A72631H).....	269
PS-I station: COUTURE AI PVT LTD. , Bengaluru.....	271
<b>Student.....</b>	<b>271</b>
Name: MUGDHA GUPTA .(2021B3A72724H) .....	271
PS-I station: CT Software Solutions India Pvt Ltd , Gurugram.....	272
<b>Student.....</b>	<b>273</b>
Name: SHYAM RAGHAVAN .(2021A7PS0013P) .....	273
PS-I station: CT Software Solutions India Pvt Ltd , Gurugram.....	273
<b>Student.....</b>	<b>274</b>
Name: JAI BOTHRA(2021A7PS0015P).....	274
PS-I station: CT Software Solutions India Pvt Ltd , Gurugram.....	274
<b>Student.....</b>	<b>274</b>
Name: KUSH GULATI(2021A8PS3036G).....	274
PS-I station: CT Software Solutions India Pvt Ltd , Gurugram.....	276
<b>Student.....</b>	<b>276</b>

Name: ADITYA KUMAR JAIN .(2021B3A82573H) .....	276
PS-I station: CT Software Solutions India Pvt Ltd , Gurugram.....	277
<b>Student.....</b>	<b>277</b>
Name: ABHISHEK MISHRA(2021B4A70823P) .....	277
PS-I station: CT Software Solutions India Pvt Ltd , Gurugram.....	278
<b>Student.....</b>	<b>278</b>
Name: ANURAG SAXENA(2021B4AA2871G).....	278
PS-I station: Datamatics , Mumbai.....	279
<b>Student.....</b>	<b>279</b>
Name: JEWALIKAR RUDRA SHASHANK(2021A7PS0450P) .....	279
PS-I station: Datamatics , Mumbai.....	280
<b>Student.....</b>	<b>280</b>
Name: CHAHAK RAKESH PUNAMIYA(2021B2A72355G).....	280
PS-I station: Datamatics , Mumbai.....	281
<b>Student.....</b>	<b>282</b>
Name: ISHAN DEEPAK WANI .(2021B3A72772P).....	282
PS-I station: Deptt. Of Information Technology & Communication , Jaipur .....	282
<b>Student.....</b>	<b>282</b>
Name: SHIVAM VERMA .(2021A3PS0779H) .....	282
PS-I station: Deptt. Of Information Technology & Communication , Jaipur .....	283
<b>Student.....</b>	<b>283</b>
Name: CHIRAG GOYAL .(2021A3PS2398P).....	283
PS-I station: Deptt. Of Information Technology & Communication , Jaipur .....	284
<b>Student.....</b>	<b>284</b>
Name: SHASHWAT SAXENA(2021A3PS2824G) .....	284
PS-I station: Deptt. Of Information Technology & Communication , Jaipur .....	285
<b>Student.....</b>	<b>285</b>
Name: ABHINAV MATHUR .(2021A8PS1100P) .....	286
PS-I station: Deptt. Of Information Technology & Communication , Jaipur .....	286
<b>Student.....</b>	<b>286</b>
Name: MANAN JAIN .(2021A8PS2458P).....	286
PS-I station: Deptt. Of Information Technology & Communication , Jaipur .....	288

<b>Student.....</b>	<b>288</b>
Name: CHAITANYA CHOUDHARY .(2021A8PS2709P) .....	288
PS-I station: Deptt. Of Information Technology & Communication , Jaipur .....	289
<b>Student.....</b>	<b>289</b>
Name: ADIT BHATIA(2021A8PS2920G).....	289
PS-I station: Deptt. Of Information Technology & Communication , Jaipur .....	290
<b>Student.....</b>	<b>290</b>
Name: KAVYA AGARWAL .(2021B2AA0881P) .....	290
PS-I station: Deptt. Of Information Technology & Communication , Jaipur .....	291
<b>Student.....</b>	<b>291</b>
Name: GAURI AGARWAL .(2021B2AA2310P) .....	291
PS-I station: Deptt. Of Information Technology & Communication , Jaipur .....	292
<b>Student.....</b>	<b>292</b>
Name: PRABHAV PAREEK .(2021B5A82927H) .....	292
PS-I station: Dynamatic Technologies Ltd (HLS Division) , Bengaluru.....	293
<b>Student.....</b>	<b>293</b>
Name: VIKRAM KOMPERLA .(2021A4PS1427P).....	293
PS-I station: Dynamatic Technologies Ltd (HLS Division) , Bengaluru.....	294
<b>Student.....</b>	<b>294</b>
Name: VITALA BHARATH .(2021A7PS0238H) .....	294
PS-I station: Dynamatic Technologies Ltd (HLS Division) , Bengaluru.....	295
<b>Student.....</b>	<b>295</b>
Name: GARVIT SINGHAL .(2021A7PS2226P).....	295
PS-I station: Dynamatic Technologies Ltd (HLS Division) , Bengaluru.....	296
<b>Student.....</b>	<b>296</b>
Name: PRANAV DEEPAK TANNA .(2021A7PS2685P) .....	296
PS-I station: Dynamatic Technologies Ltd (HLS Division) , Bengaluru.....	297
<b>Student.....</b>	<b>297</b>
Name: SHIVANSH JAIN .(2021AAPS1634P) .....	297
PS-I station: Dynamatic Technologies Ltd (HLS Division) , Bengaluru.....	299
<b>Student.....</b>	<b>299</b>
Name: KAVYA GOEL .(2021B4A32499P) .....	299

PS-I station: Dynamatic Technologies Ltd (HLS Division) , Bengaluru.....	300
<b>Student.....</b>	<b>300</b>
Name: ABHIRAM H .(2021B4A71134P).....	300
PS-I station: Dynamatic Technologies Ltd (HLS Division) , Bengaluru.....	301
<b>Student.....</b>	<b>301</b>
Name: TANAY HRISHIKESH KULKARNI(2021B4A72615G).....	301
PS-I station: Dynamatic Technologies Ltd (HLS Division) , Bengaluru.....	302
<b>Student.....</b>	<b>302</b>
Name: DEVANSH SHARMA(2021B4AA2636G).....	302
PS-I station: Dynamatic Technologies Ltd (HLS Division) , Bengaluru.....	303
<b>Student.....</b>	<b>303</b>
Name: AAROSHI R RAO(2021B5A72952G) .....	303
PS-I station: eShipz.com (LogIQ Labs Pvt. Ltd.) , Bengaluru.....	304
<b>Student.....</b>	<b>304</b>
Name: AARYAN GARG .(2021A7PS2222P) .....	304
PS-I station: eShipz.com (LogIQ Labs Pvt. Ltd.) , Bengaluru.....	305
<b>Student.....</b>	<b>305</b>
Name: ANANTH(2021A7PS2647G) .....	305
PS-I station: eShipz.com (LogIQ Labs Pvt. Ltd.) , Bengaluru.....	306
<b>Student.....</b>	<b>306</b>
Name: SRUJAL MITESH MEHTA(2021A7PS2717G) .....	307
PS-I station: eShipz.com (LogIQ Labs Pvt. Ltd.) , Bengaluru.....	307
<b>Student.....</b>	<b>307</b>
Name: AMEY PRASHANT PATIL(2021A7PS2740G).....	307
PS-I station: eShipz.com (LogIQ Labs Pvt. Ltd.) , Bengaluru.....	308
<b>Student.....</b>	<b>308</b>
Name: PRATHIK S SHETTY(2021B3A71317G).....	308
PS-I station: eShipz.com (LogIQ Labs Pvt. Ltd.) , Bengaluru.....	310
<b>Student.....</b>	<b>310</b>
Name: VARUN AJAY KHADPE(2021B3A72864G) .....	310
PS-I station: E-Sutra Technologies Pvt. Ltd. - Nontech , Delhi .....	311
<b>Student.....</b>	<b>311</b>

Name: JASKIRAT SINGH KALRA .(2021A3PS1020H) .....	311
PS-I station: E-Sutra Technologies Pvt. Ltd. - Nontech , Delhi .....	312
<b>Student.....</b>	<b>312</b>
Name: ABHIJEET CHANDRA(2021A4PS2309H) .....	312
PS-I station: E-Sutra Technologies Pvt. Ltd. - Nontech , Delhi .....	313
<b>Student.....</b>	<b>313</b>
Name: ADYA SHUKLA .(2021A5PS0394P) .....	313
PS-I station: E-Sutra Technologies Pvt. Ltd. - Nontech , Delhi .....	314
<b>Student.....</b>	<b>314</b>
Name: CHAITANYA NITIN MISHRA(2021B2AA2298G) .....	314
PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech , Delhi .....	315
<b>Student.....</b>	<b>315</b>
Name: YASH MANCHANDA(2021A1PS2964G).....	315
PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech , Delhi .....	315
<b>Student.....</b>	<b>315</b>
Name: AAHAN NAWAB(2021A3PS2365G).....	316
PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech , Delhi .....	316
<b>Student.....</b>	<b>316</b>
Name: ARKOJIT DATTA .(2021B1A32395H) .....	317
PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech , Delhi .....	318
<b>Student.....</b>	<b>318</b>
Name: PARTH AGARWAL .(2021B1A32734P) .....	318
PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech , Delhi .....	319
<b>Student.....</b>	<b>319</b>
Name: AYUSH SAMSON DSOUZA .(2021B3A31052P).....	319
PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech , Delhi .....	319
<b>Student.....</b>	<b>320</b>
Name: UJJWAL JAJOO(2021B4AA2266G) .....	320
PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi .....	320
<b>Student.....</b>	<b>320</b>
Name: CHETAN RATHAUR .(2021A1PS1579P).....	320
PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi .....	321



<b>Student.....</b>	<b>321</b>
Name: APRATIM KAKOTY .(2021A1PS3054H).....	321
PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi .....	322
<b>Student.....</b>	<b>322</b>
Name: SIDDHARTHA MISHRA .(2021A3PS0796H) .....	322
PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi .....	323
<b>Student.....</b>	<b>323</b>
Name: SAUMYA OJHA .(2021A3PS2663P) .....	323
PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi .....	324
<b>Student.....</b>	<b>324</b>
Name: LUV GULATI .(2021A3PS2931H) .....	324
PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi .....	324
<b>Student.....</b>	<b>324</b>
Name: P G S PRITAM VARMA .(2021A3PS2982H) .....	324
PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi .....	325
<b>Student.....</b>	<b>326</b>
Name: GOPAVARAPU POOJITHA .(2021A4PS1985H) .....	326
PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi .....	327
<b>Student.....</b>	<b>327</b>
Name: GADICHARLA SAI SHRIJA SRIVALLI .(2021A4PS3096H).....	327
PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi .....	328
<b>Student.....</b>	<b>328</b>
Name: AMAL SAYEED .(2021A7PS2001P) .....	328
PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi .....	329
<b>Student.....</b>	<b>329</b>
Name: SAMARTH GANDOTRA .(2021A7PS2437P).....	329
PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi .....	329
<b>Student.....</b>	<b>330</b>
Name: VATSAL GOYAL .(2021B1A32325H) .....	330
PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi .....	331
<b>Student.....</b>	<b>331</b>
Name: KHUSHI JAIN .(2021B3A33034H).....	331

PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi .....	332
<b>Student.....</b>	<b>332</b>
Name: RUDRAKSH GULHATI(2021B3AA1580G).....	332
PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi .....	332
<b>Student.....</b>	<b>333</b>
Name: SUJAL SHAILESH PIMPALE(2021B4A41067G).....	333
PS-I station: FinMapp (Fininfinity Technologies Pvt. Ltd.) - Non Tech , Gurugram.....	333
<b>Student.....</b>	<b>333</b>
Name: SAANYA.R.JAIN .(2021A5PS1278H) .....	333
PS-I station: FinMapp (Fininfinity Technologies Pvt. Ltd.) - Tech , Gurugram .....	334
<b>Student.....</b>	<b>334</b>
Name: SHUBH NEMA .(2021A1PS2602P) .....	334
PS-I station: FinMapp (Fininfinity Technologies Pvt. Ltd.) - Tech , Gurugram .....	335
<b>Student.....</b>	<b>335</b>
Name: ANISH SHANDILYA .(2021A3PS0982H) .....	335
PS-I station: FinMapp (Fininfinity Technologies Pvt. Ltd.) - Tech , Gurugram .....	336
<b>Student.....</b>	<b>336</b>
Name: DRISHTI KHANDOR .(2021A3PS2202H) .....	336
PS-I station: FinMapp (Fininfinity Technologies Pvt. Ltd.) - Tech , Gurugram .....	337
<b>Student.....</b>	<b>337</b>
Name: ISHA PARGAONKAR .(2021A3PS2803H) .....	337
PS-I station: FinMapp (Fininfinity Technologies Pvt. Ltd.) - Tech , Gurugram .....	338
<b>Student.....</b>	<b>338</b>
Name: DHRUV MEHTA .(2021A7PS2088H).....	338
PS-I station: FinMapp (Fininfinity Technologies Pvt. Ltd.) - Tech , Gurugram .....	339
<b>Student.....</b>	<b>339</b>
Name: AFZAL AFTAB .(2021A7PS2424P).....	339
PS-I station: FinMapp (Fininfinity Technologies Pvt. Ltd.) - Tech , Gurugram .....	341
<b>Student.....</b>	<b>341</b>
Name: Ansh Goyal(2021A7PS2614H) .....	341
PS-I station: FinMapp (Fininfinity Technologies Pvt. Ltd.) - Tech , Gurugram .....	342
<b>Student.....</b>	<b>342</b>

Name: UTKARSH BHASKAR .(2021B3A71610H) .....	342
PS-I station: FinMapp (Fininfinity Technologies Pvt. Ltd.) - Tech , Gurugram .....	343
<b>Student.....</b>	<b>343</b>
Name: VIDIT BUBNA .(2021B3A72494P) .....	343
PS-I station: FinMapp (Fininfinity Technologies Pvt. Ltd.) - Tech , Gurugram .....	345
<b>Student.....</b>	<b>345</b>
Name: RACHIT VAGHANI .(2021B3AA1457H).....	345
PS-I station: Flamingos Technologies Inc. , Bengaluru.....	346
<b>Student.....</b>	<b>346</b>
Name: ADITYA KASHYAP(2021A8PS3046G).....	346
PS-I station: Flamingos Technologies Inc. , Bengaluru.....	347
<b>Student.....</b>	<b>347</b>
Name: AMAN ASHISH SINGH(2021AAPS2857G).....	347
PS-I station: Future Generali India Life Insurance , Mumbai .....	348
<b>Student.....</b>	<b>348</b>
Name: SETH ROMIL DEEPAK .(2021A3PS2399P) .....	348
PS-I station: Future Generali India Life Insurance , Mumbai .....	349
<b>Student.....</b>	<b>349</b>
Name: NISHIT SONI .(2021A7PS0672P) .....	349
PS-I station: Future Generali India Life Insurance , Mumbai .....	350
<b>Student.....</b>	<b>350</b>
Name: NISHESH NAMAN .(2021A7PS2009P).....	350
PS-I station: Future Generali India Life Insurance , Mumbai .....	351
<b>Student.....</b>	<b>352</b>
Name: NACHIKET SINGH JAGMOHAN SINGH KANDARI(2021A7PS2691P).....	352
PS-I station: Future Generali India Life Insurance , Mumbai .....	353
<b>Student.....</b>	<b>353</b>
Name: ROHIT DAS .(2021A7PS2860H) .....	353
PS-I station: Goavega Software India Pvt Ltd , Bengaluru .....	354
<b>Student.....</b>	<b>354</b>
Name: KOLASANI AMIT VISHNU .(2021A7PS0151H) .....	354
PS-I station: Goavega Software India Pvt Ltd , Bengaluru .....	356

<b>Student.....</b>	<b>356</b>
Name: MALLAVARAPU SHRUTI .(2021A7PS2011P) .....	356
PS-I station: Hacker4Help , Lambhvel .....	357
<b>Student.....</b>	<b>357</b>
Name: ROHAN POTHIREDDY .(2021A7PS0365H).....	357
PS-I station: Hacker4Help , Lambhvel .....	357
<b>Student.....</b>	<b>357</b>
Name: PRITAM BASU(2021A7PS2175H) .....	358
PS-I station: Hacker4Help , Lambhvel .....	359
<b>Student.....</b>	<b>359</b>
Name: YASHWARDHAN SINGH .(2021A7PS2219P) .....	359
PS-I station: Hacker4Help , Lambhvel .....	359
<b>Student.....</b>	<b>359</b>
Name: LAKSHIT SETHI .(2021A7PS2434P).....	359
PS-I station: Hacker4Help , Lambhvel .....	360
<b>Student.....</b>	<b>360</b>
Name: MIHIR KULKARNI .(2021A7PS2689H) .....	360
PS-I station: Hacker4Help , Lambhvel .....	361
<b>Student.....</b>	<b>361</b>
Name: S ANANTH .(2021A7PS2809H).....	362
PS-I station: Hacker4Help , Lambhvel .....	362
<b>Student.....</b>	<b>362</b>
Name: AGASTYA SEN(2021A7PS2838G) .....	363
PS-I station: Hacker4Help , Lambhvel .....	363
<b>Student.....</b>	<b>363</b>
Name: VANI JAIN .(2021B1A73126H) .....	363
PS-I station: Hacker4Help , Lambhvel .....	365
<b>Student.....</b>	<b>365</b>
Name: VARUN SAI SAJA .(2021B3A71054P) .....	365
PS-I station: Hacker4Help , Lambhvel .....	366
<b>Student.....</b>	<b>366</b>
Name: OM PATEL(2021B4A71948G) .....	366

PS-I station: Hacker4Help , Lambhvel .....	367
<b>Student.....</b>	<b>367</b>
Name: ADVAY BURTE(2021B5A72873G) .....	367
PS-I station: IDS Infotech Ltd , Mohali .....	368
<b>Student.....</b>	<b>368</b>
Name: RAAG DENGRE .(2021A8PS1088H).....	368
PS-I station: IDS Infotech Ltd , Mohali .....	369
<b>Student.....</b>	<b>369</b>
Name: CHITRESH NEEMA .(2021AAPS0265P).....	369
PS-I station: IDS Infotech Ltd , Mohali .....	369
<b>Student.....</b>	<b>369</b>
Name: SUCHIT CHEBOLU .(2021B1A72281P) .....	369
PS-I station: i-exceed technology solutions private limited , Bengaluru .....	370
<b>Student.....</b>	<b>370</b>
Name: PRACHEE SHARMA .(2021A3PS2867H) .....	370
PS-I station: i-exceed technology solutions private limited , Bengaluru .....	371
<b>Student.....</b>	<b>372</b>
Name: AMIT DEEPAK KUVELKER(2021A7PS3054G).....	372
PS-I station: i-exceed technology solutions private limited , Bengaluru .....	373
<b>Student.....</b>	<b>373</b>
Name: VARUN HARISH KRISHNAN(2021AAPS2565G) .....	373
PS-I station: iLink , Pune.....	374
<b>Student.....</b>	<b>374</b>
Name: ARUNACHALA AMUDA MURUGAN .(2021A7PS0205H).....	374
PS-I station: iLink , Pune .....	375
<b>Student.....</b>	<b>375</b>
Name: AKSHAT ABHAY SHETYE .(2021A7PS2426P) .....	375
PS-I station: Immensitas Pvt. Ltd. (Lemnisk) , Bengaluru.....	376
<b>Student.....</b>	<b>376</b>
Name: SOUMITRA SHEWALE .(2021B3A70781H).....	376
PS-I station: Immensitas Pvt. Ltd. (Lemnisk) , Bengaluru.....	377
<b>Student.....</b>	<b>377</b>

Name: VRITANT CHOPRA .(2021B4A72501P) .....	377
PS-I station: Indian Institute Of Remote Sensing , Dehradun .....	378
<b>Student.....</b>	<b>378</b>
Name: HARSH RACHALWAR .(2021A7PS0200H) .....	378
PS-I station: Indian Institute Of Remote Sensing , Dehradun .....	380
<b>Student.....</b>	<b>380</b>
Name: TUSHAR RAGHANI .(2021A7PS1404H) .....	380
PS-I station: Indian Institute Of Remote Sensing , Dehradun .....	380
<b>Student.....</b>	<b>380</b>
Name: YASHVARDHAN BATWARA(2021A7PS2224P) .....	381
PS-I station: Indian Institute Of Remote Sensing , Dehradun .....	381
<b>Student.....</b>	<b>382</b>
Name: ASHMAN MEHRA(2021A7PS2508G) .....	382
PS-I station: Indian Institute Of Remote Sensing , Dehradun .....	383
<b>Student.....</b>	<b>383</b>
Name: SOUMIL RAY .(2021A7PS2652H) .....	383
PS-I station: Indian Institute Of Remote Sensing , Dehradun .....	384
<b>Student.....</b>	<b>384</b>
Name: AASHIR TYAGI .(2021A7PS3015H) .....	384
PS-I station: Indian Institute Of Remote Sensing , Dehradun .....	385
<b>Student.....</b>	<b>385</b>
Name: NAGA HARSHINI R .(2021AAPS1970H) .....	385
PS-I station: Indian Institute Of Remote Sensing , Dehradun .....	386
<b>Student.....</b>	<b>386</b>
Name: TARUN RAMAN .(2021AAPS2308H) .....	386
PS-I station: Indian Institute Of Remote Sensing , Dehradun .....	387
<b>Student.....</b>	<b>387</b>
Name: HARSHITH KUMAR BORUNDIA .(2021B3A70727H).....	387
PS-I station: Indian Institute Of Remote Sensing , Dehradun .....	388
<b>Student.....</b>	<b>388</b>
Name: ADITYA AGARWAL .(2021B3A70870P) .....	388
PS-I station: Indian Institute Of Remote Sensing , Dehradun .....	389

<b>Student.....</b>	<b>389</b>
Name: ADITYA SINGH .(2021B5A71645H) .....	389
PS-I station: Indian Meteorological Department (IMD) , Pune.....	390
<b>Student.....</b>	<b>390</b>
Name: JADHAV PRATHMESH RAJENDRA(2021A3PS2498G).....	390
PS-I station: Indian Meteorological Department (IMD) , Pune.....	391
<b>Student.....</b>	<b>391</b>
Name: PAYGHAN RAJAT BHAGWANT .(2021A7PS2218P) .....	391
PS-I station: Indian Meteorological Department (IMD) , Pune.....	392
<b>Student.....</b>	<b>392</b>
Name: Shardul Shingare(2021A7PS2539P).....	392
PS-I station: Indian Meteorological Department (IMD) , Pune.....	393
<b>Student.....</b>	<b>393</b>
Name: EESHAN YOGESH DESHPANDE(2021A8PS1567G) .....	393
PS-I station: Indian Meteorological Department (IMD) , Pune.....	394
<b>Student.....</b>	<b>394</b>
Name: ADARSH GOPALAKRISHNAN(2021A8PS1755G).....	394
PS-I station: Indian Meteorological Department (IMD) , Pune.....	395
<b>Student.....</b>	<b>395</b>
Name: PRATHAM AMOL POTNIS(2021A8PS2315G) .....	395
PS-I station: Indian Meteorological Department (IMD) , Pune.....	396
<b>Student.....</b>	<b>397</b>
Name: SHASHWAT SUNIL GOYAL(2021B1A83002G) .....	397
PS-I station: Indian Meteorological Department (IMD) , Pune.....	398
<b>Student.....</b>	<b>398</b>
Name: VIKRAM SINGH(2021B1AA3008G) .....	398
PS-I station: Indian Meteorological Department (IMD) , Pune.....	399
<b>Student.....</b>	<b>399</b>
Name: ASTIK GAUR .(2021B2A82286P) .....	399
PS-I station: Indian Meteorological Department (IMD) , Pune.....	401
<b>Student.....</b>	<b>401</b>
Name: SIDAK MALHOTRA .(2021B3AA2769P).....	401

PS-I station: Indian Meteorological Department (IMD) , Pune.....	402
<b>Student</b> .....	<b>402</b>
Name: ROSHAN KARANTH .(2021B4A31745P) .....	402
PS-I station: Indian Meteorological Department (IMD) , Pune.....	402
<b>Student</b> .....	<b>402</b>
Name: SHAHEEN ALI .(2021B4A33044H) .....	402
PS-I station: INFLIBNET Centre , Gandhinagar .....	403
<b>Student</b> .....	<b>403</b>
Name: Yash Sangram Barge(2021A7PS0006P) .....	403
PS-I station: INFLIBNET Centre , Gandhinagar .....	404
<b>Student</b> .....	<b>404</b>
Name: NAVONEEL GHOSH .(2021A7PS0462H) .....	404
PS-I station: INFLIBNET Centre , Gandhinagar .....	405
<b>Student</b> .....	<b>405</b>
Name: SUJAL KHANDELWAL(2021A7PS1421G) .....	405
PS-I station: INFLIBNET Centre , Gandhinagar .....	407
<b>Student</b> .....	<b>407</b>
Name: VYAS VEDANT KARTIK .(2021A7PS2693P) .....	407
PS-I station: Integra Design , New delhi.....	408
<b>Student</b> .....	<b>408</b>
Name: VEDANT TULI .(2021A7PS0435P).....	408
PS-I station: Integra Design , New delhi.....	409
<b>Student</b> .....	<b>409</b>
Name: PARMJEET .(2021A7PS0563P) .....	409
PS-I station: Integra Design , New delhi.....	409
<b>Student</b> .....	<b>409</b>
Name: SHIVAM ATUL TRIVEDI .(2021A7PS1512H) .....	409
PS-I station: iQuadra Information Services Pvt. Ltd. Online , NELLORE .....	410
<b>Student</b> .....	<b>410</b>
Name: UTKARSH SHARMA .(2021A7PS2429P) .....	410
PS-I station: iQuadra Information Services Pvt. Ltd. Online , NELLORE .....	411
<b>Student</b> .....	<b>411</b>



Name: SAMAY MEHTA .(2021A7PS2996H) .....	411
PS-I station: iQuadra Information Services Pvt. Ltd. Online , NELLORE .....	412
<b>Student</b> .....	<b>412</b>
Name: AYUSH PURBEY(2021A8PS2921G).....	412
PS-I station: K2 Cloud Pvt. Ltd. , Gurugram.....	413
<b>Student</b> .....	<b>413</b>
Name: RIJUL BASSAMBOO .(2021A7PS0009P) .....	413
PS-I station: K2 Cloud Pvt. Ltd. , Gurugram.....	414
<b>Student</b> .....	<b>414</b>
Name: ANSH MISHRA(2021A8PS2994G) .....	414
PS-I station: K2 Cloud Pvt. Ltd. , Gurugram.....	415
<b>Student</b> .....	<b>415</b>
Name: KUSH JAIN(2021AAPS1633G) .....	415
PS-I station: K2 Cloud Pvt. Ltd. , Gurugram.....	416
<b>Student</b> .....	<b>416</b>
Name: DIVYANSHU .(2021AAPS1937H) .....	416
PS-I station: K2 Cloud Pvt. Ltd. , Gurugram.....	417
<b>Student</b> .....	<b>417</b>
Name: VIVEK SHARMA .(2021AAPS2317H) .....	417
PS-I station: Kairos Integrated Solutions Pvt. Ltd. , Vijayapur .....	418
<b>Student</b> .....	<b>418</b>
Name: ANANYA SINGH .(2021A1PS2604P).....	418
PS-I station: Kairos Integrated Solutions Pvt. Ltd. , Vijayapur .....	419
<b>Student</b> .....	<b>419</b>
Name: SAKSHAM SAWHNEY .(2021A4PS3195H).....	419
PS-I station: Kairos Integrated Solutions Pvt. Ltd. , Vijayapur .....	420
<b>Student</b> .....	<b>420</b>
Name: BURHANUDDIN MURTAZA TINWALA .(2021A7PS2905H).....	420
PS-I station: Kairos Integrated Solutions Pvt. Ltd. , Vijayapur .....	421
<b>Student</b> .....	<b>421</b>
Name: ADITYA R PATIL .(2021AAPS2230P).....	421
PS-I station: Kairos Integrated Solutions Pvt. Ltd. , Vijayapur .....	421

<b>Student.....</b>	<b>421</b>
Name: NAMAN KOTHARI .(2021AAPS3013H).....	421
PS-I station: Kairos Integrated Solutions Pvt. Ltd. , Vijayapur .....	423
<b>Student.....</b>	<b>423</b>
Name: VIVIAN PYARRY JOHN .(2021B4A43149H).....	423
PS-I station: Loop Reality Private Limited , Hyderabad.....	424
<b>Student.....</b>	<b>424</b>
Name: ADITYA MAHAJAN .(2021A7PS2715H) .....	424
PS-I station: Loop Reality Private Limited , Hyderabad.....	425
<b>Student.....</b>	<b>425</b>
Name: JENIL SUNIL SHAH(2021B5A73027G) .....	425
PS-I station: MapmyIndia (CE Info Systems Pvt Ltd) - Marketing , New delhi .....	426
<b>Student.....</b>	<b>426</b>
Name: KRITI JAKHORIA(2021B3TS2052P).....	426
PS-I station: MapmyIndia (CE Info Systems Pvt Ltd) - Marketing , New delhi .....	427
<b>Student.....</b>	<b>427</b>
Name: AKSHITA PANWAR.(2021B3TS2057P) .....	427
PS-I station: Monocept Consulting Pvt Ltd. , Hyderabad .....	428
<b>Student.....</b>	<b>428</b>
Name: NALLABOLU SREETHI REDDY .(2021A7PS0020H) .....	428
PS-I station: Monocept Consulting Pvt Ltd. , Hyderabad .....	429
<b>Student.....</b>	<b>429</b>
Name: HASINI VEMULA .(2021A8PS1960H) .....	429
PS-I station: Monocept Consulting Pvt Ltd. , Hyderabad .....	430
<b>Student.....</b>	<b>430</b>
Name: JAINAM HEMANI .(2021AAPS0029P) .....	430
PS-I station: Monocept Consulting Pvt Ltd. , Hyderabad .....	431
<b>Student.....</b>	<b>431</b>
Name: PRAKASH DUGYALA .(2021AAPS0654H).....	431
PS-I station: Monocept Consulting Pvt Ltd. , Hyderabad .....	432
<b>Student.....</b>	<b>432</b>
Name: SRIABHIGNA YELLAPRAGADA .(2021AAPS1518H) .....	432

PS-I station: National Centre for Polar and Ocean Research (NCPOR) Online , Goa .....	433
<b>Student.....</b>	<b>433</b>
Name: RACHIT SINGLA .(2021B4A71098P) .....	433
PS-I station: National Centre for Polar and Ocean Research (NCPOR) Online , Goa .....	434
<b>Student.....</b>	<b>434</b>
Name: MS. AKSHATA KHANDELWAL .(2021B4A71700P) .....	434
PS-I station: National Centre for Polar and Ocean Research (NCPOR) Online , Goa .....	435
<b>Student.....</b>	<b>435</b>
Name: BIDWAI VARAD LAXMIKANT .(2021B5A72345P).....	435
PS-I station: North Eastern Space Applications Centre Online , Umiam.....	436
<b>Student.....</b>	<b>436</b>
Name: VENKATAVIHAN DEVAKI .(2021A7PS0429P) .....	436
PS-I station: North Eastern Space Applications Centre Online , Umiam.....	437
<b>Student.....</b>	<b>437</b>
Name: NIRMAL GOVINDARAJ(2021A7PS0441G) .....	437
PS-I station: North Eastern Space Applications Centre Online , Umiam.....	439
<b>Student.....</b>	<b>439</b>
Name: YASH RAJESH BHISIKAR(2021A7PS0483G) .....	439
PS-I station: North Eastern Space Applications Centre Online , Umiam.....	440
<b>Student.....</b>	<b>440</b>
Name: SHANAY SAWAN MEHTA(2021A7PS1322G).....	440
PS-I station: North Eastern Space Applications Centre Online , Umiam.....	441
<b>Student.....</b>	<b>441</b>
Name: AYUSH CHETAN GHATALIA(2021A7PS2571G).....	441
PS-I station: North Eastern Space Applications Centre Onsite , Umiam.....	441
<b>Student.....</b>	<b>442</b>
Name: ARYAN SAHU(2021A7PS2832G) .....	442
PS-I station: North Eastern Space Applications Centre Onsite , Umiam.....	443
<b>Student.....</b>	<b>443</b>
Name: SAKSHAM ATTRI .(2021A7PS2950H) .....	443
PS-I station: North Eastern Space Applications Centre Onsite , Umiam.....	444
<b>Student.....</b>	<b>444</b>

Name: KRISH MANTRI .(2021B3A71732H).....	444
PS-I station: North Eastern Space Applications Centre Onsite , Umiam.....	445
<b>Student.....</b>	<b>445</b>
Name: ADI MUKHERJEE .(2021B5A70776P) .....	445
PS-I station: North Eastern Space Applications Centre Onsite , Umiam.....	446
<b>Student.....</b>	<b>446</b>
Name: KOTHA SAI VARA PRASAD .(2021B5A71541P) .....	446
PS-I station: Northcorp Software Pvt. Ltd. , Gurugram.....	447
<b>Student.....</b>	<b>447</b>
Name: SRICHARAN REDDY BOLLAMPALLI .(2021A7PS0379H) .....	447
PS-I station: Northcorp Software Pvt. Ltd. , Gurugram.....	448
<b>Student.....</b>	<b>448</b>
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PS-I station: Northcorp Software Pvt. Ltd. , Gurugram.....	448
<b>Student.....</b>	<b>448</b>
Name: SANJEEV MALLICK .(2021A7PS2217P).....	449
PS-I station: Northcorp Software Pvt. Ltd. , Gurugram.....	449
<b>Student.....</b>	<b>449</b>
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PS-I station: Northcorp Software Pvt. Ltd. , Gurugram.....	450
<b>Student.....</b>	<b>450</b>
Name: SHAH ADITYA ARJAVBHAI(2021A7PS2454G) .....	450
PS-I station: Northcorp Software Pvt. Ltd. , Gurugram.....	451
<b>Student.....</b>	<b>451</b>
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PS-I station: Northcorp Software Pvt. Ltd. , Gurugram.....	452
<b>Student.....</b>	<b>452</b>
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PS-I station: Northcorp Software Pvt. Ltd. , Gurugram.....	453
<b>Student.....</b>	<b>453</b>
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PS-I station: Northcorp Software Pvt. Ltd. , Gurugram.....	454

<b>Student.....</b>	<b>454</b>
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PS-I station: Northcorp Software Pvt. Ltd. , Gurugram.....	455
<b>Student.....</b>	<b>455</b>
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PS-I station: OnFinance - IT , Bengaluru.....	456
<b>Student.....</b>	<b>456</b>
Name: PRIYANKA RANJAN .(2021A3PS2735H) .....	456
PS-I station: OnFinance - IT , Bengaluru.....	457
<b>Student.....</b>	<b>457</b>
Name: MILIND GUPTA .(2021A3PS2981H) .....	457
PS-I station: OnFinance - IT , Bengaluru.....	458
<b>Student.....</b>	<b>458</b>
Name: SIDDHANT SRINIVAS .(2021A7PS0050H).....	458
PS-I station: OnFinance - IT , Bengaluru.....	459
<b>Student.....</b>	<b>459</b>
Name: M SAI KARTHIK .(2021A7PS0097H) .....	460
PS-I station: OnFinance - IT , Bengaluru.....	460
<b>Student.....</b>	<b>460</b>
Name: ATHARVA VINOD DASHORA .(2021A7PS0127H).....	460
PS-I station: OnFinance - IT , Bengaluru.....	461
<b>Student.....</b>	<b>461</b>
Name: BHASKAR RUTHVIK BIKKINA .(2021A7PS1345H).....	461
PS-I station: OnFinance - IT , Bengaluru.....	462
<b>Student.....</b>	<b>462</b>
Name: HEMANT SESHADRI NEMANI .(2021AAPS2170P).....	463
PS-I station: OnFinance - IT , Bengaluru.....	463
<b>Student.....</b>	<b>464</b>
Name: NITYA SIVANI MADINENI .(2021AAPS2509H).....	464
PS-I station: OnFinance - IT , Bengaluru.....	465
<b>Student.....</b>	<b>465</b>
Name: VINAYAK SRIVASTAVA .(2021B1AA2313P).....	465

PS-I station: OnFinance - IT , Bengaluru.....	465
<b>Student</b> .....	<b>465</b>
Name: M R SUMEDH .(2021B2AA1875H).....	465
PS-I station: OnFinance - IT , Bengaluru.....	466
<b>Student</b> .....	<b>466</b>
Name: VINAY NAIDU VANKA .(2021B3A71026H).....	466
PS-I station: OnFinance - IT , Bengaluru.....	467
<b>Student</b> .....	<b>467</b>
Name: SHOBHIT OM KUMAR(2021B3A72155G).....	468
PS-I station: OnFinance - IT , Bengaluru.....	468
<b>Student</b> .....	<b>468</b>
Name: NISHANTH M S(2021B3A72176G).....	468
PS-I station: OnFinance - IT , Bengaluru.....	469
<b>Student</b> .....	<b>469</b>
Name: KINJAL VARDIA .(2021B3A72579H).....	469
PS-I station: Pacify Medical Technology Pvt Ltd , Mumbai.....	470
<b>Student</b> .....	<b>470</b>
Name: Shashwat Agrawal(2021B1A30811P).....	470
PS-I station: Pacify Medical Technology Pvt Ltd , Mumbai.....	471
<b>Student</b> .....	<b>471</b>
Name: ANSHUMAN DEWANGAN .(2021B1A42279P).....	471
PS-I station: Palmtree Infotech , Chennai.....	472
<b>Student</b> .....	<b>472</b>
Name: KUSH AGRAWAL .(2021A7PS0142H).....	472
PS-I station: Palmtree Infotech , Chennai.....	474
<b>Student</b> .....	<b>474</b>
Name: AMIT ANJANDEB GHOSH .(2021A7PS0181H).....	474
PS-I station: Palmtree Infotech , Chennai.....	475
<b>Student</b> .....	<b>475</b>
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PS-I station: Palmtree Infotech , Chennai.....	476
<b>Student</b> .....	<b>476</b>

Name: ADITYA AGGARWAL .(2021A7PS2380H) .....	476
PS-I station: Palmtree Infotech , Chennai .....	477
<b>Student.....</b>	<b>477</b>
Name: HRIDYA ARORA(2021A7PS2538G).....	478
PS-I station: Palmtree Infotech , Chennai .....	478
<b>Student.....</b>	<b>478</b>
Name: PRACHI SHAH(2021A7PS2589H) .....	478
PS-I station: Palmtree Infotech , Chennai .....	479
<b>Student.....</b>	<b>479</b>
Name: GAURAV SOMAI .(2021A7PS2783H) .....	479
PS-I station: Palmtree Infotech , Chennai .....	480
<b>Student.....</b>	<b>480</b>
Name: DIVYE GOEL(2021A7PS2908G) .....	480
PS-I station: Palmtree Infotech , Chennai .....	481
<b>Student.....</b>	<b>482</b>
Name: SHUBHAM GUPTA .(2021A8PS2953H) .....	482
PS-I station: Palmtree Infotech , Chennai .....	483
<b>Student.....</b>	<b>483</b>
Name: MALLIKA AJMANI .(2021AAPS1488P).....	483
PS-I station: Palmtree Infotech , Chennai .....	483
<b>Student.....</b>	<b>483</b>
Name: SEJAL AGARWAL .(2021B1AA1695P).....	484
PS-I station: Palmtree Infotech , Chennai .....	485
<b>Student.....</b>	<b>485</b>
Name: JAI YOGESH BHOBE(2021B3A71024G) .....	485
PS-I station: Palmtree Infotech , Chennai .....	485
<b>Student.....</b>	<b>486</b>
Name: PRERIT RAI .(2021B5A72354P) .....	486
PS-I station: ParallelDots Technology Pvt. Ltd. , Gurugram .....	487
<b>Student.....</b>	<b>487</b>
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PS-I station: ParallelDots Technology Pvt. Ltd. , Gurugram .....	487

<b>Student.....</b>	<b>487</b>
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PS-I station: ParallelDots Technology Pvt. Ltd. , Gurugram .....	489
<b>Student.....</b>	<b>489</b>
Name: DIKSHA .(2021A5PS2001H).....	489
PS-I station: ParallelDots Technology Pvt. Ltd. , Gurugram .....	490
<b>Student.....</b>	<b>490</b>
Name: NIKHIL BHAT(2021B3A72541G).....	490
PS-I station: ParallelDots Technology Pvt. Ltd. , Gurugram .....	491
<b>Student.....</b>	<b>491</b>
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PS-I station: ParallelDots Technology Pvt. Ltd. , Gurugram .....	493
<b>Student.....</b>	<b>493</b>
Name: ARUSHI GULATI .(2021B5A71704P).....	493
PS-I station: Pass Consulting , Hyderabad.....	494
<b>Student.....</b>	<b>494</b>
Name: PRANAV J PANIKULANGARA(2021A3PS2236G) .....	494
PS-I station: Pass Consulting , Hyderabad.....	495
<b>Student.....</b>	<b>495</b>
Name: TANISH GOTTIMUKKALA(2021A7PS0047H) .....	495
PS-I station: Pass Consulting , Hyderabad.....	496
<b>Student.....</b>	<b>496</b>
Name: BILAKANTI SATHWIK A REDDY .(2021A7PS0225H) .....	496
PS-I station: Petasense Technologies Pvt. Ltd. - Embedded Systems , Bengaluru.....	497
<b>Student.....</b>	<b>497</b>
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PS-I station: Petasense Technologies Pvt. Ltd. - Embedded Systems , Bengaluru.....	498
<b>Student.....</b>	<b>498</b>
Name: RAJUL BANGANI .(2021B1A32739P) .....	498
PS-I station: Petasense Technologies Pvt. Ltd. - Web Development , Bengaluru.....	499
<b>Student.....</b>	<b>499</b>
Name: KRISH PARAKH .(2021AAPS0485H).....	499



PS-I station: Petasense Technologies Pvt. Ltd. - Web Development , Bengaluru.....	500
<b>Student.....</b>	<b>500</b>
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PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli.....	502
<b>Student.....</b>	<b>502</b>
Name: OJASVA GOYAL .(2021A2PS2378P).....	502
PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli.....	503
<b>Student.....</b>	<b>503</b>
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PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli.....	504
<b>Student.....</b>	<b>504</b>
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PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli.....	505
<b>Student.....</b>	<b>505</b>
Name: SHIKHAR SRIVASTAVA .(2021A3PS1131P).....	505
PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli.....	506
<b>Student.....</b>	<b>506</b>
Name: KANCHAN .(2021A3PS2185H) .....	506
PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli.....	507
<b>Student.....</b>	<b>507</b>
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PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli.....	509
<b>Student.....</b>	<b>509</b>
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PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli.....	510
<b>Student.....</b>	<b>510</b>
Name: LAVANYA ANANTHAN(2021A4PS2332G) .....	510
PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli.....	511
<b>Student.....</b>	<b>511</b>
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PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli.....	513
<b>Student.....</b>	<b>513</b>

Name: AKSHAT MAHENDRA JAIN .(2021A7PS2564H) .....	513
PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli.....	514
<b>Student.....</b>	<b>514</b>
Name: Aryan Bhosale(2021AAPS0274G) .....	514
PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli.....	515
<b>Student.....</b>	<b>515</b>
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PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli.....	516
<b>Student.....</b>	<b>516</b>
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PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli.....	517
<b>Student.....</b>	<b>517</b>
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PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli.....	518
<b>Student.....</b>	<b>518</b>
Name: RATNESH PAREEK .(2021B2A12487P) .....	518
PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli.....	519
<b>Student.....</b>	<b>519</b>
Name: OM HITESH BHUVA .(2021B3A81920H) .....	519
PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli.....	520
<b>Student.....</b>	<b>520</b>
Name: MOHIT AGARWAL .(2021B5A33159H) .....	520
PS-I station: Prompt Equipments Pvt. Ltd. , Ahmedabad .....	521
<b>Student.....</b>	<b>521</b>
Name: CHANDRASHEKAR RAMACHANDRAN .(2021A7PS2541P).....	521
PS-I station: Prompt Equipments Pvt. Ltd. , Ahmedabad .....	522
<b>Student.....</b>	<b>522</b>
Name: PRATHMESH TIWARI(2021A7PS2834G) .....	522
PS-I station: Prompt Equipments Pvt. Ltd. , Ahmedabad .....	523
<b>Student.....</b>	<b>523</b>
Name: KANAV AGGARWAL .(2021A8PS3010H).....	523
PS-I station: Prompt Equipments Pvt. Ltd. , Ahmedabad .....	524

<b>Student.....</b>	<b>524</b>
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PS-I station: Qualitykiosk Technologies Pvt. Ltd. , Mumbai.....	525
<b>Student.....</b>	<b>525</b>
Name: SIDDHANTH KALYANARAMAN .(2021A1PS2331H) .....	525
PS-I station: Qualitykiosk Technologies Pvt. Ltd. , Mumbai.....	526
<b>Student.....</b>	<b>526</b>
Name: SARTHAK SHARMA .(2021A7PS2535P).....	526
PS-I station: Qualitykiosk Technologies Pvt. Ltd. , Mumbai.....	527
<b>Student.....</b>	<b>527</b>
Name: ANURAAG AKELLA .(2021A8PS1887H) .....	527
PS-I station: Qualitykiosk Technologies Pvt. Ltd. , Mumbai.....	528
<b>Student.....</b>	<b>528</b>
Name: Akhil Goel(2021A8PS2548P).....	528
PS-I station: Qualitykiosk Technologies Pvt. Ltd. , Mumbai.....	529
<b>Student.....</b>	<b>529</b>
Name: JAHAWAR RAHULRAJ .(2021ABPS1664P).....	529
PS-I station: Race2Cloud Technologies Pvt. Ltd. , Bengaluru.....	530
<b>Student.....</b>	<b>530</b>
Name: RADHIKA JAYAN NAIR(2021A7PS0005G).....	530
PS-I station: Race2Cloud Technologies Pvt. Ltd. , Bengaluru.....	531
<b>Student.....</b>	<b>531</b>
Name: PUPPALA REVANTH KUMAR .(2021A7PS2692P) .....	531
PS-I station: Regional Remote Sensing Centre , Jodhpur .....	532
<b>Student.....</b>	<b>532</b>
Name: KAUSHAL DUGGAR .(2021A3PS0950P) .....	532
PS-I station: Regional Remote Sensing Centre , Jodhpur .....	533
<b>Student.....</b>	<b>533</b>
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PS-I station: Regional Remote Sensing Centre , Jodhpur .....	534
<b>Student.....</b>	<b>534</b>
Name: MADHAV DIKSHIT .(2021A7PS2769H).....	534

PS-I station: Regional Remote Sensing Centre , Jodhpur.....	535
<b>Student.....</b>	<b>535</b>
Name: V S S S PAVAN KOUSHIK .(2021AAPS2258P) .....	535
PS-I station: Regional Remote Sensing Centre , Jodhpur.....	536
<b>Student.....</b>	<b>536</b>
Name: PRAKHAR AGRAWAL .(2021B4A70817P).....	536
PS-I station: Regional Remote Sensing Centre , Jodhpur.....	537
<b>Student.....</b>	<b>537</b>
Name: KARTIK RAO .(2021B4AA0766P) .....	537
PS-I station: Regional Remote Sensing Centre , Jodhpur.....	538
<b>Student.....</b>	<b>538</b>
Name: SHREYASH VERMA .(2021B5A71538P).....	538
PS-I station: RI Equation , Pune.....	540
<b>Student.....</b>	<b>540</b>
Name: RISHITH DAMANI .(2021A3PS2147H).....	540
PS-I station: RI Equation , Pune.....	541
<b>Student.....</b>	<b>541</b>
Name: ARYAMAN VAISH(2021A4PS2491H).....	541
PS-I station: RI Equation , Pune.....	542
<b>Student.....</b>	<b>542</b>
Name: KARTIKEYA KHANNA(2021A8PS2608G).....	542
PS-I station: RI Equation , Pune.....	543
<b>Student.....</b>	<b>543</b>
Name: SUBIT SHEKHAR PANDA .(2021B4A72325P).....	543
PS-I station: SatSure Analytics India Pvt. Ltd. , Bengaluru .....	544
<b>Student.....</b>	<b>544</b>
Name: RISHI TEJA PENDYALA .(2021A3PS1049H).....	544
PS-I station: SatSure Analytics India Pvt. Ltd. , Bengaluru .....	544
<b>Student.....</b>	<b>544</b>
Name: TIA SANJEEV KUMAR AGRAWAL .(2021B2A42758P) .....	544
PS-I station: SatSure Analytics India Pvt. Ltd. , Bengaluru .....	545
<b>Student.....</b>	<b>545</b>

Name: ANIRUDH JAYAKISHAN(2021B3A70979G).....	545
PS-I station: SatSure Analytics India Pvt. Ltd. , Bengaluru .....	546
<b>Student.....</b>	<b>546</b>
Name: KEERTHAN SHRIRAM KARVAJE .(2021B5A31258P).....	546
PS-I station: SatSure Analytics India Pvt. Ltd. , Bengaluru .....	547
<b>Student.....</b>	<b>547</b>
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PS-I station: Shalaka Connected Devices - IoT , Pune .....	548
<b>Student.....</b>	<b>548</b>
Name: MEGHAN CHALLA .(2021A3PS1708H).....	548
PS-I station: Shalaka Connected Devices - IoT , Pune .....	549
<b>Student.....</b>	<b>549</b>
Name: ABHINAV SHAH(2021A3PS2561G) .....	549
PS-I station: Shalaka Connected Devices - IoT , Pune .....	550
<b>Student.....</b>	<b>550</b>
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PS-I station: Shalaka Connected Devices - IoT , Pune .....	551
<b>Student.....</b>	<b>551</b>
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PS-I station: Shalaka Connected Devices - IoT , Pune .....	552
<b>Student.....</b>	<b>552</b>
Name: AMIT PRAKASH .(2021A4PS2109P) .....	552
PS-I station: Shalaka Connected Devices - IoT , Pune .....	554
<b>Student.....</b>	<b>554</b>
Name: YASH MOONDRA(2021A4PS2301G).....	554
PS-I station: Shalaka Connected Devices - IoT , Pune .....	555
<b>Student.....</b>	<b>555</b>
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PS-I station: Shalaka Connected Devices - IoT , Pune .....	556
<b>Student.....</b>	<b>556</b>
Name: SPARSH MATHUR .(2021B5A33178H).....	556
PS-I station: Shalaka Connected Devices - IoT , Pune .....	557

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PS-I station: Shris Infotech Services Pvt Ltd , Secunderabad .....	558
<b>Student.....</b>	<b>558</b>
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PS-I station: Shris Infotech Services Pvt Ltd , Secunderabad .....	559
<b>Student.....</b>	<b>559</b>
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PS-I station: Shris Infotech Services Pvt Ltd , Secunderabad .....	560
<b>Student.....</b>	<b>560</b>
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PS-I station: Shris Infotech Services Pvt Ltd , Secunderabad .....	561
<b>Student.....</b>	<b>561</b>
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PS-I station: Shris Infotech Services Pvt Ltd , Secunderabad .....	562
<b>Student.....</b>	<b>562</b>
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PS-I station: Shris Infotech Services Pvt Ltd , Secunderabad .....	563
<b>Student.....</b>	<b>563</b>
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PS-I station: Shris Infotech Services Pvt Ltd , Secunderabad .....	564
<b>Student.....</b>	<b>564</b>
Name: MANAV MEHTA .(2021AAPS0636P) .....	564
PS-I station: Shris Infotech Services Pvt Ltd , Secunderabad .....	565
<b>Student.....</b>	<b>565</b>
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PS-I station: Shris Infotech Services Pvt Ltd , Secunderabad .....	566
<b>Student.....</b>	<b>566</b>
Name: KARTIK VERMA .(2021B3AA0554H).....	566
PS-I station: Shris Infotech Services Pvt Ltd , Secunderabad .....	567
<b>Student.....</b>	<b>567</b>
Name: SANYA SINGH(2021B3AA0818G).....	567

PS-I station: Shris Infotech Services Pvt Ltd , Secunderabad .....	568
<b>Student.....</b>	<b>568</b>
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PS-I station: Silver Touch Technologies Ltd. , Ahmedabad .....	569
<b>Student.....</b>	<b>569</b>
Name: PATIL HARSHITH REDDY .(2021A3PS0889H) .....	569
PS-I station: Silver Touch Technologies Ltd. , Ahmedabad .....	570
<b>Student.....</b>	<b>570</b>
Name: SIDDARTH ANNAMANENI .(2021A3PS1551H).....	570
PS-I station: Silver Touch Technologies Ltd. , Ahmedabad .....	571
<b>Student.....</b>	<b>571</b>
Name: VITHALANI MEET AMITKUMAR .(2021A7PS0555P) .....	571
PS-I station: Silver Touch Technologies Ltd. , Ahmedabad .....	572
<b>Student.....</b>	<b>572</b>
Name: DOSHI TANAY CHIRAG(2021A7PS2984G).....	572
PS-I station: Silver Touch Technologies Ltd. , Ahmedabad .....	573
<b>Student.....</b>	<b>573</b>
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PS-I station: Silver Touch Technologies Ltd. , Ahmedabad .....	574
<b>Student.....</b>	<b>574</b>
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PS-I station: Silver Touch Technologies Ltd. , Ahmedabad .....	575
<b>Student.....</b>	<b>575</b>
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PS-I station: SimpleWorks Solutions Pvt. Ltd. (SimpleCRM) , Nagpur .....	576
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PS-I station: SimpleWorks Solutions Pvt. Ltd. (SimpleCRM) , Nagpur .....	577
<b>Student.....</b>	<b>577</b>
Name: SUDHANSHU PATIL .(2021AAPS0663H) .....	577
PS-I station: SimpleWorks Solutions Pvt. Ltd. (SimpleCRM) , Nagpur .....	578
<b>Student.....</b>	<b>578</b>

Name: GAURAV GOLCHHA .(2021B2A83135H) .....	578
PS-I station: Smartlink Holdings Ltd- Synegra EMS , Goa.....	579
<b>Student.....</b>	<b>579</b>
Name: SUTAPALLI LIKHITH BHARGAV .(2021A7PS0444H).....	579
PS-I station: Smartlink Holdings Ltd- Synegra EMS , Goa.....	580
<b>Student.....</b>	<b>580</b>
Name: SISTU AKSHAR(2021A8PS2598G) .....	580
PS-I station: Smartlink Holdings Ltd- Synegra EMS , Goa.....	581
<b>Student.....</b>	<b>581</b>
Name: PRADYUN CHAKRAVARTHY LADE .(2021AAPS0565H).....	581
PS-I station: Smartlink Holdings Ltd- Synegra EMS , Goa.....	582
<b>Student.....</b>	<b>582</b>
Name: JANHAVI SANTOSH SAVANT(2021B1A32362G) .....	582
PS-I station: Smartlink Holdings Ltd- Synegra EMS , Goa.....	583
<b>Student.....</b>	<b>583</b>
Name: HARSHITH THATHAPUDI .(2021B5A83165H) .....	583
PS-I station: Solutionec Pvt. Ltd. , Bengaluru.....	584
<b>Student.....</b>	<b>584</b>
Name: ROHAN G SHROFF(2021A7PS0004G) .....	584
PS-I station: Solutionec Pvt. Ltd. , Bengaluru.....	585
<b>Student.....</b>	<b>585</b>
Name: HARSH INDRAJIT AGRAWAL .(2021A7PS0524P).....	585
PS-I station: Solutionec Pvt. Ltd. , Bengaluru.....	586
<b>Student.....</b>	<b>586</b>
Name: AAYUSH KATARIYA .(2021B4A32924H) .....	586
PS-I station: Syntegon Technology India Private Limited , Goa .....	587
<b>Student.....</b>	<b>587</b>
Name: SALIL KRISHNA GYANANI .(2021B5A42346P).....	587
PS-I station: Syntegon Technology India Private Limited , Goa .....	588
<b>Student.....</b>	<b>588</b>
Name: PRABHALA SREEJIT .(2021B5A43175H) .....	588
PS-I station: Unicloud , Noida .....	589



<b>Student.....</b>	<b>589</b>
Name: VEHAAN HANDA(2021A1PS1907G).....	589
PS-I station: Unicloud , Noida .....	590
<b>Student.....</b>	<b>590</b>
Name: RITVIK MITTAL .(2021A8PS2545P) .....	590
PS-I station: Unicloud , Noida .....	591
<b>Student.....</b>	<b>591</b>
Name: SHASHWAT BAJPAI .(2021B3AA3041H) .....	591
PS-I station: Unicloud , Noida .....	592
<b>Student.....</b>	<b>592</b>
Name: MITUSHI GOYAL(2021B4AA2784G).....	593
PS-I station: Unicloud , Noida .....	593
<b>Student.....</b>	<b>593</b>
Name: VIDIT GOYAL(2021B4AA2944G) .....	593
PS-I station: UST Global - Infinity Labs , Thiruvananthapuram .....	595
<b>Student.....</b>	<b>595</b>
Name: ABHIRAM AJITH(2021A7PS2525G).....	595
PS-I station: UST Global - Infinity Labs , Thiruvananthapuram .....	595
<b>Student.....</b>	<b>595</b>
Name: IVAN JOSEPH JACOB .(2021A8PS2552P) .....	595
PS-I station: UST Global - Infinity Labs , Thiruvananthapuram .....	596
<b>Student.....</b>	<b>597</b>
Name: GIBIN BIJU KARIAMADOM .(2021AAPS2229H) .....	597
PS-I station: UST GLOBAL , Chennai .....	598
<b>Student.....</b>	<b>598</b>
Name: HARIKRISHNA V .(2021A3PS1662H) .....	598
PS-I station: UST GLOBAL , Chennai .....	598
<b>Student.....</b>	<b>599</b>
Name: VAL DIDAR SINGH .(2021A3PS2233P) .....	599
PS-I station: UST GLOBAL , Chennai .....	600
<b>Student.....</b>	<b>600</b>
Name: SRIVARAN KUKATLA .(2021A4PS1988H) .....	600

PS-I station: UST GLOBAL , Chennai .....	600
<b>Student</b> .....	<b>600</b>
Name: GNANA PRANEETH NERIYANURI .(2021A7PS0263H) .....	601
PS-I station: UST GLOBAL , Chennai .....	601
<b>Student</b> .....	<b>601</b>
Name: ABHISHEK KHURANA .(2021A7PS2688P) .....	601
PS-I station: UST GLOBAL , Chennai .....	603
<b>Student</b> .....	<b>603</b>
Name: POTHIREDDY SAI SUSHRUTH .(2021AAPS1680H) .....	603
PS-I station: UST GLOBAL , Chennai .....	604
<b>Student</b> .....	<b>604</b>
Name: PALANIAPPAN R .(2021B4AA2915H).....	605
PS-I station: UST GLOBAL , Chennai .....	605
<b>Student</b> .....	<b>605</b>
Name: NIKHILESH .(2021B5A33166H) .....	605
PS-I station: Variable Energy Cyclotron Centre (Onsite) , Kolkata .....	607
<b>Student</b> .....	<b>607</b>
Name: JATIN MAHAJAN(2021A7PS2089G).....	607
PS-I station: Variable Energy Cyclotron Centre (Onsite) , Kolkata .....	608
<b>Student</b> .....	<b>608</b>
Name: SOUMYADIP ROY .(2021A8PS2549P) .....	608
PS-I station: Variable Energy Cyclotron Centre (Onsite) , Kolkata .....	609
<b>Student</b> .....	<b>609</b>
Name: S HARI NAYAN .(2021AAPS0659H) .....	609
PS-I station: Variable Energy Cyclotron Centre (Onsite) , Kolkata .....	610
<b>Student</b> .....	<b>610</b>
Name: ANUSHKA MISHRA(2021AAPS2856G) .....	610
PS-I station: Variable Energy Cyclotron Centre (Onsite) , Kolkata .....	611
<b>Student</b> .....	<b>611</b>
Name: MIHIR JAIPURIA(2021B4AA1935G) .....	611
PS-I station: Variable Energy Cyclotron Centre (Onsite) , Kolkata .....	613
<b>Student</b> .....	<b>613</b>

Name: DEBDATTA DEY .(2021B5A31869H).....	613
PS-I station: Variable Energy Cyclotron Centre (Onsite) , Kolkata .....	614
<b>Student.....</b>	<b>614</b>
Name: RHIK MAITRA(2021B5A82487G).....	615
PS-I station: Variable Energy Cyclotron Centre (Onsite) , Kolkata .....	616
<b>Student.....</b>	<b>616</b>
Name: KRISHNENDU MATHUR .(2021B5AA2475H).....	616
PS-I station: Verse Innovation Private Limited , Bengaluru .....	618
<b>Student.....</b>	<b>618</b>
Name: SHRESTHA SAXENA .(2021A3PS2980H).....	618
PS-I station: Verse Innovation Private Limited , Bengaluru .....	618
<b>Student.....</b>	<b>618</b>
Name: ASEEM CHIB .(2021A7PS0466P) .....	618
PS-I station: Verse Innovation Private Limited , Bengaluru .....	620
<b>Student.....</b>	<b>620</b>
Name: UJJWAL KUMAR(2021A7PS2736G).....	620
PS-I station: Verse Innovation Private Limited , Bengaluru .....	621
<b>Student.....</b>	<b>621</b>
Name: PRATIK PATIL(2021A7PS3111H) .....	621
PS-I station: Verse Innovation Private Limited , Bengaluru .....	623
<b>Student.....</b>	<b>623</b>
Name: STHITAPRAJNA .(2021B3A71082H) .....	623
PS-I station: Verse Innovation Private Limited , Bengaluru .....	623
<b>Student.....</b>	<b>624</b>
Name: AVYAKTH KRISHNA KUMAR .(2021B3A71111P).....	624
PS-I station: Verse Innovation Private Limited , Bengaluru .....	625
<b>Student.....</b>	<b>625</b>
Name: EKANSH NAYAK .(2021B3A72318P) .....	625
PS-I station: Verse Innovation Private Limited , Bengaluru .....	625
<b>Student.....</b>	<b>625</b>
Name: SAI ANIRUDH KOTA .(2021B4AA2287H).....	626
PS-I station: Vidcentum R & D Pvt. Ltd. , Hyderabad .....	627

<b>Student.....</b>	<b>627</b>
Name: VAGARTH DVIVEDI(2021A7PS2426G) .....	627
PS-I station: Vidcentum R & D Pvt. Ltd. , Hyderabad .....	628
<b>Student.....</b>	<b>628</b>
Name: RISHAB MALOO .(2021B2AA2767P) .....	628
PS-I station: Vidcentum R & D Pvt. Ltd. , Hyderabad .....	629
<b>Student.....</b>	<b>629</b>
Name: AIMAN .(2021B5A73177H).....	629
PS-I station: VoiceQube - II , Bengaluru .....	631
<b>Student.....</b>	<b>631</b>
Name: ANEESH KABRA .(2021A7PS0442P) .....	631
PS-I station: VoiceQube - II , Bengaluru .....	632
<b>Student.....</b>	<b>632</b>
Name: ANISH TAORI .(2021A7PS0939P) .....	632
PS-I station: VoiceQube - II , Bengaluru .....	632
<b>Student.....</b>	<b>633</b>
Name: NAVNEET SINGLA .(2021A7PS1450P).....	633
PS-I station: VoiceQube - II , Bengaluru .....	634
<b>Student.....</b>	<b>634</b>
Name: TRAYAMBAK SHRIVASTAVA .(2021A7PS1629P).....	634
PS-I station: VoiceQube - II , Bengaluru .....	635
<b>Student.....</b>	<b>635</b>
Name: AARYAN JAIN(2021A7PS2060G) .....	635
PS-I station: VoiceQube - II , Bengaluru .....	636
<b>Student.....</b>	<b>636</b>
Name: ARYAN SETH .(2021A7PS2221P).....	636
PS-I station: VoiceQube - II , Bengaluru .....	637
<b>Student.....</b>	<b>637</b>
Name: SHREYAS KUMAR .(2021A7PS2432P) .....	637
PS-I station: VoiceQube - II , Bengaluru .....	637
<b>Student.....</b>	<b>638</b>
Name: MIHIKA PARAG DESHPANDE .(2021A7PS2435P).....	638

PS-I station: VoiceQube - II , Bengaluru .....	639
<b>Student</b> .....	<b>639</b>
Name: ADITYA PRASAD DESHPANDE .(2021A7PS2681P) .....	639
PS-I station: VoiceQube - II , Bengaluru .....	640
<b>Student</b> .....	<b>640</b>
Name: SHAH NIDHI DHARMENDRA .(2021A7PS2684P) .....	640
PS-I station: VoiceQube - II , Bengaluru .....	641
<b>Student</b> .....	<b>641</b>
Name: PRANAV DINESH SHARMA .(2021A7PS2818H) .....	641
PS-I station: VoiceQube - II , Bengaluru .....	642
<b>Student</b> .....	<b>642</b>
Name: TEERTH DHAKAD .(2021A7PS2851H) .....	642
PS-I station: VoiceQube - II , Bengaluru .....	644
<b>Student</b> .....	<b>644</b>
Name: SHASHANK S T .(2021A7PS2855H) .....	644
PS-I station: VoiceQube - II , Bengaluru .....	646
<b>Student</b> .....	<b>646</b>
Name: SANCHIT BOLINJKAR .(2021A7PS2997H).....	646
PS-I station: VoiceQube - II , Bengaluru .....	647
<b>Student</b> .....	<b>647</b>
Name: VRIHEN ARORA .(2021A7PS3206H).....	647
PS-I station: VoiceQube - II , Bengaluru .....	648
<b>Student</b> .....	<b>648</b>
Name: UJJWAL MISHRA(2021B1A72479H).....	649
PS-I station: VoiceQube - II , Bengaluru .....	650
<b>Student</b> .....	<b>651</b>
Name: HARSH BAVISHI .(2021B2A73137H) .....	651
PS-I station: VoiceQube - II , Bengaluru .....	651
<b>Student</b> .....	<b>651</b>
Name: VIVEK RONA MEHTA(2021B3A71903G) .....	651
PS-I station: VoiceQube - II , Bengaluru .....	652
<b>Student</b> .....	<b>652</b>

Name: AYUSH SRIVASTAVA(2021B3A72462G) .....	652
PS-I station: VoiceQube - II , Bengaluru .....	653
<b>Student.....</b>	<b>653</b>
Name: PARTH VAISH(2021B3A72867G).....	653
PS-I station: VoiceQube - III , Bengaluru .....	654
<b>Student.....</b>	<b>654</b>
Name: KESHAV SHARMA .(2021A7PS2170H) .....	654
PS-I station: VoiceQube - III , Bengaluru .....	655
<b>Student.....</b>	<b>655</b>
Name: SHAURYA PRATAP SINGH .(2021A7PS2588H) .....	655
PS-I station: VoiceQube - III , Bengaluru .....	657
<b>Student.....</b>	<b>657</b>
Name: AYUSH NAUTIYAL .(2021A7PS2607H) .....	657
PS-I station: VoiceQube - III , Bengaluru .....	658
<b>Student.....</b>	<b>658</b>
Name: KRISH GOYAL .(2021A7PS2646H) .....	658
PS-I station: VoiceQube - III , Bengaluru .....	658
<b>Student.....</b>	<b>659</b>
Name: DEEPAK(2021A7PS2733G).....	659
PS-I station: VoiceQube - III , Bengaluru .....	660
<b>Student.....</b>	<b>660</b>
Name: VAIBHAV KHANNA .(2021A7PS2819H).....	660
PS-I station: VoiceQube - III , Bengaluru .....	660
<b>Student.....</b>	<b>660</b>
Name: NISARG AGARWAL .(2021A7PS2994H).....	661
PS-I station: VoiceQube - III , Bengaluru .....	661
<b>Student.....</b>	<b>661</b>
Name: ADWAIT KULKARNI .(2021A7PS2995H).....	661
PS-I station: VoiceQube - III , Bengaluru .....	662
<b>Student.....</b>	<b>662</b>
Name: ANUSHKA AGNIHOTRI .(2021A7PS3114H) .....	662
PS-I station: VoiceQube - IV , Bengaluru .....	663

<b>Student.....</b>	<b>663</b>
Name: ANMOL AGARWAL .(2021A7PS0136H) .....	663
PS-I station: VoiceQube - IV , Bengaluru .....	664
<b>Student.....</b>	<b>664</b>
Name: KSHITIZ AGARWAL .(2021A7PS1818H).....	664
PS-I station: VoiceQube - IV , Bengaluru .....	665
<b>Student.....</b>	<b>665</b>
Name: KRISHANG SHUKLA .(2021A7PS2168H).....	665
PS-I station: VoiceQube - IV , Bengaluru .....	666
<b>Student.....</b>	<b>666</b>
Name: PATEL DHRUV YOGESH(2021A7PS2672G).....	666
PS-I station: VoiceQube - IV , Bengaluru .....	667
<b>Student.....</b>	<b>667</b>
Name: JOYDEEP SAHA(2021A7PS2718G) .....	667
PS-I station: VoiceQube - IV , Bengaluru .....	667
<b>Student.....</b>	<b>667</b>
Name: MOHIT TIWARI(2021A7PS2719G) .....	668
PS-I station: VoiceQube - IV , Bengaluru .....	668
<b>Student.....</b>	<b>668</b>
Name: TANISHQ SURESH GHOLAP(2021A7PS2728G) .....	668
PS-I station: VoiceQube - IV , Bengaluru .....	670
<b>Student.....</b>	<b>670</b>
Name: MD SHADAB KALIM(2021A7PS3058G).....	670
PS-I station: VoiceQube , Bengaluru .....	672
<b>Student.....</b>	<b>672</b>
Name: ARYAN BAKSHI .(2021A7PS0532P) .....	672
PS-I station: VoiceQube , Bengaluru .....	673
<b>Student.....</b>	<b>673</b>
Name: VIBHA PATIL(2021A7PS1465G) .....	673
PS-I station: VoiceQube , Bengaluru .....	674
<b>Student.....</b>	<b>674</b>
Name: SOHUM DATTA(2021A7PS1758G).....	674

PS-I station: VoiceQube , Bengaluru .....	675
<b>Student</b> .....	<b>675</b>
Name: NIMITT ARORA(2021A7PS1764G) .....	675
PS-I station: VoiceQube , Bengaluru .....	676
<b>Student</b> .....	<b>676</b>
Name: PRANAV BAJPAI(2021A7PS2062G) .....	676
PS-I station: VoiceQube , Bengaluru .....	677
<b>Student</b> .....	<b>677</b>
Name: BANIA KARAN CHANDRESH(2021A7PS2582G).....	677
PS-I station: VoiceQube , Bengaluru .....	678
<b>Student</b> .....	<b>678</b>
Name: SHIVAM MUNDADA(2021A7PS2605G) .....	678
PS-I station: VoiceQube , Bengaluru .....	679
<b>Student</b> .....	<b>679</b>
Name: DEVANSH SADHANANDHAN(2021A7PS2655G) .....	679
PS-I station: VoiceQube , Bengaluru .....	680
<b>Student</b> .....	<b>680</b>
Name: SHREYAS GHOSH .(2021B4A72502P) .....	680
PS-I station: VoiceQube , Bengaluru .....	681
<b>Student</b> .....	<b>681</b>
Name: ABHIJEET PRATAP SINGH .(2021B5A72573P).....	681
PS-I station: YK Innosoft Technologies Pvt. Ltd. , Hyderabad .....	683
<b>Student</b> .....	<b>683</b>
Name: SHAH PREET JIGNESH(2021A7PS2727G) .....	683
PS-I station: YK Innosoft Technologies Pvt. Ltd. , Hyderabad .....	684
<b>Student</b> .....	<b>684</b>
Name: ARYAN SALUJA .(2021A7PS2947H).....	684
PS-I station: YK Innosoft Technologies Pvt. Ltd. , Hyderabad .....	685
<b>Student</b> .....	<b>685</b>
Name: SRIYA GUDIPATI .(2021B4A73151H) .....	685





**PS-I station: 24/7 - I Labs , Bengaluru**

**Student**

**Name: NACHIKETH S SHASTRY .(2021A7PS2686P)**

**Student Write-up:**

**PS-I Project Title:** Data science intern

**Short Summary of work done:** We built a generic human conversational AI chatbot builder using chatgpt' s API for intent recognition and entity extraction. We then implemented the dialogue flow in an SCXML state graph later we parsed it to form a network x graph in python environment and then run the chatbot with this graph as this bass for dialogue management.

**Objectives of the project:** AI chatbot builder

**Tool used:** NLP, python, SCXML

**Details of Papers/patents:** Dialogue Management

**Brief description of the working environment:** We worked directly under teb senior director who was very enthusiastic about the project and also highly qualified. He gave more onus to learning and innovating rather than getting the job done. So it was a great learning experience.

**Academic courses relevant to the project:** DSA

**Learning Outcome:** Innovation

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**PS-I station: 24/7 - I Labs , Bengaluru**

**Student**

Name: RAGHAV SARDA .(2021A7PS2765H)

## Student Write-up:

**PS-I Project Title:** Auto Query Completion

**Short Summary of work done:** Initially when I was given the following project, I had absolutely zero experience in Machine Learning and Deep Learning. However, over the course of 6-8 weeks the company mentor taught me all the basics and requirements needed to complete our project and a hands on experience of implementing these learnings on code. I learnt Word2vec, Dimension reduction, Neural Networks, N-gram Modelling and many more Machine Learning methodologies in order to implement the Query Auto Completion model. Worked upon various dummy datasets and an actual company dataset in order to test the model built with respect to real world data and scenarios.

**Objectives of the project:** Building a Machine Learning model in order to predict and complete any unfinished query by providing the most probable suggestions given the initial few words/ characters of the query

**Tool used:** Colab Notebooks, Python(Numpy and Mathplotlib)

**Details of Papers/patents:** None

**Brief description of the working environment:** An extremely positive and welcoming work environment is what was experienced in my internship at [24]7.ai. The mentors and other team members were always available and ready to help with anything. The company focuses heavily on learning and the mentor makes sure each and every aspect of the theory is understood properly. We were told to give a few presentations to the company too to have an idea about our progress. Expectations of the company include a deep understanding and equally well-done execution of the project using above learnings

**Academic courses relevant to the project:** Machine Learning, Data Structures and Algorithms

**Learning Outcome:** Machine Learning methods, Coding in numpy, matplotlib in python, Deep Learning theory

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## PS-I station: 24/7 - I Labs , Bengaluru

### Student

Name: OJAS PUNGALIA .(2021B4A71552P)

#### Student Write-up:

**PS-I Project Title:** Conversational AI

**Short Summary of work done:** My role in the project: Providing theoretical basis for this project from literature and prior work. Understanding and specifying what is good and bad with each approach we are taking in building chatbots.

**Objectives of the project:** To develop a chatbot builder

**Tool used:** ChatGPT, VoiceFlow, PowerPoint

#### Details of Papers/patents:

Research Papers I referred:

1. Recent Approaches to Dialog Management for Spoken Dialog Systems
2. State Chart Extensible Markup Language (SCXML)
3. Data-driven Dialog Management (Solution)

**Brief description of the working environment:** Our mentors were quite helpful and understanding.

The work environment was collaborative and focused on our learning.

Regular meetings (twice a week) were conducted to ensure continuous progress to our goal.

We also had a fun meeting.

**Academic courses relevant to the project:** DBMS

DSA

**Learning Outcome:** Theoretical approach to Artificial intelligence

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## PS-I station: 24/7 - I Labs , Bengaluru

### Student

Name: SNEHAL YUTIKA .(2021B4A72322H)

### Student Write-up:

**PS-I Project Title:** Query Auto Completion

**Short Summary of work done:** Dataset: The Shakespearean text dataset was obtained from a GitHub repository. The dataset was downloaded and saved as "language-never-random.txt" for further processing. The text served as the foundation for training the n-gram model. Data Preprocessing: The text was preprocessed to prepare it for training. The number of lines in the text was counted, and the training set size was determined as 60% of the total characters. The training set was created by appending characters, along with appropriate padding, to a list. Padding involved adding start-of-sentence and end-of-sentence tags to provide context for the model. Model Training: Dictionaries were created to store the counts of bigrams and trigrams in the training set. The counts were updated by iterating through the training set. This step was essential for calculating probabilities. An array was constructed to contain the bigram, trigram, and their corresponding probabilities. The probability of a trigram was calculated as the count of the trigram divided by the count of the corresponding bigram. Model Testing: A test set was created from the remaining characters in the text. The model was tested by iterating through the test set. For each pair of characters, the corresponding bigram was searched in the stored probabilities. The trigram with the highest probability was identified as the predicted next character. Results and Findings: The model successfully learned patterns from the training set and generated predictions based on the learned probabilities. The predictions were printed for each pair of characters in the test set, showcasing the model's ability to infer the most likely next character.

**Objectives of the project:** Query auto completion, also known as search auto suggestion or type ahead, is a feature commonly found in search engines, online marketplaces, and various other applications. It is designed to enhance user experience by providing real time suggestions as users type their search queries or input text. Plan For

**Tool used:** Python, libraries: Numpy

**Details of Papers/patents:** N-gram Model Paper was used to understand the working of the model.

**Brief description of the working environment:** It was a great learning experience, and everyone was very helpful and welcoming.

**Academic courses relevant to the project:** Linear Algebra, Probability and Statistics, Optimization

**Learning Outcome:** Learned about different language models to create the project. Learned to build an N gram language model from scratch without any libraries and deploy it over the training dataset.

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**PS-I station: Agnext Technologies Pvt Ltd , Sahibzada Ajit Singh Nagar**

## **Student**

**Name:** GOVIND TULI .(2021A3PS0130P)

### **Student Write-up:**

**PS-I Project Title:** FreeRTOS on ESP-32, Tensorflow Python to C++ API

**Short Summary of work done:** During my PS-I internship, I worked on three distinct but interconnected projects that focused on implementing advanced technological solutions. Firstly, I executed over-the-air (OTA) updates on ESP-32 using freeRTOS, AWS IoT Core, and ESP-IDF. This work entailed configuring the ESP-32 microcontroller to receive and install software updates remotely, allowing for significant flexibility and operational efficiency. Secondly, I transitioned a model that was previously coded in Tensorflow Python to Tensorflow C++. This shift permitted a more direct interface with the lower-level APIs, potentially improving performance and resource efficiency in complex computations. Lastly, I utilized Docker, a popular tool for automating the deployment, scaling, and management of applications, to fetch update files from an S3 bucket and then install them on the host machine. This streamlined the process of updating software components, mitigating the risks of inconsistencies and improving productivity. Overall, my work during PS-I was centered on enhancing the efficiency, performance, and stability of software systems using a suite of cutting-edge technologies and methodologies. The breadth of these projects helped deepen my understanding of both embedded systems and software development practices, whilst simultaneously developing my problem-solving skills in real-world scenarios.

**Objectives of the project:** 1st- Enabling OTA updates on ESP-32, 2nd- Making loading ML models faster

**Tool used:** powershell ,cmd, git bash, IoT core, IAM, ESP IDF, Tensorflow python, Tensorflow C++

**Details of Papers/patents:** NA

**Brief description of the working environment:** During my PS-I internship, I was immersed in a highly transparent and relaxed working environment that fostered independence and accountability. The company's open communication culture allowed for seamless collaboration and effective problem-solving, facilitating a better understanding of project goals and expectations.

The company encouraged autonomy, entrusting me with significant responsibilities that allowed me to take ownership of my work. This instilled in me a strong sense of accountability, pushing me to deliver high-quality results and continually improve. The relaxed atmosphere didn't hinder productivity but instead promoted a balanced work-life experience, reducing stress and enhancing overall job satisfaction.

The company had high expectations, continually challenging me to strive for excellence and innovate. This drove me to expand my knowledge base, skillset, and problem-solving abilities, paving the way for substantial personal and professional growth.

The learning curve during PS-I was steep but extremely rewarding. Working hands-on with advanced technologies such as ESP-32, freeRTOS, AWS IoT Core, ESP-IDF, Tensorflow C++, and Docker substantially deepened my understanding of these tools and their practical applications. Simultaneously, I had the opportunity to learn about project management, teamwork, and accountability, providing invaluable soft skills to complement my technical expertise.

**Academic courses relevant to the project:** Computer Programming (CS F111), Microprocessors and Interfacing (EEE F241)

**Learning Outcome:** Knowledge about command line interfaces (powershell ,cmd, git bash), AWS(IoT core, IAM), APIs , Tensorflow python, Tensorflow C++

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**PS-I station: Agnext Technologies Pvt Ltd , Sahibzada Ajit Singh Nagar**

**Student**

Name: SAKSHAM GARG(2021A7PS2083G)

## Student Write-up:

**PS-I Project Title:** QAF Dashboard

**Short Summary of work done:** Developed the QAF Dashboard - Rake and Truck Report Automation project—which intends to automate the production of test result reports for grain testing—with Multi-Commodity Support. By utilising a variety of technologies and APIs, we have developed an effective and automated approach for producing these reports. Google Docs was used to create PDFs using specially created templates, and Google Apps Script was used for the automation script. We have learned a lot about using numerous technologies during this assignment. The dashboard now offers interactive features and dynamic functionality thanks to JavaScript. Task automation and Google API connectivity are now both possible thanks to Google Apps Script. Team member collaboration and version control have been made easier by Git and GitHub.

**Objectives of the project:** Automating the manual report generation for food quality assessment

**Tool used:** Google Apps Script, JavaScript, Git-GitHub, Google Docs API, Google Maps API, Google Sheets API, Apache Echarts

**Details of Papers/patents:** N/A

**Brief description of the working environment:** The office environment was focused and organized exactly like many IT organisations. During the internship, we received a good amount of work and experienced some work pressure. We strived to achieve deadlines and grew accustomed to corporate culture, it was a great exposure experience.

**Academic courses relevant to the project:** Computer Programming

**Learning Outcome:** Technical Skills [Java Script, Google Apps Script], Soft & Communication Skills

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**PS-I station:** Agnext Technologies Pvt Ltd , Sahibzada Ajit Singh Nagar



## Student

Name: AYUSH KALRA(2021A7PS2222H)

### Student Write-up:

**PS-I Project Title:** Integration of IoT devices with Amazon Web Services for various functionalities

**Short Summary of work done:** During PS-I, I undertook several projects focused on integrating AWS IoT Core with Raspberry Pi and implementing various functionalities. In the first project, I successfully integrated AWS IoT Core with Raspberry Pi. I established a secure connection between the IoT device and AWS IoT Core, enabling seamless communication and data exchange. In the second project, I utilized an MQTT client in AWS IoT Core to publish the Raspberry Pi device's location as a database in AWS DynamoDB. By implementing an AWS Lambda function, I automated the process of updating the location information in real-time, ensuring accurate and up-to-date records. Additionally, I worked on a project involving the download of the latest version file from AWS S3 to the Raspberry Pi. By leveraging AWS S3 and appropriate protocols, I implemented a mechanism to fetch the latest version file from the cloud storage service. Subsequently, I developed a process to install the downloaded version in the Raspberry Pi, allowing for seamless updates and upgrades. In addition to the aforementioned projects, I also dedicated time to learning the basics of WebSocket technology during PS-I.

**Objectives of the project:** The objective of this project is to integrate IoT devices with Amazon Web Services (AWS) to enable various functionalities. This includes real-time data collection, data storage, and automation using AWS. The goal is to create a seamless and scalable system that leverages the power of AWS to enhance IoT device functionality, improve operational efficiency, and enable data-driven decision-making.

**Tool used:** H/W- Raspberry Pi. S/W- AWS, Python, MinGW, VS Code, Docker

**Details of Papers/patents:** -

**Brief description of the working environment:** The working environment during PS-I was collaborative and innovative, fostering open communication and knowledge sharing. I worked alongside a team of professionals, mentors, and colleagues who shared a passion for technology and project execution. The company had clear expectations, including active participation in project planning, adherence to timelines, and delivering high-quality outcomes.

During PS-I, I had valuable learning opportunities. I gained a strong understanding of IoT device integration principles, focusing on establishing secure connections and utilizing AWS services for real-time data collection, analysis, and automation. I became proficient

in AWS IoT Core, AWS Lambda, AWS DynamoDB, and AWS S3, using them to develop scalable solutions. Programming languages such as Python were utilized to implement efficient code.

The experience enhanced my problem-solving and critical thinking skills, as I overcame challenges faced during the projects. Collaboration in the team improved my teamwork and communication abilities. Additionally, I developed project management competencies, meeting deadlines and delivering outcomes aligned with company expectations.

Overall, PS-I provided a solid foundation in IoT device integration, AWS services, programming languages, and project execution. I am now well-equipped to contribute effectively to future projects and continue my growth as a technologist in the fields of IoT and cloud computing.

**Academic courses relevant to the project:** IoT, Cloud Computing

**Learning Outcome:** Through this project, I gained valuable experience in integrating IoT devices, including Raspberry Pi, with Amazon Web Services (AWS). I developed expertise in establishing secure connections, utilizing AWS IoT services for real-time data collection, processing, and analysis.

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**PS-I station: Agnext Technologies Pvt Ltd , Sahibzada Ajit Singh Nagar**

**Student**

**Name: ANIRUDH BAGALKOTKER .(2021A7PS2682H)**

**Student Write-up:**

**PS-I Project Title:** QAF Dashboard - Report Automation

**Short Summary of work done:** I worked in the Solutions Team. We Successfully developed the QAF Dashboard - Rake and Truck Report Automation project with Multi-Commodity Support, which aims to automate the generation of test result reports for grain testing. We have created an efficient and automated process for generating these reports by leveraging various technologies and APIs. We Used Google Apps Script for the Automation script and Google Docs to generate PDFs using custom designed templates. During this project, we have gained valuable experience utilising various technologies.

JavaScript has been instrumental in providing dynamic functionalities and interactivity within the dashboard. Google Apps Script has enabled the automation of tasks and the integration of various Google APIs. Git and GitHub have facilitated version control and collaboration among team members.

**Objectives of the project:** Eliminating the manual report generation process by automation

**Tool used:** Google Apps Script, JavaScript, Git-GitHub, Google Docs API, Google Maps API, Google Sheets API, Apache Echarts

**Details of Papers/patents:** N/A

**Brief description of the working environment:** The Work environment was just like other IT companies, calm and cool. we got a good amount of work and had a little bit of work pressure during the internship. As I was already aware of the Technologies like Google Apps Script, the only learning for me came was the communication skills, where we had Daily meets, where the status of the work is discussed. Now I am more confident while speaking during such meets.

**Academic courses relevant to the project:** NONE

**Learning Outcome:** Technical Skills(Google Apps Script), Communication Skills

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**PS-I station: Agnext Technologies Pvt Ltd , Sahibzada Ajit Singh Nagar**

**Student**

**Name:** SATYAM SHARAN(2021A8PS2985G)

**Student Write-up:**

**PS-I Project Title:** Machine Learning Intern - Computer Vision

**Short Summary of work done:** Learnt about the use of OpenCv for image processing. About different OpenCv libraries. Also learnt about training machine learning model and use of Convolutional Neural Networks for improving the accuracy of a trained machine

learning model. Learnt python, linux commands etc. Learnt how to work as a team and how to convey your ideas and forge professional relationship with your colleagues.

**Objectives of the project:** Use image processing and machine learning concepts for quality assessment of food grain.

**Tool used:** Python, OpenCv, Machine Learning, Linux

**Details of Papers/patents:** No

**Brief description of the working environment:** Working environment was fine. Seniors are friendly and approachable. Also my teams's seniors were pretty helpful .

**Academic courses relevant to the project:** None

**Learning Outcome:** Learnt python, opencv, basic machine learning

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**PS-I station: Agnext Technologies Pvt Ltd , Sahibzada Ajit Singh Nagar**

**Student**

**Name: RAHUL JHA .(2021A8PS3005H)**

**Student Write-up:**

**PS-I Project Title:** Physical Analysis of Food Grains using Computer Vision

**Short Summary of work done:** We used OpenCV to implement Stage-I segmentation to segment out grains of rive from an image, then we perform Stage-II Segmentation using a Deep Learning model to accurately segment out the clusters of grains into independent grains. Then with the help of a classification model, we classified all grains into categories such as chalky, broken, damaged, discolored etc.

**Objectives of the project:** Be able to segment out grains of food such as rice / wheat from an image and then classify them into categories like broken, damaged etc to be able to analyse thwir quality on the basis of physical features.

**Tool used:** Python, OpenCV, Machine Learning, Neural Networks, Deep Learning, CNN

**Details of Papers/patents:** N.A.

**Brief description of the working environment:** The team was very helpful and guided us a lot, one small issue would be that my mentor was not from a coding background and the engineers there were sometimes away in work pertaining to clients, which made communication with them pretty hard. Other than that the atmosphere is very accepting and encouraging for you to learn a lot and also do some actual work.

**Academic courses relevant to the project:** Machine Learning, Digital Image Processing

**Learning Outcome:** Be able to explore various Image processing techniques using OpenCV and then proceed to train DL models based on CNN architectures such as ResNet50 and ENET to perform image segmentation and classification tasks.

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**PS-I station: Agnext Technologies Pvt Ltd , Sahibzada Ajit Singh Nagar**

**Student**

**Name:** RISHABH JAIN(2021AAPS2763G)

**Student Write-up:**

**PS-I Project Title:** NIR Spectroscopy specialist.Expert in false commodity detection through advanced identification techniques

**Short Summary of work done:** During my internship, I had the incredible opportunity to work on the fascinating intersection of machine learning and NIR spectroscopy. I delved into various machine learning models, such as neural networks, SVM, and deep learning architectures, discovering how they could be applied to analyze intricate NIR spectroscopy data. My main focus was on overcoming data challenges like noise and baseline drift while improving prediction accuracy and model generalization. I also explored feature extraction and selection techniques to identify crucial spectral characteristics for specific analytes or compounds. Throughout the internship, I was able to develop valuable skills in data preprocessing, model selection, and hyperparameter

tuning. Leveraging transfer learning methods helped optimize prediction performance, especially when dealing with limited labeled data. Overall, this internship provided me with practical experience in an exciting field that has significant real-world applications, such as pharmaceuticals, agriculture, and environmental monitoring. I am grateful for the opportunity and look forward to continuing my journey in the exciting world of machine learning and spectroscopy.

**Objectives of the project:** Detection of the false commodity and blank scans through machine learning models

**Tool used:** Pnadas, Numpy, Sklearn, machine learning

**Details of Papers/patents:** NO

**Brief description of the working environment:** I am delighted to provide positive feedback for the company. My experience with them has been exceptional. From day one, I felt welcomed and supported by the entire team. The company's commitment to fostering a positive work environment is evident in their strong emphasis on employee growth and development. Throughout my time here, I have been exposed to challenging projects that have allowed me to expand my skills and knowledge. The open and collaborative culture has made working here an enjoyable and fulfilling experience. I am grateful for the opportunity to be part of this remarkable company.

**Academic courses relevant to the project:** Artificial intelligence and Introduction to machine learning

**Learning Outcome:** Learn how does data science works in practical life and learned how to build various machine learning models

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**PS-I station: Agnext Technologies Pvt Ltd , Sahibzada Ajit Singh Nagar**

**Student**

**Name: ANIMESH JAWLA(2021B1A30816G)**

**Student Write-up:**

## **PS-I Project Title:** Integration of ESP32 and CC1120

**Short Summary of work done:** Agnext Pvt Ltd is a company that specializes in cutting-edge devices and technologies. During my time there, I had the opportunity to delve into their fascinating products and broaden my skill set. One aspect I focused on was Amazon Web Services (AWS), a robust cloud computing platform widely used in the industry. Understanding AWS allowed me to harness its power for scalable and efficient data processing and storage. In addition to AWS, I immersed myself in various communication protocols, such as SPI (Serial Peripheral Interface), which enabled me to facilitate seamless communication between different devices. This knowledge proved invaluable when integrating an ESP32 microcontroller with the CC1120 module, creating a powerful gateway device. This device served as a bridge, facilitating the exchange of data between multiple devices and systems. During my time at Agnext, I also recognized the importance of professional skills for success in the workplace. I honed my ability to collaborate effectively in a team environment, leveraging the diverse expertise of my colleagues. I also developed strong problem-solving and critical thinking skills, allowing me to tackle complex challenges with confidence and creativity. Overall, my experience at Agnext was incredibly enriching. It provided me with hands-on experience in working with cutting-edge devices, integrating different technologies, and leveraging cloud services. Moreover, I acquired essential professional skills that are highly valued in the industry. I am excited to apply this knowledge and expertise to future endeavors, confident in my ability to contribute to innovative projects and drive meaningful impact.

**Objectives of the project:** To integrate ESP32 and CC1120 to make a gateway device

**Tool used:** ESP32 microcontroller, CC1120 transceiver, different pcb , Arduino ide , vscode , cc1120 datasheet , embedded c understanding

**Details of Papers/patents:** Not applicable

**Brief description of the working environment:** The work environment at Agnext Pvt Ltd was exceptional, fostering a positive and supportive atmosphere. I was fortunate to be surrounded by helpful and cheerful colleagues who were always willing to lend a hand whenever needed. Their readiness to assist created a collaborative culture where teamwork thrived.

The senior members of the team played a significant role in establishing a pleasant workplace. Not only were they knowledgeable and experienced, but they also knew how to lighten the mood with their humor and camaraderie. Their ability to crack jokes and create a relaxed atmosphere contributed to a healthy work-life balance and boosted team morale.

One of the invaluable lessons I learned during my time at Agnext was professionalism in a corporate setting. From observing my peers and superiors, I acquired a deeper understanding of the importance of maintaining a high standard of conduct and integrity. This encompassed traits such as punctuality, effective communication, and accountability, which were consistently demonstrated by everyone in the company.

Witnessing professionalism in action taught me the significance of upholding a positive reputation both individually and as a team. It reinforced the notion that professionalism not only impacts the quality of work but also establishes trust and credibility with clients and partners.

Overall, my experience at Agnext Pvt Ltd not only provided me with technical knowledge and skills but also instilled in me the values of collaboration, positivity, and professionalism. These valuable lessons will undoubtedly shape my future endeavors and contribute to my success in the corporate world.

**Academic courses relevant to the project:** Not applicable

**Learning Outcome:** Understanding of datasheets for electronic devices , coding on microcontroller , AWS, communication protocols , Professional behaviour

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**PS-I station: Agnext Technologies Pvt Ltd , Sahibzada Ajit Singh Nagar**

**Student**

**Name:** ARIHANT RAI .(2021B3A72507H)

**Student Write-up:**

**PS-I Project Title:** Detection of false commodities through NIR spectroscopy

**Short Summary of work done:** It was a good experience, mentored under a great team. I worked on model building and preprocessing techniques in ML. We firstly did pre processing then trained the model to detect if the user puts a false commodity in it and stops the process.

**Objectives of the project:** To detect the false commodity

**Tool used:** Python

**Details of Papers/patents:** None

**Brief description of the working environment:** The environment was pretty good, there was frankness among employees. I learnt ML by the problems given to me by the



company. It was an amazing opportunity to get hands on experience of corporate world under such good mentors.

**Academic courses relevant to the project:** CP-F111

**Learning Outcome:** Learn a lot about ML

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**PS-I station:** Agrix Agrotech Pvt. Ltd. , New delhi

**Student**

**Name:** ROHAN GARG .(2021A3PS2864H)

**Student Write-up:**

**PS-I Project Title:** user manangement dashboard

**Short Summary of work done:** made a user management dashboard in MERN stack, added JWT auth and also integrated google maps

**Objectives of the project:** make a dashboard in react

**Tool used:** MERN stack

**Details of Papers/patents:** na

**Brief description of the working environment:** i was expected to work on MERN stack

**Academic courses relevant to the project:** computer programing

**Learning Outcome:** learned the MERN stack

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## PS-I station: Agrix Agrotech Pvt. Ltd. , New delhi

### Student

Name: SHARWIN NEEMA(2021A7PS1442G)

#### Student Write-up:

**PS-I Project Title:** QGIS PLUGIN FOR AGRICULTURAL PLOT ANALYSIS AND MACHINERY UTILIZATION

**Short Summary of work done:** worked on QGIS and Python to create a detailed dashboard for the app. My work was related to machine learning, but I did not do any coding. Instead, I found the algorithms and implemented them on the dataset. The dataset that I used contained information about crop yields, weather data, and soil conditions. I used a variety of machine learning algorithms to analyze the data, including decision trees, random forests, and support vector machines. The results of my work showed that the algorithms were able to predict crop yields with a high degree of accuracy

**Objectives of the project:** Learn about machine learning algorithms and how to use them to analyze data. Learn about the importance of data cleaning and data preparation. Learn how to use QGIS and Python to create a detailed dashboard.

**Tool used:** QGIS, python

**Details of Papers/patents:** no

**Brief description of the working environment:** I learned a lot about the agricultural industry and about the challenges that farmers face. I also learned about the company's products and services, which are designed to help farmers improve their yields and profitability. I learned about different machine learning algorithms and how they can be used to solve real-world problems in agriculture. I also learned about the ethical implications of using machine learning in agriculture.

**Academic courses relevant to the project:** ML, AI

**Learning Outcome:** I visualize the results of machine learning algorithms. I create a detailed dashboard using QGIS and Python.

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**PS-I station: Agrix Agrotech Pvt. Ltd. , New delhi**

**Student**

**Name: ISHAAN KAPOOR(2021A7PS2091G)**

**Student Write-up:**

**PS-I Project Title:** Classification of fields using satellite images using Machine Learning

**Short Summary of work done:**  
<https://drive.google.com/file/d/1qWkisR7QILXb93gNYVsOGeEwMGeCEspM/view?usp=sharing>

**Objectives of the project:** To classify crop fields using satellite images

**Tool used:** Azure Server, Kaggle

**Details of Papers/patents:** NIL

**Brief description of the working environment:**  
<https://drive.google.com/file/d/1qWkisR7QILXb93gNYVsOGeEwMGeCEspM/view?usp=sharing>

**Academic courses relevant to the project:** ML, CP

**Learning Outcome:** Exposure to machine learning

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**PS-I station: Agrix Agrotech Pvt. Ltd. , New delhi**

**Student**

**Name: KARTIK PANDEY .(2021A7PS2574H)**

## **Student Write-up:**

**PS-I Project Title:** QGIS Plugin for Agricultural Plot Analysis and Machinery Utilization

**Short Summary of work done:** In this project conducted in QGIS, a series of steps were followed to analyze a geospatial dataset for the benefit of farmers. The process began with loading the dataset and converting it to CSV format for compatibility. Integration with the QGIS mapping tool allowed for efficient mapping and visualization. The dataset's date-time field was formatted to ensure consistency and proper analysis. Utilizing the ST-DBSCAN clustering algorithm, attribute-based clustering was performed to identify distinct clusters within the dataset. Next, polygons representing minimum bounding geometry and convex hull were generated, providing clear boundaries for each cluster. This allowed for improved plot management and precise resource allocation for farmers. Attribute extraction was conducted to obtain area and perimeter information without requiring additional calculations, further aiding farmers in crop planning and resource allocation. Lastly, using vector geometric tools, the centroid for each cluster was calculated. These centroids served as representative points, facilitating efficient monitoring and decision-making for farmers. Overall, this project yielded valuable insights into the spatial patterns and characteristics of the dataset, empowering farmers with data-driven tools for optimized land management, improved crop planning, and enhanced decision-making for increased yields and profitability.

**Objectives of the project:** To create plots on QGIS using given dataset

**Tool used:** QGIS Software and Python

**Details of Papers/patents:** None

**Brief description of the working environment:** The mentors were helpful and learnt a lot from them as to how to work in an industry. Though there were some setbacks but with their and my teammates help we somehow managed it. Hopefully further in future i maybe able to apply what i learnt so far here.

**Academic courses relevant to the project:** Digital Mapping

**Learning Outcome:** We were able to make plots from the given dataset using clusters and alpha shapes and with which we can find location, perimeter and area of the plot.

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**PS-I station:** Agrix Agrotech Pvt. Ltd. , New delhi

## Student

Name: ADITYA NARAYAN MALLIK(2021AAPS2767G)

### Student Write-up:

**PS-I Project Title:** GPS DATA VISUALIZATION USER MANAGEMENT DASHBOARD

**Short Summary of work done:** Used MERN Stack to create a dashboard that allows Agrix's clients to view tractor coverage GPS data conveniently

**Objectives of the project:** to create a dashboard that allows Agrix's clients to view tractor coverage GPS data conveniently

**Tool used:** HMTL, CSS, JavaScript, MERN Stack

**Details of Papers/patents:** NA

**Brief description of the working environment:** Very helpful and accomodating.

**Academic courses relevant to the project:** Object Oriented Programming

**Learning Outcome:** Learned MERN, communication, working in a team

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**PS-I station:** AIoTBlocks Pvt. Ltd. , Faridabad

## Student

Name: VIDHI CHETAN SHAH .(2021A3PS2645H)

### Student Write-up:

**PS-I Project Title:** All-in-one Library Management App

**Short Summary of work done:** I have gained a new skill set in the form of Android app frontend development. I got a glimpse into how the process of app development for an organization is - wireframing, UI design and the continuous debugging and frontend development. While wireframing and UI design were somewhat static processes, the most challenging phase was the continuous debugging regarding layout and functionality. During this time, I learnt about the different widgets and packages available in Flutter. I also worked on the initial UI design using Figma and wireframing of the app. Overall, these experiences have provided me with invaluable lessons in adaptability, time management, teamwork, and perseverance.

**Objectives of the project:** Frontend Development - Flutter and Figma

**Tool used:** Flutter, Figma

**Details of Papers/patents:** .

**Brief description of the working environment:** The PS mentor, Mr Anubhav Elhence gave continuous encouragement and insightful feedback throughout the development and design process of the Integrated Management App. He gave pointers on how to approach when an issue arose. His extensive knowledge and experience in Frontend development, Backend Development and UI design has been instrumental in shaping the outcome of this project.

**Academic courses relevant to the project:** .

**Learning Outcome:** How wireframing of an app is done; UI Design of apps using Figma; Frontend Development using Flutter in VSCode and Android Studio

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**PS-I station: AlotBlocks Pvt. Ltd. , Faridabad**

**Student**

**Name: DESHPANDE HARSH SWAPNIL .(2021A7PS2225P)**

**Student Write-up:**

**PS-I Project Title:** Contrastive Learning Approach for Drone collected 3d LIDAR data

**Short Summary of work done:** Came up with a contrastive learning approach pertinent to our particular use case.

**Objectives of the project:** To use self supervised contrastive learning to work on point cloud data in low light conditions

**Tool used:** PyToRCH, ROS

**Details of Papers/patents:** Working on publishing a paper

**Brief description of the working environment:** The working environment was very healthy and would push me to work the extra mile. The mentor would assist in any difficulties faced. It was expected that I would be able to independently quickly pick up things and was given full assistance in the same.

**Academic courses relevant to the project:** Deep Learning

**Learning Outcome:** I learnt about different self supervised methods . I read through popular papers like DINO, DINO v2 ,BYOL and others. I learnt about Contrastive Learning as well and read papers on different Contrastive Learning approaches which were pertinent to our use case.

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**PS-I station: AlotBlocks Pvt. Ltd. , Faridabad**

**Student**

**Name: SHAUNAK SUNIL DAMLE(2021A7PS2607G)**

**Student Write-up:**

**PS-I Project Title:** All-In-One Lab Management Software

**Short Summary of work done:** During our PS-I internship, we successfully completed a comprehensive project in app development. Over the course of the internship, we built a fully functional app that integrated both frontend and backend components. For the backend, we utilized Firebase, a robust platform that allowed us to create and implement

over 8 services catering to both users and administrators. This ensured smooth data management and efficient communication between the app and server. On the frontend, we leveraged the power of Flutter to design and develop 14 user-side screens and 17 admin-side screens. Flutter's versatility and performance allowed us to create a seamless and visually appealing user experience. To design the app's user interface, we employed Figma, a powerful design tool. This facilitated the creation of a user-friendly and aesthetically pleasing interface, enhancing the overall usability and visual appeal of the app. In total, we created over 20+ designs using Figma, carefully iterating and refining the user interface to achieve the best possible results.

**Objectives of the project:** The background of our project centered around addressing the prevalent challenges encountered by educational labs within Indian institutions. Our aim was to introduce a comprehensive solution that tackled the issues related to lab equipment, electronic components, and other issuable resources through the implementation of a library management software model. Access control management and inventory control were the primary concerns that needed to be addressed. While RFID-based solutions have been successfully employed in library settings, a noticeable gap exists when it comes to implementing such services in laboratory environments. To bridge this gap, our project aimed to integrate three pivotal elements: inventory management, access control, and real-time monitoring to detect any potential misconduct.

**Tool used:** Flutter, Firebase, Amazon S3, Amazon DynamoDB, Amazon boto3, Git, Dart

**Details of Papers/patents:** We are still in the process of publishing the paper on the app as the app is still under development.

**Brief description of the working environment:**

During my PS-1, I worked in an online station, limiting my ability to provide detailed information about the physical working environment. However, the virtual setup allowed for flexibility and remote collaboration.

The company had clear expectations from the interns, requiring us to develop a fully functional app by the end of the internship. This provided an excellent opportunity to apply theoretical knowledge gained during academic studies to a practical project. The hands-on experience was crucial for enhancing our skills and understanding real-world challenges.

We met with our industry mentor Anubhav Sir thrice weekly throughout the internship. These sessions were invaluable as they provided guidance, feedback, and insights from someone with substantial experience in the field. It also gave us a broader perspective on industry practices and trends.

During the internship, we focused on learning from E-commerce giants like Flipkart and Amazon. We researched their tech stacks, the UI/UX design principles they employed, and the color schemes used in their apps. This exploration of existing successful applications enriched our understanding of user preferences and best practices in the industry. Ultimately, we could implement these learnings into an actual application, which was a rewarding experience.



Another crucial aspect of the internship was the emphasis on teamwork. Being part of a team of four, we learned effective communication, collaboration, and task distribution. Working together on the project allowed us to leverage our strengths, share ideas, and collectively solve problems, mirroring a professional work environment.

**Academic courses relevant to the project:** Computer Programming(CS F111), Object Oriented Programming(CS F213), Database Systems(CS F212)

**Learning Outcome:** I learnt about various tech stacks such as Flutter, Firebase, Amazon Services like S3, DynamoDB, and Firebase. I also learnt how to implement all these technologies and make a fully running app based on the modern E-commerce apps used these days.

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## **PS-I station: AlotBlocks Pvt. Ltd. , Faridabad**

### **Student**

**Name:** SANSRAV ARORA .(2021A7PS2690P)

#### **Student Write-up:**

**PS-I Project Title:** LoRaWAN based framework for private blockchain land monitoring

**Short Summary of work done:** Designed a complete framework for secure, scalable, land monitoring with iot devices using LoRaWAN communications in Blockchain

**Objectives of the project:** To research about how to integrate LoRaWAN with blockchain for scalable and seeure land monitoring

**Tool used:** NS3, C++

**Details of Papers/patents:** NA

**Brief description of the working environment:** It was a great learning environment, and learnt about a lot of things and improved lot of skills.

**Academic courses relevant to the project:** Blockchain

**Learning Outcome:** learnt about Helium network, LoRaWAN, Blockchain, Cryptography, NS3

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## PS-I station: AlotBlocks Pvt. Ltd. , Faridabad

### Student

Name: ROHAN CHAVAN .(2021A7PS2739H)

### Student Write-up:

**PS-I Project Title:** All in One Lab Management Software

**Short Summary of work done:** The project involved the development of cross-platform application with several key features. Firstly, a signup page was created to allow new users to create an account. Following that, a login page was implemented to enable registered users to access their accounts securely. The team also designed a homepage to provide users with a centralized hub for navigating the application's various functionalities. A crucial aspect of the project was the creation of an item description and cart page, which allowed users to view detailed information about products and add them to their shopping carts. To enhance user experience and customization, a profile page and an edit profile page were developed. These pages enabled users to manage their personal information and make necessary changes as desired. Additionally, on the administrative side, an upload items feature was implemented, enabling authorized individuals to add new items to the application's inventory. Access control mechanisms were put in place to ensure that only authorized personnel had the ability to perform administrative tasks such as item uploads.

**Objectives of the project:** The primary goals of the project are to address the difficulties faced by educational laboratories in Indian institutions by implementing a comprehensive solution through a library management software model. This solution will emphasise the management of lab equipment, electronic components, and other resources that are issued. Access control management and inventory control within these laboratories are the primary issues that this initiative seeks to address. While RFID-based solutions are available for libraries, there is a notable absence of lab-specific services of a similar nature. In order to address this deficiency, our project aims to integrate three essential

components: inventory management, access control, and real-time monitoring for identifying and addressing any lab malfeasance. By combining these essential components, we hope to create an efficient and effective system that improves the overall administration and security of educational laboratories, ultimately to the benefit of students, researchers, and institution personnel.

**Tool used:** Flutter, Dart, Firebase, Aws Dynamodb, django with python

**Details of Papers/patents:** None

**Brief description of the working environment:** Overall the working environment was great. We were given choice to use any tech stack we want also we were given access to different platform to learn whatever we need to develop the application. Our mentor Anubhav sir were very helpful and motivated us to learn new things and encouraged us to take up the task which we found important for our future.

Along with the technical things I learned, we also learned lots of soft skills like communication skills, presentation skills, we learned how to work in a team. We learned how to use Flutter with Firebase how to use flutter to design the frontend and how to use different services provided by firebase for developers. During our PS-1 journey we also got to learn how to use dynamodb provided my AWS we used django for backend we used the boto3 package provided my python to integrate nosql database like dynamodb but later on due to some issues we dropped dynamodb and took firebase for database and backend services.

**Academic courses relevant to the project:** Object Oriented Programming.

**Learning Outcome:** We developed the app with Flutter, which helped us become experts at creating responsive user interfaces utilising Flutter's widget-based methodology. We learnt how to use different Firebase services while using them for backend services, including Firebase Authentication to authenticate users into apps, Firebase Firestore to store user data, and all the items in documents that are arranged into collections. Additionally, we used Firebase storage to store photographs, including the profile picture and pictures of every item. To correctly integrate the backend and frontend and to give the customer a seamless experience, we learned about several Flutter packages. The packages we used include image\_picker, providers, etc. We utilised providers to decrease the calls made to the database which increased the efficiency of the app.

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**PS-I station: AlotBlocks Pvt. Ltd. , Faridabad**

## Student

Name: SIMRAN MOORJANI .(2021A8PS2697P)

### Student Write-up:

**PS-I Project Title:** Exploration of RP2040: Bare Metal Programming

**Short Summary of work done:** Preparation of Lab Manuals and other resources needed to provide a better practical understanding of RP2040 and Raspberry Pi Pico W microcontroller board.

**Objectives of the project:** By comparing ARM architecture with the traditional 8086 microprocessor, showcasing the advantages and relevance of the RP2040 in an undergraduate college course. Through hands-on experimentation and application development, seeking to equip students with a deeper understanding of modern microcontrollers, their features, and their potential for interfacing with external devices.

**Tool used:** Raspberry Pi Pico W, RP2040, Visual Studio Code, GDB,

**Details of Papers/patents:** N.A.

**Brief description of the working environment:** Great working environment. Gave me the freedom and space to try out a lot of things. Maintained good communication as well. It was interesting to see the other projects the others were working on too.

**Academic courses relevant to the project:** Microprocessor Programming and Interfacing, Computer Programming

**Learning Outcome:** Understanding of ARM architecture, interfacing, use of hardware (microcontroller boards).

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**PS-I station: AlotBlocks Pvt. Ltd. , Faridabad**

## Student

Name: NISHANT ABHIJEET KONDEKAR .(2021AAPS0326P)

### Student Write-up:

**PS-I Project Title:** Autonomous drone development project

**Short Summary of work done:** The work was to set up an autonomous drone to be used as platform for research. This involved interfacing all the necessary hardware, setting up communication protocols between the various hardware and finally integrating the software to be used into the hardware and testing it via simulators before finally making the real drone take flight.

**Objectives of the project:** To set up an autonomous drone to be used as a platform for CV research.

**Tool used:** HW- stereo cameras, NVIDIA JETSON Xavier, raspberry Pi 4, pixhawk,soldering iron. SW - ROS, GAZEBO, PX4

**Details of Papers/patents:** -

**Brief description of the working environment:** The working environment was very conducive to hardware work as despite the station being online, we decided to work in the lab specifically due to the nature of this project. We recieved all the hardware support we needed and guidance when necessary.

**Academic courses relevant to the project:** Modern control systems, autonomous mobile robotics, IOT, other basic embedded courses.

**Learning Outcome:** ROS, UNIX, PX4

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**PS-I station: AlotBlocks Pvt. Ltd. , Faridabad**

### Student

Name: UNNAT OMER .(2021B3A70896H)

## **Student Write-up:**

### **PS-I Project Title:** All-in-One Lab Management Software

**Short Summary of work done:** The project involved the development of an access control application with several key features. Firstly, a signup page was created to allow new users to create an account. Following that, a login page was implemented to enable registered users to access their accounts securely. The team also designed a homepage to provide users with a centralized hub for navigating the application's various functionalities. A crucial aspect of the project was the creation of an item description and cart page, which allowed users to view detailed information about products and add them to their shopping carts. To enhance user experience and customization, a profile page and an edit profile page were developed. These pages enabled users to manage their personal information and make necessary changes as desired. Additionally, on the administrative side, an upload items feature was implemented, enabling authorized individuals to add new items to the application's inventory. Access control mechanisms were put in place to ensure that only authorized personnel had the ability to perform administrative tasks such as item uploads. Finally, inventory management capabilities were implemented to provide administrators with efficient control over the stock of items available in the application. Overall, the project successfully delivered a comprehensive application with essential functionalities including user registration, login, homepage navigation, item description and cart management, profile customization, as well as administrative features such as item uploading, access control, and inventory management.

**Objectives of the project:** The primary goals of the project are to address the difficulties faced by educational laboratories in Indian institutions by implementing a comprehensive solution through a library management software model. This solution will emphasise the management of lab equipment, electronic components, and other resources that are issued. Access control management and inventory control within these laboratories are the primary issues that this initiative seeks to address. While RFID-based solutions are available for libraries, there is a notable absence of lab-specific services of a similar nature. In order to address this deficiency, our project aims to integrate three essential components: inventory management, access control, and real-time monitoring for identifying and addressing any lab malfeasance. By combining these essential components, we hope to create an efficient and effective system that improves the overall administration and security of educational laboratories, ultimately to the benefit of students, researchers, and institution personnel.

**Tool used:** Figma, Dart, Flutter, Python, Django, AWS DynamoDB, Boto3, Firebase, Amazon S3

**Details of Papers/patents:** None

**Brief description of the working environment:** During my Practice School I (PS-I) experience, I was immersed in a dynamic and collaborative working environment. The

company fostered a culture of innovation, where team members openly shared ideas and worked collectively to tackle challenges. The atmosphere encouraged creativity and allowed for hands-on experience in various aspects of the project.

The company's expectations were explicit and centered on professional development. They encouraged members to actively participate in team discussions and solicit their input. Regular progress meetings were conducted to ensure that project objectives and deadlines were being met. I was expected to be proactive in assuming responsibility for assigned tasks, seeking guidance when necessary, and meeting deadlines with high-quality work.

Throughout PS-I, I was exposed to the latest technologies and industry best practices, which accelerated my learning trajectory. Working in a real-world environment provided invaluable experience in applying theoretical knowledge to real-world situations. Using technologies such as Flutter in Dart, Firebase, AWS DynamoDB, and Python with Boto3, I improved my technical skills, especially in front-end and back-end development.

In addition, I honed my project management and time management skills by establishing attainable milestones and prioritizing duties effectively. Using Git to collaborate with team members enhanced my version control and code collaboration skills.

Overall, PS-I was a transformative learning experience, equipping me with a strong foundation in full-stack app development, fostering a sense of responsibility, and preparing me to contribute effectively in future professional endeavors.

**Academic courses relevant to the project:** None

**Learning Outcome:** During the two-month duration of this project, I was able to partake in full-stack app development, which encompassed all phases of the process. This experience substantially deepened my knowledge of app development, allowing me to accomplish several important learning objectives.

First, I acquired a thorough understanding of the app development lifecycle, from the initial phases of wireframing, where I learned to plan and conceptualize user interfaces and functionalities, to the actual app development phase, where these concepts were implemented.

As I immersed myself in Flutter in Dart, front-end development skills were a key focus. This allowed me to create aesthetically pleasing and interactive user interfaces, while responsive design principles ensured device compatibility.

Back-end development expertise was also crucial. Understanding the role of server-side technologies like Firebase and DynamoDB in data storage, authentication, and server communication has provided me with a firm foundation in these technologies. Working with these databases enhanced my data management and optimization skills.

In addition, using Git to collaborate with team members taught me essential version control and code collaboration techniques.

My troubleshooting and problem-solving skills have been enhanced by the experience of resolving challenges and rectifying issues during development.

In addition, I refined my project management and time management skills by setting attainable milestones, prioritizing duties, and meeting deadlines.

This hands-on full-stack app development experience emphasized UX/UI design, project management, and time management, as well as understanding the app development

lifecycle, refining technical skills in front-end and back-end development, and grasping database management, version control, and troubleshooting. These abilities collectively prepare me to be an adaptable and competent app developer for future challenges.

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## PS-I station: AlgoUniversity (YC-S21) , Hyderabad

### Student

Name: JEET LOHIYA(2021B1A33003G)

#### Student Write-up:

**PS-I Project Title:** SEO

**Short Summary of work done:** 1)Conduct keyword research and analysis to identify relevant keywords and topics for content creation. 2)Create high-quality, informative, and engaging blog posts and product descriptions that incorporate relevant keywords and topics. 3)Optimize on-page elements of the website, such as meta tags, headings, and internal linking, to improve search engine visibility. 4)Build high-quality backlinks to the website through outreach and networking. Monitor and measure the effectiveness of our SEO and content marketing efforts using tools such as Google Analytics and SEMrush.

**Objectives of the project:** The objective of the content writing and SEO project at Algo University is to increase organic traffic to the website and improve search engine visibility for relevant keywords and phrases through effective content writing and SEO strategies. By achieving this objective, the company aims to attract more potential customers to its website, improve engagement and conversions, and ultimately increase sales and revenue.

**Tool used:** Google Keyword Planner, Ahrefs, SEMrush,

**Details of Papers/patents:** None

**Brief description of the working environment:** I learnt all the fundamentals and basics of SEO and now can work on it for other websites. The company had a very awful working environment wherein none of them had fixed timing/ days of working either of the



managers would surely take the day off or wouldn't be available on the day. It was difficult to contact them. overall, did not like the working environment.

**Academic courses relevant to the project:** none

**Learning Outcome:** The content writing and SEO project I have been assigned at Algo University has been a valuable learning experience that has allowed me to develop my skills in two critical areas of digital marketing.

As a content writer, my role is to create high-quality, informative, and engaging content that connects with pet owners and promotes the company's mission and products.

As an SEO specialist, my role is to optimize website pages and content to improve search engine visibility and drive organic traffic. So far, I have worked on several projects that have allowed me to develop my skills in both content writing and SEO.

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**PS-I station: AlgoUniversity (YC-S21) , Hyderabad**

**Student**

**Name:** ABHILASH KALYANAKRISHNAN PARAMESWARAN(2021B1A42297H)

**Student Write-up:**

**PS-I Project Title:** Growth of TheJobOverflow.com

**Short Summary of work done:** Created a discord monthly leaderboard bot using python . Documentation of various interview experiences for better reference for AlgoUniversity users.

**Objectives of the project:** Solve User Queries and also come up with strategies which can lead to a better management of the TJO community

**Tool used:** Airtable, Python , Google Data Analytics

**Details of Papers/patents:** none

**Brief description of the working environment:** Had the opportunity to meet people from other campuses and interacted with many people. The work towards the end was redundant .

**Academic courses relevant to the project:** none

**Learning Outcome:** We came to know about the work culture of corporate organisations and we also learnt about the implementation of various best practices.

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**PS-I station: AlgoUniversity (YC-S21) , Hyderabad**

**Student**

**Name:** PRANAVI MANNAVA .(2021B1AA1913H)

**Student Write-up:**

**PS-I Project Title:** Job Management system

**Short Summary of work done:** Under the guidance of Mr. Swapnil, I collaborated with a team to develop a comprehensive placement strategy for participants in the LEAP and Accelerator programs. We conducted meticulous research, curated diverse job sources, and implemented a tailored matching process. Through collaboration and

**Objectives of the project:** To come up with a placement strategy for the accelerator program students

**Tool used:** slack, chatgpt , canva ,etc

**Details of Papers/patents:** NA

**Brief description of the working environment:** The timings were flexible. The mentors were helpful

**Academic courses relevant to the project:** Product management

**Learning Outcome:** strategic planning, research and curating , and communication and networking

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**PS-I station: AlgoUniversity (YC-S21) , Hyderabad**

**Student**

**Name:** BASUVULA KRISHNA CHAITANYA .(2021B3A81119P)

**Student Write-up:**

**PS-I Project Title:** Financial analysis of competitor startup companies

**Short Summary of work done:** understanding the financial documents and analyse that of other ed-tech startups In the industry. To track their funding rounds and what major changes have they gone through after funding. To find out who are their competitors and how are they performing better than them. So that AlgoUniversity can be benefitted with their fundings and try differently than industry trends.

**Objectives of the project:** help in series A fundng of the company

**Tool used:** MCA website, ACRA singapore,Google Sites, Google Charts

**Details of Papers/patents:** nil

**Brief description of the working environment:** no comments

**Academic courses relevant to the project:** Fundamentals of finance and accounting

**Learning Outcome:** data analysis

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## PS-I station: Allos AI Limited - Market Research , London

### Student

Name: KISLAY RANJAN NEE TANDON(2021A7PS2627G)

#### Student Write-up:

**PS-I Project Title:** Market Research

**Short Summary of work done:** As part of our market research work, we aim to conduct a comprehensive case study on companies that have successfully expanded their product line. By delving into the strategies and decisions implemented by these companies, we seek to gain valuable insights into the key factors that contributed to their expansion success. This case study will explore the identification of untapped market opportunities, effective product diversification, customer feedback integration, competitive analysis, and the utilization of innovative marketing campaigns. Through a rigorous examination of these cases, we intend to offer actionable recommendations and best practices to support other businesses in their quest for successful product line expansion, ultimately fostering sustainable growth and market competitiveness.

**Objectives of the project:** To guide Allos AI product development strategy. To ensure they can obtain Grant from UK governments and can compete with the CROs

**Tool used:** Na

**Details of Papers/patents:** Na

**Brief description of the working environment:** Working experience is something which I really appreciate. We were asked to work on our own comfortable pace. Our Mentor was always just a message away from us. Learning crucial skills how market study happens in the organizations and how crucial is understanding of market to bring in any product.

**Academic courses relevant to the project:** Technical report writing, Principle of Economics, new Venture

**Learning Outcome:** How do we

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## PS-I station: Allos AI Limited - Market Research , London

### Student

Name: HARSHAVARDHAN GALI .(2021AAPS0691H)

### Student Write-up:

**PS-I Project Title:** Market Research

**Short Summary of work done:** I focused on understanding rheumatology in different parts of the world (UK, US, India) and analyzing healthcare systems in these countries. My research revealed that the UK has the NHS, a government-funded system providing free healthcare, while the US and India have mixed systems with public and private healthcare options. I thoroughly explored who pays for services, which institutions offer treatments and the addressable market opportunity. I also researched AI's role in the pharmaceutical industry and clinical trials, discovering that AI has revolutionized drug discovery, dosage form designing, and more. I delved into the importance of Contract Research Organizations (CROs) as essential partners for managing clinical trials and expediting drug development. Additionally, I conducted competitor analysis and identified companies like TrialSpark, Lindus, Flatiron, Tempus, Deep6AI, and Unlearn.AI in the market. Each competitor had unique approaches to enhancing clinical trials, such as optimizing trial design, improving patient recruitment, and leveraging real-world evidence to inform decision-making.

**Objectives of the project:** Research and learn about the medical industry and its market in various countries.

**Tool used:** Slack, Zoom, Google Docs

**Details of Papers/patents:** NA

**Brief description of the working environment:** Throughout the internship, I collaborated closely with my teammate and communicated with the station coordinator through a Slack group. The station coordinator provided guidance on tasks, and we shared our research findings and ideas together. The company's focus on innovation, generating value, and applying for grants made the internship highly valuable and enriching.

Overall, this internship provided me with valuable insights into the healthcare industry, AI/ML applications, and the clinical trial process. My research and collaboration with the team laid a strong foundation for future projects and the company's pursuit of excellence in the pharmaceutical space.

**Academic courses relevant to the project:** Technical report writing

**Learning Outcome:** Learnt how to write market reports. Learny how to research effectively.

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**PS-I station: Allos AI Limited - Web Development , London**

**Student**

**Name:** GUDEPU RAJESWARI ANANYA(2021A3PS2642P)

**Student Write-up:**

**PS-I Project Title:** Analysis and Segmentation of Blood Cells followed by Classification

**Short Summary of work done:** The goal of the project was to deploy Meta's SAM (Segment Anything Model) to carry out the segmentation of images of blood samples, following which we developed a CNN (Convolutional Neural Network) to classify WBCs into various categories. It was a group project and done on Google Colab notebooks. All of the data used for segmentation and training the CNN was open - source data. The project required mastering the use of various software libraries such as SAM, PyTorch, Matplotlib and NumPy to name a few. Towards the end of the project, our CNN was able to classify WBCs with an accuracy of ~ 93%.

**Objectives of the project:** 1) To carry out segmentation of images of blood samples  
2)To classify the thus obtained WBCs

**Tool used:** The (predominant) software libraries used in this project include SAM (Segment Anything Model), PyTorch, Matplotlib, NumPy. Open source datasets were taken from kaggle.

**Details of Papers/patents:** None

**Brief description of the working environment:** Initially I was allotted web development, but then we were given the option to switch over to ML/AI in case we were interested, I applied and got allotted the ML/AI vertical. Even for the web development team their

preferences were taken before allotting frontend or backend so you're given a lot of flexibility in terms what you want to work on.

The company has a highly flexible working environment - ample time is provided to master necessary skills and you get to set your own deadlines. Throughout the whole project our PoC was always on hand in case we had doubts and he would schedule meetings based on our requirements. A lot of freedom is given in terms of choosing how you want to go about your project, broad guidelines (what approach to take, which libraries to use) and a few helpful resources are given but you're free to go above and beyond that as well. The company expects you to go about your tasks sincerely, weekly reports aren't necessary and they don't constantly monitor your progress. You'll mostly be given a group project, so make it a point to be in touch with your teammates about the division of work and their progress.

My main takeaway from this project was how to develop CNNs and deploy SAM, along with it I picked up the skills required to master new libraries. I also learnt how to work on a professional project and to coordinate my progress with a team.

**Academic courses relevant to the project:** The company provides all the academic resources (tutorials, online material) relevant to your allotted project so no courses are required beforehand. For the ML/AI vertical Machine Learning might be a useful course if you've already done it but it's not a

**Learning Outcome:**

1. Being able to deploy Meta's SAM (Segment Anything Model) effectively for image segmentation
2. Being able to develop a CNN (convolutional neural network) capable of classifying images
3. Gaining a working knowledge of machine learning and the various libraries that can be used to implement it

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**PS-I station: Allos AI Limited - Web Development , London**

**Student**

**Name: JASON AARON GOVEAS .(2021A7PS0237H)**

**Student Write-up:**

**PS-I Project Title: Issue Tracker Tool**

**Short Summary of work done:** I worked in a two member team to develop a website to help employees track issues in various software projects. I worked on the backend part of the application, developing an Express API that serves as the backend for the application. I used PostgreSQL as the main database, with Redis serving as a cache layer and temporary data storage. I also used AWS S3 to help store files on the cloud. Multiple features were included in the backend, such as Authentication, User Roles, Admin Dashboard, Project and Ticket management and Email Notifications. I then worked on hosting the server on an AWS EC2 instance, where I used Docker to containerize the backend to help for easy deployment and setup the server to serve frontend requests as needed.

**Objectives of the project:** To develop a website to help employees track issues in various projects undertaken by the company

**Tool used:** Node, Express, PostgreSQL, Redis, AWS S3, Docker

**Details of Papers/patents:** None

**Brief description of the working environment:** My expectations from the company were bare minimum, such as contact with other various employees and a proper project. However, since it was an online PS station, my interaction with company employees was minimal. We were granted significant freedom, including flexible work hours, and a basic roadmap was provided for the initial two weeks to aid in preparation for Web Development Interns. I had only 3-4 meetings with mentors throughout the entire internship duration, primarily focused on monitoring project progress. I had to learn most of the tech used on my own, which helped me develop my skills immensely in Backend Development. All in all, the experience felt similar to a supervised personal project rather than an internship.

**Academic courses relevant to the project:** None

**Learning Outcome:** Learnt how to setup and develop an efficient production ready backend server from scratch, implementing various features such as file upload and working with message queues. Also learnt how to host APIs using Docker and AWS EC2.

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**PS-I station: Allos AI Limited - Web Development , London**

**Student**



Name: **HARDIK GUPTA .(2021A7PS2421P)**

**Student Write-up:**

**PS-I Project Title:** Employee Sprint Dashboard

**Short Summary of work done:** The project developed an elegant dashboard using the MERN stack to streamline employee data collection and display. Employees submit weekly updates on tasks, plans, and challenges. The dashboard features tagging, upvoting, downvoting, and sorting functions, promoting collaboration and progress tracking. Individual profiles enhance personalization. The successful implementation provides the organization with an efficient tool, fostering productivity and teamwork.

**Objectives of the project:** Creation of a dashboard which tracks progress made as a social media app.

**Tool used:** React.js, Bootstrap

**Details of Papers/patents:** None

**Brief description of the working environment:** The company atmosphere is relaxed and easy-going, fostering a comfortable environment. Meetings are called as needed, allowing for flexibility. Employees are encouraged to be creative and come up with their own ideas for projects, such as designing the dashboard. However, the lack of clear guidelines and oversight can lead to confusion and potentially poor results, as seen when uncertainty arose about the project's data until clarified with further questioning.

**Academic courses relevant to the project:** None

**Learning Outcome:** Frontend Development, Collaboration

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**PS-I station: Allos AI Limited - Web Development , London**

**Student**

Name: **AYUSH BHARDWAJ(2021A7PS2634G)**

## **Student Write-up:**

### **PS-I Project Title:** Annotation Tools

**Short Summary of work done:** In this project, we developed two annotation tools using ReactJS for medical image analysis: the XRay-annotation tool and the Blood Cells annotation tool. The XRay-annotation tool offers a user-friendly interface with brush tools, layers functionality, and AI-assisted annotations, enabling efficient and accurate annotation of X-ray images. We incorporated cloud save functionality for secure storage and seamless collaboration, along with an import feature for workflow continuity. For the Blood Cells annotation tool, we created a specialized tool with crop and pan capabilities, allowing users to annotate specific regions of blood cell images in detail. The tool also captures snapshots of annotated regions, facilitating further analysis and reporting. Cloud and local storage options were provided for flexible data access. Both tools allow users to train machine learning models using the annotated data, enabling automatic detection and classification of relevant features. We explored the potential of AI-assisted annotations to improve productivity and accuracy in image analysis. Overall, this project equipped us with proficiency in ReactJS development for medical image annotation and provided insights into integrating cloud storage, import functionality, and AI-assisted annotations. The tools' applications in radiology, hematology, medical research, education, and quality control showcase their potential impact in the medical field.

**Objectives of the project:** Develop user-friendly annotation tools using ReactJS for X-ray and blood cell images, incorporating advanced features, cloud storage, and AI-assisted annotations to enhance efficiency and accuracy in medical image analysis.

**Tool used:** ReactJS & Libraries

**Details of Papers/patents:** NA

**Brief description of the working environment:** Working Environment:

The working environment during PS-I was extremely positive and conducive to learning. The company fostered a collaborative atmosphere, where team members were supportive and approachable. This friendly and professional environment encouraged open communication and creativity.

Expectations from the Company:

The company had clear expectations from interns during PS-I, which included active participation, dedication to assigned tasks, and a willingness to learn and grow. They provided regular feedback and guidance, helping interns align their efforts with company goals.

Learning during PS-I:

PS-I was a valuable learning experience. The company provided exposure to real-world projects, cutting-edge technologies, and industry best practices. Interns had the opportunity to apply their knowledge and skills, gaining practical insights and honing their

abilities. The structured learning programs and mentorship allowed for continuous improvement and professional development.

**Academic courses relevant to the project:** Data Structures

**Learning Outcome:** 1. Develop annotation tools using ReactJS for medical images.  
2. Implement cloud storage and import functionalities.  
3. Integrate AI-assisted annotations for improved efficiency.

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## **PS-I station: Allos AI Limited - Web Development , London**

### **Student**

**Name:** ARNAV ARVIND .(2021A7PS2709H)

### **Student Write-up:**

**PS-I Project Title:** Issue Tracker Tool

**Short Summary of work done:** We were given a month to learn how to use the technologies that were required to create the website. Then we drafted a list of features and a basic UI design for it. After this we proceeded to code out the MVP. It was a group project wherein one person worked on frontend and integration, and one worked on backend.

**Objectives of the project:** To develop a valuable tool for software development teams and organizations that enables them to effectively track, manage, and resolve issues or bugs within their projects. By providing a centralized platform for issue tracking, the website allows users to create detailed bug reports, assign them to team members, and track their progress through customizable workflows.

**Tool used:** Frontend: ReactJS, Tailwind CSS, Axios. Backend: NodeJS, PostgreSQL, Redis

**Details of Papers/patents:** None

**Brief description of the working environment:** The company provides a very casual working environment. There are no rigid deadlines and flexibility is given with regard to work timings. They provided the necessary resources to facilitate the learning process and laid down certain guidelines for how to go about making the project without spoon-feeding the entire time. Interaction with the company associate however was rather less. Overall a positive experience.

**Academic courses relevant to the project:** Web Development

**Learning Outcome:** I learnt how to create the frontend for a web application using ReactJS and Tailwind CSS and integrate it with the backend using Axios.

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**PS-I station: Allos AI Limited - Web Development , London**

**Student**

**Name:** RUPESH YARLAGADDA(2021B3A70839G)

**Student Write-up:**

**PS-I Project Title:** Web Development

**Short Summary of work done:** Initially we were taken in as recruits of Web Development, but due to the dynamic nature of the requirements some of the students interested in Machine Learning were given the option to shift into developing ML models to identify and classify masks in an image into 6 categories, 5 types of WBCs and RBCs. This model would find application in decreasing the time needed for blood test results, testing of machines for accuracy, etc.

**Objectives of the project:** Develop a ML model that is able to identify and classify the various masks in a blood smear image as either a WBC or a RBC

**Tool used:** Python

**Details of Papers/patents:** None

**Brief description of the working environment:** The station was an online one, and hence we were given complete flexibility of our working hours. Tasks given were very objective and we could choose how we wanted to complete the said tasks. The mentors were very helpful and prompt in replying to queries and also helped guide us by holding regular meetings from time to time. They were also very understanding and supportive and gave us sufficient time to learn the necessary skills to complete the work in an orderly fashion. The organisation uses latest technology and we were working with models that were just 1-2 months old, this displays how the company is always adopting the cutting edge in their workflow.

**Academic courses relevant to the project:** Machine learning

**Learning Outcome:** Lernt ML modelling

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## **PS-I station: Allos AI Limited - Web Development , London**

### **Student**

**Name:** PRIYANSHU DHARIWAL .(2021B5AA3167H)

### **Student Write-up:**

**PS-I Project Title:** Employee Sprint Dashboard

**Short Summary of work done:** The project involved the development of a dynamic dashboard aimed at streamlining data collection and visualization within the organization. The dashboard serves as a hub for employees to submit updates regarding their work which will allow them to track their progress and collaborate effectively with other employees. Developed the backend infrastructure for the same using Node.js, Express.js and MongoDB.

**Objectives of the project:** Our project aimed to develop a dashboard solution which provides the organisation an elegant way to collect, organise and display employee data

**Tool used:** Node.js, Express.js, MongoDB

**Details of Papers/patents:** None

**Brief description of the working environment:** The project mentor was very supportive throughout and was available for swift resolution of doubts, if any. We were given ample time and provided with resources to learn the technologies we would require for the successful completion of the project. I got to learn about backend web development and how to effectively communicate and work in a team.

**Academic courses relevant to the project:** Computer Programming, Object Oriented Programming

**Learning Outcome:** Communication, Teamwork, Web Development

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## **PS-I station: Amazon - Applied Science - Shipping Tech , Hyderabad**

### **Student**

**Name:** ARNAV GOYAL(2021A7PS2596G)

### **Student Write-up:**

**PS-I Project Title:** Health metric creation for item shipping cost

**Short Summary of work done:** In our project, we have developed an API that calculates the base shipping cost of an item based on UPS guidelines and publicly available data. The API takes into account the item's dimensions, specified in individual units, to calculate its "dimensional weight." This dimensional weight is then compared with the "Actual weight" of the item, and the higher of the two is considered the "billable weight" used in our cost calculation function. To determine the shipping cost accurately, we take three main inputs: the Source Zip Code, Destination Zip Code, and "Mode" of shipping. These inputs are utilized to determine the appropriate "zone" for the shipment. Once the zone is determined, we can calculate the benchmark shipping cost for the item. Additionally, we have developed a machine learning model that considers similar features to those used in the API, such as dimensions, zip codes, and shipping mode, to predict the "actual shipping cost." This ML model can be seamlessly integrated into our API, providing an alternative benchmark for shipping cost. It allows us to compare the predicted cost with the calculated cost from our API for outlier detection and validation.

**Objectives of the project:** The cost of shipping an item depends on many metrics or factors such as distance, fragility, size, carriers, etc. The purpose of this project is to identify any anomalies or discrepancies in the actual shipping cost of an item against its expected shipping cost whether it is too low or high. This will provide insights into the “health” of the item shipping cost and help identify the logistic reasons behind the differences seen in the actual and the expected benchmark shipping cost. This will help to optimize future deliveries and result in cost savings and on-time deliveries.

**Tool used:** Django REST, Pandas, Scikit-Learn, Python

**Details of Papers/patents:** -

**Brief description of the working environment:** The working environment at Amazon Applied Science was very professional and methodical. The practicum program was designed to provide a supportive and educational atmosphere for interns with allowing them to choose a solution path for a given problem statement and contribute to a real project. The Amazon mentors assigned to us were extremely helpful giving us guidance at each step.

The interns were expected to be punctual and complete the tasks assigned according to the timeline discussed. They expected a project deliverable by the end of the internship.

**Academic courses relevant to the project:** Object Oriented Programming, Database Systems, Machine Learning

**Learning Outcome:** I gained a deeper understanding of the workplace culture at Amazon and the shipping tech industry in general. Working as part of a team in a professional setting helped me improve my teamwork, collaboration and communication. On the technology side, I learnt API building using Django REST Framework and deployment of apps on cloud platforms such as Vercel. I gained invaluable insight into machine learning frameworks and libraries like Scikit-Learn and got hands-on experience with real data preprocessing. Learnt about various ML models such as tree-based models, decision trees, linear regression, random forests, gradient boosting, xgboost along with their application and evaluation.

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**PS-I station: Amazon - Applied Science - Shipping Tech , Hyderabad**

**Student**

Name: SIDDHARTH YAYAVARAM .(2021A7PS3116H)

## Student Write-up:

**PS-I Project Title:** HEALTH METRIC IDENTIFICATION FOR ITEM SHIPPING COST

**Short Summary of work done:** In our innovative project, we have successfully created a robust and efficient API designed to calculate the base shipping cost of items, adhering to UPS guidelines and utilizing publicly available data. The key element of our API is the incorporation of dimensional weight, derived from the item's specified dimensions, to ensure accurate cost calculations. By comparing the dimensional weight with the actual weight of the item, we determine the "billable weight" that governs our cost calculation function. To ensure precise shipping cost estimates, we rely on three critical inputs: the Source Zip Code, Destination Zip Code, and the chosen "Mode" of shipping. These inputs play a crucial role in determining the appropriate "zone" for the shipment. Once the zone is identified, we can swiftly calculate the benchmark shipping cost for the specific item, taking into account all relevant factors. Moreover, our project goes a step further by incorporating a sophisticated machine learning model. This ML model utilizes features similar to those used in the API, such as dimensions, zip codes, and shipping mode, to predict the "actual shipping cost" for any given item. The seamless integration of this ML model with our API provides an alternative benchmark for shipping cost estimation, enabling us to compare the predicted cost with the calculated cost from our API. This comparison facilitates outlier detection and validation, enhancing the accuracy and reliability of our shipping cost predictions. Overall, our project's innovative API and integrated machine learning model form a powerful shipping cost calculation system that ensures precise and dependable estimates for businesses and customers alike. With a focus on data-driven methodologies and UPS guidelines compliance, we aim to optimize shipping cost calculations and enhance overall shipping logistics for our users.

**Objectives of the project:** The objective of the project would be to find the benchmark shipping cost of an item to transport it from point A to point B. This benchmark shipping cost can then be used to compare it with actual shipping cost to find anomalies to provide an indication of the health of the shipment. This metric can later be used to inspect the attributes of certain items to understand why the shipping costs are high/low.

**Tool used:** Django REST Framework, Vercel, Jupyter Notebooks, SK-Learn, SQLite, DB Browser for SQLite

**Details of Papers/patents:** None

**Brief description of the working environment:** Throughout my PS-I, I received guidance from experienced mentors, access to various learning resources, and continuous feedback to help me thrive in my role as an intern.

**Academic courses relevant to the project:** ML



**Learning Outcome:** I learnt about building an API using Django REST Framework, regression based ML models such as HGBM, LGMB, XGBM. I also gained experience in data preprocessing and feature engineering. Another learning outcome was deployment of an app using vercel.

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## **PS-I station: Amazon Applied Science - Amazon Stores , Hyderabad**

### **Student**

**Name:** AYUSH BHAUWALA .(2021A7PS0180H)

### **Student Write-up:**

**PS-I Project Title:** Product Attribute and Specification Extraction from Web

**Short Summary of work done:** The project used data scraping and named entity recognition (NER) to identify the brand and model name of refrigerators from their titles. The data scraping was done on the website [www.gadgets360.com](http://www.gadgets360.com). The titles and product specifications of all refrigerators listed on the website were scraped and stored in csv files. NER was implemented using spaCy and BERT. spaCy is a free, open-source library for natural language processing (NLP) in Python. BERT is a machine learning model for natural language processing (NLP) developed by researchers at Google AI Language. spaCy was used to train a model to identify the brand and model name of a product from unstructured text. The model achieved an accuracy of 100% on test split, but this is a sign that the model is overfitting the data. BERT was used to implement NER using Hugging Face's transformers library and PyTorch framework. The model was trained using stochastic gradient descent with a learning rate of  $5e-3$ , 5 epochs and a batch size of 2. The results show that BERT is a more effective model for NER than spaCy. This is because BERT is able to learn contextual relations between words in a text, which spaCy is not able to do. One way to prevent overfitting is to artificially make the training data more complex. This can be done by adding noise to the data, by jumbling the words in the text, or by removing brand or model names from some training examples. These techniques can help to make the model more robust and less likely to overfit.

**Objectives of the project:** The objective of the project is to develop a knowledge base of product attributes. This knowledge base would contain information about the features, specifications, and other attributes of each product sold on Amazon.

**Tool used:** PyTorch, Python, Beautifulsoup, Pandas

**Details of Papers/patents:** None

**Brief description of the working environment:** Very helpful mentors who guided me in the completion of the project.

**Academic courses relevant to the project:** Machine Learning

**Learning Outcome:** I learnt about natural language processing, named entity recognition, transformer models like BERT. I also learnt how to tackle practical problems countered like overfitting, preparing training and testing data.

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## **PS-I station: Amazon Applied Science - Amazon Stores , Hyderabad**

### **Student**

**Name:** TARIMALA VIGNESH REDDY .(2021A7PS0234H)

### **Student Write-up:**

**PS-I Project Title:** Product Review Summarisation

**Short Summary of work done:** Experienced in the fine-tuning of Large Language Models to facilitate the generation of precise and informative summaries of Amazon product reviews. These summaries aid retailers on a global online platform to swiftly and effectively distinguish the positive and negative attributes of their products. Used AI tools like ChatGPT and frameworks like Langchain to prompt GPT-3.5 and get desired summaries for Amazon products. Used multiple prompting techniques like Zero shot, few shot and chain of thought prompting to get more comprehensive summaries from the AI model. Used the generated summaries from GPT 3.5 to fine-tune LLMs like the T5 model and Falcon 7B using Parameter Efficient Finetuning techniques including LoRA which freezes most of the model's parameters and helps in fine-tuning the model on a single

GPU. The summaries generated are evaluated using Perplexity, BLEU and ROGUE scores.

**Objectives of the project:** To fine-tune a large language model and generate aspect level summaries for product reviews available on the Amazon website

**Tool used:** H/w: nvidia A100 GPU, S/w: Langchain, Xturing, Lit-Parrot, Parameter Efficient Fine-tuning

**Details of Papers/patents:** None

**Brief description of the working environment:** During my PS-1 internship at Amazon as an Applied Science intern, I had an incredibly positive experience working in a dynamic and innovative environment. From the very beginning, I was impressed by the company's high standards and dedication to excellence, which set clear expectations for interns like myself.

The working environment at Amazon was truly inspiring. The company fostered a collaborative and inclusive culture where everyone's ideas were valued and respected. I had the opportunity to work alongside talented professionals who were passionate about their work. Open communication and teamwork encouraged me to step out of my comfort zone, ask questions, and contribute my ideas.

Amazon provided me with numerous learning opportunities throughout my internship. I was exposed to cutting-edge technologies and had access to vast resources to enhance my skills. My mentor constantly suggested new courses to upskill myself and try new things and conduct research in the field of NLP.

Through this process, I gained valuable insights into the industry, honed my problem-solving skills, and learned to navigate real-world challenges.

Overall, my PS-1 internship at Amazon was an enriching experience that exceeded my expectations. The supportive working environment, high expectations, and focus on learning and growth made it an invaluable opportunity for me to develop as an applied science professional. I am grateful for the skills and knowledge I acquired during my time at Amazon, which will undoubtedly shape my future career path.

**Academic courses relevant to the project:** Machine Learning

**Learning Outcome:** Natural Language Processing, Large Language Models, Langchain, Prompt Engineering

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**PS-I station: Amazon Applied Science - Amazon Stores , Hyderabad**

## Student

Name: KULKARNI DEV SHREE .(2021A7PS2430P)

### Student Write-up:

**PS-I Project Title:** Product Review Summarization

**Short Summary of work done:** We Generated desired summaries of product reviews on Amazon using frameworks like Langchain and GPT 3.5 turbo. Using these generated summaries we were able to fine-tune a Large Language Model - Falcon 7B.

**Objectives of the project:** Develop a Machine learning based Large language Model (LLM) that takes set of reviews as input and provides a detail summary of insights that are highlighted in the reviews.

**Tool used:** Numpy, Pandas libraries, Open AI API

**Details of Papers/patents:** NA

**Brief description of the working environment:** Had regular meets with Amazon mentor who was very supportive and encouraging.

**Academic courses relevant to the project:** NA

**Learning Outcome:** -Finetuning Large Language Models  
-Prompt Engineering

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**PS-I station: Amazon Applied Science - Amazon Stores , Hyderabad**

## Student

Name: ARNAV YAYAVARAM .(2021A7PS3117H)

### Student Write-up:

**PS-I Project Title:** Product Attribute and Specification Extraction from Web

**Short Summary of work done:** The project utilized data scraping and named entity recognition (NER) to identify refrigerator brands and model names from their titles. The website [www.digicamb.com](http://www.digicamb.com) was scraped to gather the titles and product specifications of all digital cameras listed on it, and this data was stored in CSV files. NER was implemented through spaCy and BERT, where spaCy, a free, open-source Python library for natural language processing (NLP), was employed to train a model for identifying brands and model names from unstructured text. Although the model achieved 100% accuracy on the test split, this high accuracy might be an indicator of overfitting. For the NER using BERT, Hugging Face's transformers library and PyTorch framework were employed. The BERT model was trained using stochastic gradient descent with a learning rate of  $5e-3$ , over 5 epochs, and a batch size of 2. The results demonstrated that BERT outperformed spaCy for NER, mainly because BERT can learn contextual relationships between words in a text, a capability that spaCy lacks. To address the issue of overfitting, one approach is to increase the complexity of the training data artificially. This can be achieved by introducing noise to the data, jumbling the words in the text, or removing brand and model names from some training examples. We did so using `nlpaug` and `langchain` using Falcon LLM.

**Objectives of the project:** The objective of the project is to develop a knowledge base of product attributes. This knowledge base would contain information about the features, specifications, and other attributes of each product sold on Amazon.

**Tool used:** PyTorch, Python, Beautifulsoup, Pandas, Langchain

**Details of Papers/patents:** None

**Brief description of the working environment:** Very helpful mentors who guided me in the completion of the project.

**Academic courses relevant to the project:** Machine Learning, NLP

**Learning Outcome:** I learnt about natural language processing, named entity recognition, transformer based models like BERT. I also learnt how to tackle practical problems encountered with overfitting and preparing of training and testing data. I also used `langchain` and Falcon LLM.

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## PS-I station: Amazon Software - Amazon Stores , Hyderabad

### Student

Name: ARYAN GUPTA .(2021A7PS0162H)

### Student Write-up:

**PS-I Project Title:** No-Code Integration Test

**Short Summary of work done:** We built an AWS cloud application (the framework) for running integration tests on other AWS cloud applications (or infrastructure) with only JSON config files as input. The input consists of the operations to run, and the framework is responsible for running the required operation on the needed aws resources. The framework can mock processes and order tests based on dependencies to maximise parallel processing. The framework could test 4 services as of writing this summary. The framework allows optional input. The framework can auto-configure the test parameters depending on the account it is deployed to.

**Objectives of the project:** Build an Integration Test Framework, which requires developers/users to run their integration test based on JSON config.

**Tool used:** S/w - AWS, TypeScript, Python, Git

**Details of Papers/patents:** None

**Brief description of the working environment:** The projects were assigned by the company. They were prompt with their communication, so much so that we knew all the following month's events in advance.

Our mentor was flexible and easily approachable, available through both Whatsapp and Email. All deadlines and project goals were decided after discussion with all interns working on that project. He frequently cleared our queries and gave solutions to our problems. He also reviewed our work be it related to our project or the report we made, providing constructive feedback. We felt quite at home with this internship (maybe because it was online :P).

I wanted the AI project, but the one I got was alright too. The final cloud application built was quite impressive and professional. We learnt about the working of Cloud Computing Services and strategies in-depth.

Learning Outcomes

- AWS Services & Software
- TypeScript and Python
- Version Control

And soft skills like teamwork, professional Coding, communication, and presentation.

**Academic courses relevant to the project:** Data Structures and Algorithm, Computer Programming (From the core CS Courses till 2nd year)

**Learning Outcome:** Experience with AWS Cloud Platform, Experience with Software Testing, and Knowledge of Cloud Computing Strategies.

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## **PS-I station: Amazon Software - Amazon Stores , Hyderabad**

### **Student**

**Name:** REVANTH NALLA(2021A7PS0236H)

### **Student Write-up:**

**PS-I Project Title:** Identification of fake reviews on Amazon

**Short Summary of work done:** My project focuses on utilizing machine learning (ML) and Natural Language Processing (NLP) techniques to identify fake reviews on Amazon. During my internship, I concentrated on a comprehensive analysis of labeled datasets and unlabeled datasets of reviews to gain valuable insights into the patterns and characteristics of fake reviews. This enabled me to identify key factors contributing to their identification. In the realm of data preprocessing, I dedicated myself to various tasks aimed at enhancing the model's performance. This encompassed cleaning the dataset by addressing null and missing values, as well as employing techniques such as text tokenization and the removal of stop words. These steps played a vital role in ensuring the quality of the data for subsequent analysis. Subsequently, I proceeded to train and fine-tune ML and NLP models. Rigorous evaluation and validation processes were conducted to measure the model's performance and identify potential areas for improvement. Throughout this phase, I relied on metrics including accuracy, precision, recall and F1 score to determine the effectiveness of the models. To ensure proper documentation and knowledge sharing, I carefully recorded my research, methodologies, and findings throughout the entirety of the project. This enabled effective communication of my progress, insights and recommendations to the Amazon mentor and my PS instructor.

**Objectives of the project:** Improving Customer Trust, Maintaining Platform Integrity, Enhancing User Experience

**Tool used:** Amazon SageMaker, Git, NLTK, Scikit-learn, Spacy, Tensorflow

**Details of Papers/patents:** No

**Brief description of the working environment:** The environment during my internship on the Amazon Software team was exceptional, creating an excellent atmosphere for learning and growth. There was little to no pressure, allowing me to focus on the project with a clear mind. Additionally, the well-structured project plan set by my mentor provided a sense of direction and clarity. My mentor's accurate approach to divide the project into manageable parts was particularly beneficial. Each segment was well-defined, and he ensured that we had ample time to work on each aspect, guaranteeing that no part was rushed or neglected. The timeline was carefully designed, providing us with a sufficient deadline for every stage of the project which further helped us to achieve a high level of accuracy and precision in our work. Overall, the experience of working in such a supportive and well-organized environment, with a mentor who was attentive to our needs, made the internship an enriching and rewarding learning journey.

**Academic courses relevant to the project:** ML, NLP, Deep learning

**Learning Outcome:** Machine Learning Techniques, Sentiment Analysis, Data Preprocessing, Feature Engineering, Evaluation Metrics

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**PS-I station: Amazon Software - Amazon Stores , Hyderabad**

**Student**

**Name:** AASHISH CHANDRA K.(2021A7PS0467H)

**Student Write-up:**

**PS-I Project Title:** Virtual Try-On with Multiple ASIN Imposition

**Short Summary of work done:** During PS-1, the focus was on developing a Virtual Try-On system with Multiple ASIN Imposition. The project began with the implementation of



the PF-AFN (Pose Flow-based Alignment-Free Network) model, which aimed to align the customer image and the target clothing image without relying on explicit human pose estimation. This step ensured accurate alignment for virtual try-on. Next, the HR-VITON (High Resolution Virtual Try-On Network) model was integrated into the system. HR-VITON utilized an encoder-decoder structure combined with adversarial learning to generate realistic and visually appealing virtual try-on results. The model was trained on the VITON-HD dataset, which provided a diverse range of clothing and body poses for optimal generalization. Further improvements were made by integrating the LADI-VTON (Latent Diffusion Enhanced Virtual Try-On) model, which enhanced the system's ability to handle occlusions and missing areas. The LADI-VTON model was trained on the dresscode dataset, providing a comprehensive range of upper body, lower body, and dress images for optimal performance. To enhance the Virtual Try-On system, Mediapipe was utilized for face extraction, ensuring the natural appearance of the customer's face during the try-on process. Additionally, OpenCV and dlib were employed to create specialized models for accessories such as hats, lipsticks, and sunglasses. These models accurately detected and tracked facial landmarks, enabling precise placement and alignment of virtual accessories. Throughout the project, rigorous testing and evaluation procedures were conducted, ensuring the accuracy and effectiveness of the Virtual Try-On system. Continuous refinement and optimization, guided by user feedback and advancements in computer vision and deep learning, contributed to the system's overall performance and usability. In summary, the work during PS-1 involved the integration of the PF-AFN and VITON models, the utilization of Mediapipe for face extraction, the development of specialized accessory models using OpenCV and dlib, and the integration of the LADI-VTON model. These efforts led to the creation of a robust Virtual Try-On system capable of accurate and realistic virtual product visualization across multiple ASIN categories.

**Objectives of the project:** To enhance customer engagement and satisfaction by implementing a virtual try-on model, enabling better product exploration for various product categories, ultimately driving increased sales.

**Tool used:** Python, TensorFlow and PyTorch, OpenCV, Stable Diffusion, Mediapipe, dlib, Jupyter Notebook (Google Colab), Google Drive

**Details of Papers/patents: -**

**Brief description of the working environment:** The program was online. Our PS Faculty was very friendly and there was a very smooth onboarding. Our project was a bit complex for us, since my team did not work with ML in the past. But with the guidance from our Faculty and our mentors, who helped us from the very start by providing useful resources which were most important to the success of the project.

The expectations from the company were a little harsh to be honest, but because of that we had an incredible learning experience which was the best work I have done in college. I never worked with CV before, but researching and learning all of this have also piqued my interest.

So finally, it is a bit hectic PS actually, you will be doing more work compared to all other PS stations, so keep that in mind with respect to SI prep. but it is very worthy experience and I would recommend you to take it even if the projects don't align with your interests.

**Academic courses relevant to the project:** Computer Vision ,Image Processing, Deep Learning, Machine Learning.

**Learning Outcome:** Comprehensive understanding of Virtual Try-On Systems.  
Integration of State-of-the-Art Models.  
Expertise in ASIN Imposition.  
Proficiency in Computer Vision and Deep Learning Libraries.  
Data Preparation and Evaluation.  
Model Evaluation (Metrics and Timing).  
Researching and understanding architecture/ pros and cons of multiple Models.

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## **PS-I station: Amazon Software - Amazon Stores , Hyderabad**

### **Student**

**Name:** YASH PANDEY .(2021A7PS0661P)

### **Student Write-up:**

**PS-I Project Title:** Fake Review Detection

**Short Summary of work done:** Extracted numerous features from labelled and unlabelled datasets of reviews that can be useful for fake review detection based on research done and trend analysis on the datasets. Trained numerous supervised learning, unsupervised learning, outlier detection and duplicate detection models for detection of fake reviews with significant precision. I trained models such as SVM, KNN, Logistic Regression, XGBClassifier for prediction on labelled dataset of Amazon Reviews based on various features both pre-present and extracted from the dataset. Trained duplicate detection models for the unlabelled dataset of Amazon reviews using cosine similarity and jaccard similarity to classify reviews as duplicates based on a 0.9 threshold. Trained supervised deep learning models such as ANNs and CNNs for labeled review classification and unsupervised methods such as SOMs to detect outliers in unlabelled review dataset which are used to further train supervised learning models for outlier

detection. Experimented with various text embedding and vectorisation methods such as Word2Vec, TFIDF, BERT, GloVe and FastText in combination with supervised models as well as acting as standalones. Built a final model using Word2Vec & TFIDF combined with supervised learning models for labeled review detection, combined with feature extraction and data preprocessing tasks. Used unsupervised methods such as Local Outlier Factor, Isolation Forest and One-Class SVM for outlier detection in unlabelled dataset. Used Amazon SageMaker to import data stored on cloud storage of Amazon S3 and running preprocessing steps using the Data Wrangler tool and building an endpoint combined with Lambda function and REST API

**Objectives of the project:** Build a model with atleast 70% precision for detection of fake reviews

**Tool used:** Python, Amazon SageMaker, Amazon S3, AWS Lambda, AWS API Gateway, Jupyter Notebook, Libraries - SkLearn, Keras, Tensorflow, PyTorch, Spacy, matplotlib

**Details of Papers/patents:** NA

**Brief description of the working environment:** The Amazon mentor was. extremely helpful in providing us a pathway to follow while developing the project from scratch. In our very first meeting in May, I had almost no knowledge regarding machine learning implementations and natural language processing, our mentor was patient with us and explained to us simple terms and methods using in fake review detection along with guiding us to read research papers and build a theoretical model before starting with the implementation itself. Subsequently, as I utilised resources to learn about machine learning, deep learning, NLP and their implementations in Python, I was able to build models with sufficient precision at an early stage during the PS and my mentor evaluated us and provided further guidance in what to do next, in terms of researching about various word embeddings and text classification methods along with an eventual pathway to deployment using Amazon's cloud services such as Amazon SageMaker and Amazon S3. It was an amazing learning experience to interact with such highly qualified individuals from. the tech industry and to work alongside them as they truly treated us as professionals ourselves and evaluated us fairly while also guiding us like students.

**Academic courses relevant to the project:** Natural Language Processing, Deep Learning, Machine Learning

**Learning Outcome:** Learnt how to develop complete Machine Learning models in python for any dataset, Learnt all the popular steps of data preprocessing and when to use them. Trained and implemented models on cloud services such as Amazon Sagemaker using cloud storage on Amazon S3. Implemented complex deep learning models such as Self Organising Maps, Convolutional Neural Networks etc. along with becoming familiar with famous word embeddings such as BERT and GloVe

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## PS-I station: Amazon Software - Amazon Stores , Hyderabad

### Student

Name: RADHEY KANADE .(2021A7PS2534P)

#### Student Write-up:

**PS-I Project Title:** No-Code Integration Test Framework

**Short Summary of work done:** My project was to develop a no-code integration test framework to test AWS applications containing multiple microservices. The framework was driven by JSON config files. These microservices included AWS S3, AWS DynamoDB, AWS SQS, AWS SNS. The framework was designed using AWS Step Functions and individual unit tests were written in Python using boto3. Boto3 is the SDK for AWS in python. Unit test code was deployed using AWS Lambda and the entire stack of resources was deployed using the Cloud Deployment Kit written in typescript.

**Objectives of the project:** No-Code framework to run integration tests for AWS applications with multiple microservices

**Tool used:** Python3, Typescript, AWS CDK, git

**Details of Papers/patents:** -

**Brief description of the working environment:** My PS-1 experience was coding intensive and required a lot of collaboration with my colleague which helped me get comfortable to work on larger projects. Our company mentor would hold weekly review meets to discuss the progress of the project and discuss further steps. Initially we were asked to study about various tools in the AWS suite and come up with some test scenarios for each tool along with writing python lambdas for the same. Then we were shared a sample Cloudformation stack and asked to learn typescript for deploying a similar stack for our project. Only the final code review was done by the mentor and we were expected to learn everything ourselves. It was a great experience overall.

**Academic courses relevant to the project:** DSA, Discrete Structures for Comp Sci

**Learning Outcome:** AWS suite, typescript, collaboration in a team

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## PS-I station: Amazon Software - Amazon Stores , Hyderabad

### Student

Name: ANUJ NETHWEWALA(2021A7PS2716G)

#### Student Write-up:

**PS-I Project Title:** Virtual try-on

**Short Summary of work done:** We used a standard model (LADI-VTON) for getting try-on results of clothing category. We then used OpenCV to make separate models for sunglasses, hats and lipsticks. Finally we tried to combine all these models together so that the user can provide his/her image and select the products and the model would output the image of him/her wearing those products.

**Objectives of the project:** Create a virtual try on model for multiple product categories like clothes, sunglasses, hats etc.

**Tool used:** OpenCV, PyTorch, Python

**Details of Papers/patents:** None

**Brief description of the working environment:** We were 12 people overall at Amazon and were divided into 6 groups of 2 and were assigned projects in pairs under mentors from Amazon. The mentors were really supportive and always guided us if we were stuck. Our PS faculty-in-charge also conducted regular meetings with us, took regular updates and helped us out in every possible way. I learnt a lot about Machine Learning and Computer Vision through this program. This program also helped me improve my communication skills since we had regular meetings and presentations where we would be explaining our work and the results obtained.

**Academic courses relevant to the project:** Machine Learning

**Learning Outcome:** Machine Learning, Computer Vision, OpenCV, PyTorch, Communication skills

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## PS-I station: Apisero - An NTT Data Company , Pune

### Student

Name: PATHAPATI SUBBU VARUN SAI .(2021A3PS2487H)

#### Student Write-up:

**PS-I Project Title:** Bill Payment System

**Short Summary of work done:** During my internship at Apisero, I worked on a bill payment project that involved utilizing my skills in Java, MySQL, JDBC, and the Spring Framework. The main objective of the project was to develop a system for handling bill payments efficiently. Throughout the internship, I gained practical experience in Java programming, using MySQL as a database management system, and integrating the two through JDBC. The project was mainly back-end and I used Java and the Spring Framework to develop the backend functionality of the system. This involved implementing features such as user authentication, bill generation, payment processing, and transaction management.

**Objectives of the project:** To create a bill payment app for managing transactions

**Tool used:** Github, Eclipse, Postman, MySQL Workbench

**Details of Papers/patents:** None

**Brief description of the working environment:** The working environment in Apisero is very good. Apisero is open, transparent, and embraces individuality and team innovation. The company expects us to have strong problem-solving skills, the ability to analyze problems, propose effective solutions, and think critically to overcome obstacles. It also expects us to have a willingness to learn.

The internship program at Apisero began with a comprehensive training phase where I received instruction on core Java concepts, object-oriented programming, algorithms, and later on with JDBC, MySQL, SpringBoot, etc. This training equipped me with a strong foundation in Java Back-end development.

Throughout the internship, I worked on several hands-on projects under the guidance of experienced mentors. These projects allowed me to apply the knowledge gained from training to real-world scenarios, solve problems, and gain practical coding experience.

Apart from project work, the internship program often included training sessions and workshops on advanced Java topics, frameworks, tools, and industry best practices. Overall, my internship experience in the Java training program at Apisero- An NTT Data Company provided me with a valuable combination of theoretical knowledge and practical skills.

**Academic courses relevant to the project:** CS F111

**Learning Outcome:** I got to learn about Java, JDBC, MySQL, and the Spring Framework. I also got to work with the Agile methodology which I didn't know earlier. The exposure to various Business interactions and tech talk sessions improved my presentation techniques.

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**PS-I station: Apisero - An NTT Data Company , Pune**

**Student**

**Name:** KUMARASAMY CHELLIAH .(2021A7PS0096H)

**Student Write-up:**

**PS-I Project Title:** Bill Payment System

**Short Summary of work done:** We first began with Java training where we learnt about classes, objects, attributes and methods. We then moved on to understand advanced OOP(Object Oriented Programming) concepts like method overloading, method overriding, inheritance, exception handling, access specifiers, packages and interfaces. Then we learnt SQL and how JDBC(Java Database Connectivity) acts as the connector between the backend and the database, we also implemented multiple apps to understand JDBC better. After getting a clear idea of JDBC we moved on to use MySQL to setup databases, create tables and understand database management. We then learnt to use Spring Boot and Spring Framework in building fully functional backends with multiple API endpoints and one consolidated database to store and retrieve data. We also had an assessment on building a fully functional backend for a Bill Payment System with multiple APIs and a database. We are now working on an APISone project with Business SMEs in APISERO.

**Objectives of the project:** The final goal was to build a backed for a Bill Payment System using Spring Boot and MySQL

**Tool used:** Eclipse IDE, MySQL Workbench, Postman

**Details of Papers/patents:** NA

**Brief description of the working environment:** During my summer internship at Apisero, I had an incredible experience gaining practical knowledge and honing my skills in Java, MySQL, and Spring Boot. The internship program provided comprehensive training in these technologies, empowering us to tackle real-world challenges. Working alongside a talented team, we collaborated on various projects, applying our newfound expertise to develop innovative solutions. Through hands-on experience, I learned how to design and implement efficient Java applications, leverage the power of MySQL for database management, and utilize Spring Boot to create robust and scalable web applications. The internship at Apisero not only enhanced my technical proficiency but also fostered my ability to work collaboratively and effectively in a professional setting.

**Academic courses relevant to the project:** Object Oriented Programming, Database Management, Systems

**Learning Outcome:** We attained a good proficiency in Sprint Boot, Java, MySQL

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**PS-I station: Apisero - An NTT Data Company , Pune**

**Student**

**Name:** AMBEKAR SHANTANU NILESH .(2021A7PS2540P)

**Student Write-up:**

**PS-I Project Title:** Training on building web applications using Java Spring Boot

**Short Summary of work done:** For the first five weeks of the project, we had training on Java, SQL, JDBC and Spring Boot. There were weekly 4 hour sessions where the instructor taught us these topics and we practiced them. After each training session, some



assignments were given. After the training got over, there was a mini-project on building a bill payment system using Spring Boot followed by another Spring boot project.

**Objectives of the project:** To get the basics of building applications using Spring Boot

**Tool used:** Eclipse, Postman, MySQL

**Details of Papers/patents:** None

**Brief description of the working environment:** The working environment was good and all people in the company were approachable. The company expected us to participate enthusiastically in the training and projects. We learned about the basics of Spring boot.

**Academic courses relevant to the project:** Object oriented programming, Database systems

**Learning Outcome:** I learned about JDBC, Maven, Spring Boot.

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## PS-I station: Apisero - An NTT Data Company , Pune

### Student

**Name:** NISHIT PODDAR .(2021A7PS2626H)

### Student Write-up:

**PS-I Project Title:** Customer Registration for Bank

**Short Summary of work done:** In this immersive Java programming internship, I delved into the versatile world of Java, from writing "Hello, World!" to mastering object-oriented concepts and Spring Framework. I explored advanced topics like exception handling, file handling, and Java IO, building a strong foundation. Through mini projects, I applied Java skills to real-world scenarios, creating dynamic web applications and efficient data management systems. As I conclude this journey, I am filled with accomplishment and enthusiasm. Looking ahead, I aim to explore advanced Java topics, contribute to open-source projects, and pursue Java certifications. Exciting opportunities await as I strive to make a meaningful impact in software development.

**Objectives of the project:** Customer Registration for Bank

**Tool used:** Eclipse,Postman

**Details of Papers/patents:** No

**Brief description of the working environment:** The work environment during the Java programming internship was highly positive and supportive. The team members and colleagues were friendly and encouraging, fostering a collaborative atmosphere. It was a nurturing environment where everyone was eager to help and share their expertise. This supportive ambiance played a crucial role in enhancing my learning experience and allowed me to explore Java programming with confidence and enthusiasm.

**Academic courses relevant to the project:** Object Oriented Programming,Database System

**Learning Outcome:** Learned how to use spring boot,java

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**PS-I station: Apisero - An NTT Data Company , Pune**

**Student**

**Name:** YATHARTH NANDA(2021AAPS1291G)

**Student Write-up:**

**PS-I Project Title:** Development of backend of a bank app using springboot

**Short Summary of work done:** We underwent a month long training on basics of APIS ,best practices for writing code for backend and the different layers of service . We learnt how to connect the database with the code to provide functionality to the backend , and so we also learnt mysql queries . After this we moved to maven and springboot and simulated building a CRUD operation backend on it . For the mini project we programmed the backend of a room booking service using springboot and also exceotion handling . We were then divided into teams and worked on creating a Bank app which could perform various CRUD operation on its customer and validate their data for the same .

**Objectives of the project:** To develop the backend of a bank app , apply CRUD operation functionality and validate the data being entered

**Tool used:** Eclipse ,Postman , Java ,Mysql

**Details of Papers/patents:** NA

**Brief description of the working environment:** The working environment was pleasant and welcoming . We were expected to attend training with our camera and video on from 10-2 .We were then given tasks to complete from 3-7 to solidify the learnings incorporated in the day

**Academic courses relevant to the project:** OOPS

DBMS

Programming in C

**Learning Outcome:** JAVA

OOPS

SPRINGBOOT

DATA BASE AND MYSQL

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**PS-I station: Apisero - An NTT Data Company , Pune**

**Student**

**Name:** UNMESH SANDIPANI BHOLE(2021B1A71949G)

**Student Write-up:**

**PS-I Project Title:** Teacher Student Connect Application

**Short Summary of work done:** The internship was really really helpful to understand how real-world APIs work. I got to learn many new things that form the core of Application Interfaces. It all started with Java training. I was not much exposed to Java. With this internship, I got to learn the academic as well as practical aspects of Java language. Java training has really helped me to improve my knowledge of object-oriented programming.

Also, I never came across database management systems. MySQL training provided me with invaluable knowledge about databases and their management. Then finally, SpringBoot, which is a completely new concept to me, was also covered as a part of the internship. SpringBoot was the final key to achieving a complete understanding of APIs, and it was taught well in this internship as well. I also got to know more about the corporate environment and how a company works. We created a Student Teacher Connect application as part of our mini-project. The mini-project gave me hands-on experience with APIs, and efficient problem-solving ability was gained as a part of this project. We were also given a business project which was specific to our PS station. It was known as the APIstone project. We had to create a robust Apisero Union Bank application using all the things we have learned. Overall, the internship prepared me for a successful career ahead.

**Objectives of the project:** The objective of the projective is to create and API that can allow the teachers and students to connect. The teachers can add resources on the application for the students to access and learn.

**Tool used:** Eclipse IDE, MySQL Workbench and Postman.

**Details of Papers/patents: -**

**Brief description of the working environment:** The working environment is awesome in Apisero. The instructors and the colleagues were really friendly and were easy to approach. They were always there for us whenever he had difficulties with software installation or the output of the programs. During the course of the internship, we had Java Training for almost a month. The training lasted for 4 hours every day from 10 to 2 pm. And for the remaining time, we were given assignments to complete by the end of the day based on every day's learnings. Since the internship was online, it was mandatory to stay on the call till 7 pm and complete the assignments. For the second month, we were given a Mini Project and an APIstone Project. The mini-project was about building a Teacher Student Connect application. The APIstone project was a special project for the company that dealt with business requirements. The project was about creating an Apisero Union Bank Application. The PS station also scheduled Tech Talks twice a month. It provided more knowledge about the latest tech in order to stay up to date in the company. The PS station also hosted a Campus 2 Corporate session that focussed on the major changes required for a college undergraduate in order to fit into the corporate environment and work efficiently. It was also required to give a presentation about the key learnings from the session.

**Academic courses relevant to the project:** Object Oriented Programming (OOP), Database Management Systems (DBMS), Web Application Development.

**Learning Outcome:** Java, MySQL, Spring Framework, SpringBoot, Postman API.

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## PS-I station: Apisero - An NTT Data Company , Pune

### Student

Name: NISHCHAY DEEP .(2021B4A73144H)

#### Student Write-up:

**PS-I Project Title:** Bill Payment API and Apisero Union Bank API

**Short Summary of work done:** During my PS-I at Apisero, I developed a Bill Payment API and an Apisero Union Bank API. I used Eclipse for coding, Postman for API testing, and MySQL Workbench for database management. The projects involved implementing various functionalities, such as user authentication, bill retrieval, payment processing, and account management. I followed Agile methodologies and collaborated with my team. Overall, the experience provided practical exposure to OOPs, MySQL, and Spring Boot in a real-world project environment.

**Objectives of the project:** 1. Develop a Bill Payment API: The aim was to create an API that facilitates bill payment transactions, providing a seamless experience for users. 2. Create Apisero Union Bank API: The project involved developing an API specifically for the Apisero Union Bank, catering to their unique requirements and functionalities.

**Tool used:** Eclipse , Postman and MySQL workbench

**Details of Papers/patents:** While working on the projects, I did not come across any papers or patents directly related to the work.

**Brief description of the working environment:** Apisero was a transformative experience that fueled my growth. The dynamic work culture fostered continuous learning. I worked on diverse projects, expanding my skills and knowledge. The supportive leadership enhanced my well-being. Apisero propelled my career and instilled in me a passion for ongoing development.

**Academic courses relevant to the project:** OOPs , Database System

**Learning Outcome:** During the internship, I had the chance to work extensively on these projects and gained valuable experience. I utilized my knowledge of OOPs, MySQL, and Spring Boot to design and implement the APIs. This practical application allowed me to deepen my understanding of these technologies.

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**PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi**

**Student**

**Name: UDDAYA GUPTA .(2021A2PS2621P)**

**Student Write-up:**

**PS-I Project Title:** Backend and Blockchain Development

**Short Summary of work done:** We had a selection of EMV files in our possession. Our goal was to incorporate the API of our choice into our programme so that we could take use of the processing power it offered for EMV data. The upkeep of VideoWiki's code was our responsibility. The website was supposed to have problems, which we were to locate and address in order to improve its functionality and other aspects.

**Objectives of the project:** API handling and Upkeeping VideoWiki's code

**Tool used:** Git Labs, Node.JS, VS Code

**Details of Papers/patents:** N.A

**Brief description of the working environment:** My PS1 was online, so all of the work done by me was remote and done online. I did not get to interact with a bunch of people, but the people with whom I did were very helpful and tried their best to have a good learning environment for a beginner

**Academic courses relevant to the project:** Computer Programming (My branch is civil, so most of my courses were irrelevant)

**Learning Outcome:** I was taught how to interact with people in a professional setting in an appropriate manner. I am now proficient at using Git and GitHub.

## PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi

### Student

Name: ROHAN KAPUR .(2021A3PS2228P)

#### Student Write-up:

**PS-I Project Title:** Web Scraping using Selenium

**Short Summary of work done:** As part of my project, I designed a bot which scraped various fields (like Course Name, Description, Duration, Rating etc.) from different websites which provided courses on IT Development. The bot scraped the contents and stored them in a structured format in a csv file.

**Objectives of the project:** The objective of the project was to automate the task of scraping course contents from various websites

**Tool used:** Python, VS Code, Selenium, Pandas, Numpy

**Details of Papers/patents:** None

**Brief description of the working environment:** The PS was conducted in an online fashion. I was expected to complete various tasks as and when they were allotted to me. The faculty in charge and the mentors allotted to me were extremely helpful and guided wherever I needed their assistance.

**Academic courses relevant to the project:** Courses on Python and Web Scraping were relevant to the project

**Learning Outcome:** I became acquainted with the fundamentals of Python programming language and the various libraries/frameworks that come along with it.

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## PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi

### Student

Name: MAYANK BHADAURIA .(2021A3PS2843H)

#### Student Write-up:

**PS-I Project Title:** Vediowiki Backend

**Short Summary of work done:** During my internship at Arbunize, I had the opportunity to work on the Vediowiki project, which integrated artificial intelligence and blockchain technology. As part of the backend development team, I focused on API testing and validation, ensuring seamless communication between Vediowiki's components. Collaborating closely with the development team, I identified and resolved data retrieval, processing, and storage issues through the API endpoints.

**Objectives of the project:** To test different APIs to integrate with vediowiki backend.

**Tool used:** Postman

**Details of Papers/patents:** NA

**Brief description of the working environment:** During my practice school station, I thrived in a supportive and collaborative environment that allowed for significant personal and professional growth. Under the guidance of a helpful mentor, I honed my technical skills and gained a deep understanding of real-world projects. Working with a cooperative team, I learned the importance of effective communication and teamwork, enabling me to contribute to the team's success. This experience enhanced my problem-solving abilities, adaptability, and confidence in tackling complex challenges. Overall, my practice school station provided invaluable learnings that have prepared me to excel in my future endeavors as a skilled and competent professional.

**Academic courses relevant to the project:** NA

**Learning Outcome:** Creating and Testing APIs for backend.

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## PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi

### Student

Name: SARTHAK AGARWAL .(2021A4PS3087H)

#### Student Write-up:

**PS-I Project Title:** Backend development

**Short Summary of work done:** I was assigned the task of testing APIs on Postman further developing and creating them using celery.

**Objectives of the project:** API Testing and Development

**Tool used:** Postman, Docker, Celery, Redis

**Details of Papers/patents:** None

**Brief description of the working environment:** The working atmosphere of the company was pleasant, and the mentor gave me enough time to finish the tasks that were given to me. I learned many things about backend development. Overall, I had a good experience.

**Academic courses relevant to the project:** None

**Learning Outcome:** I learned about Postman, Docker, and backend development in general.

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## PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi

### Student

Name: SOURABH GUPTA .(2021A8PS0843P)

## **Student Write-up:**

**PS-I Project Title:** Videowiki backend

**Short Summary of work done:** During my internship, I gained valuable experience in API testing using Postman and working with Django Celery. Postman, a popular API testing tool, provided me with a comprehensive platform to design, execute, and analyze API tests efficiently. Through this experience, I learned how to create test collections, write test scripts, and automate the testing process, ensuring the smooth functionality and integration of various APIs. Additionally, my exposure to Django Celery allowed me to delve into the world of asynchronous task processing. Celery, being a powerful distributed task queue, enabled me to offload time-consuming operations to background workers, resulting in improved application performance and responsiveness. I grasped the concepts of task queues, workers, and brokers, understanding how to configure and scale them for different projects. Throughout the internship, I honed my skills in troubleshooting and debugging, as I encountered various challenges while testing APIs and implementing Celery tasks. I developed a systematic approach to identify and resolve issues, contributing to the overall reliability and stability of the applications. Furthermore, I collaborated with experienced developers, gaining exposure to industry best practices and agile development methodologies. Working in a team environment enhanced my communication and teamwork skills, allowing me to contribute effectively to projects and understand the importance of collaboration in software development. Overall, my internship experience with API testing using Postman and Django Celery provided me with a strong foundation in software testing, API integration, and asynchronous task processing. These skills have not only prepared me for real-world development challenges but have also fueled my passion for continuous learning and growth in the field of software engineering. I look forward to applying and expanding upon these skills in my future endeavors.

**Objectives of the project:** API testing using Postman and django celery

**Tool used:** Postman, docker, django, celery

**Details of Papers/patents:** No

**Brief description of the working environment:** It was a good learning environment and I learnt how to work in a team or as a team..My project manager was very cooperative and my expectations from company were fulfilled.. I learnt API testing using postman, django, celery and docker.

**Academic courses relevant to the project:** Since I am from Electronics department and my project was in IT domain..so no academic course was relevant for me.

**Learning Outcome:** We learnt about POSTMAN , django, celery and docker and also learnt how to test API using these tools.

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**PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi**

**Student**

**Name: PRIYANSH SHRIVASTAVA .(2021A8PS1466H)**

**Student Write-up:**

**PS-I Project Title:** Backend development

**Short Summary of work done:** In this project, the work involved cloning the repository from GitHub to create a local copy of the codebase. The team then proceeded to make necessary modifications to the code to implement desired features and improvements. Thorough testing of all the APIs was conducted to ensure the functionality and stability of the project. Once the modifications were completed and the project passed the testing phase, the final version was pushed back into the GitHub repository. This action made the changes available for review, collaboration, and version control. By following these steps of cloning, modifying, testing, and pushing the code, the team successfully completed the project, achieving its objectives and ensuring a well-documented and version-controlled project repository on GitHub.

**Objectives of the project:** Backend development of VideoWiki meet platform

**Tool used:** Python, Django Rest Framework, Postman and GitHub

**Details of Papers/patents:** None

**Brief description of the working environment:** The working environment was quite competitive as everyone was curious to learn about the corporate world. We were supposed to help the sister company of Arbunize digital media, named "Getboarded" wherein all of us worked in different fields including frontend, backend, UI/UX, web scrapping etc. to better the site using our coding knowledge. The company was a well established resume/profile boosting giant which had collaborated with giants such as "Gala Gaming". Such achievements of the company had a positive impact on all the interns as we were encouraged to take the company to greater heights.

**Academic courses relevant to the project:** OOPS in Python

**Learning Outcome:** Python, Django Rest Framework, Postman and GitHub were the educational learning, however I also learned teamwork and time management as a core part of this entire internship at Arbunize Digital Media Pvt. Ltd.

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**PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi**

**Student**

**Name:** KRTIN KHEMKA .(2021B1A32732P)

**Student Write-up:**

**PS-I Project Title:** WEB3 APPLICATION FOR VIDEO CONFERENCING AND CONTENT CREATION

**Short Summary of work done:** During practice school, I was primarily responsible for their code management. I created several .env files to store environment-specific variables and to store sensitive information like API keys and database passwords. I also found bugs in the mobile view application of Cast.video-wiki. I also worked on the front-end code by removing unwanted logic and making the code more efficient. To do this, I had to learn Javascript and solidity; while learning the two, I made a Web3 application which aims to reduce cheating in an online examination by serving a different set of question papers for each student that logs in to the platform.

**Objectives of the project:** Manage and improve code for the product "Video Wiki"

**Tool used:** s/w: Visual Studio code, GITLAB, GITHUB, Solidity, Ganache

**Details of Papers/patents:** none

**Brief description of the working environment:** PS at Arbunize Digital Media in Delhi has been a fantastic experience. Through first-hand experience, I have made a lot of new friends, learned new skills, and become more knowledgeable about business practises in offices. I was able to assess my skills and limitations, allowing me to concentrate on bettering myself.

My experience has been quite enlightening. My knowledge of programming in Javascript, the fundamentals of solidity, and GIT will all be useful in my future aspirations. Using the topics I've learned so far to create a Web 3 application will provide me practical experience and aid in the development of my critical thinking abilities.

**Academic courses relevant to the project:** Computer programming

**Learning Outcome:** I got the opportunity to learn Javascript , Solidity , .env files and their real world application.

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**PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi**

**Student**

**Name:** SARTHAK SINGHAL(2021B2A82348G)

**Student Write-up:**

**PS-I Project Title:** Team Dynamics Application

**Short Summary of work done:** I was allotted to flutter development team of the company which worked on the Team Dynamics Application, I was told to make a page which consisted of all the events that were held by the company and link that frontend page to a backend using firebase.

**Objectives of the project:** Flutter App Development

**Tool used:** MS Visual Studio Code, Android Studio, Firebase console

**Details of Papers/patents:** none

**Brief description of the working environment:** Great working environment and helpful mentor allotted

**Academic courses relevant to the project:** DSA, Object Oriented Programming

**Learning Outcome:** Dart, Flutter, Firebase concepts

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**PS-I station:** Arbunize Digital Media Pvt. Ltd. , Delhi

**Student**

**Name:** ANKITA BEHERA .(2021B2A83133H)

**Student Write-up:**

**PS-I Project Title:** VideoWiki Backend

**Short Summary of work done:** In Arbuize Digital Media, I worked I the backend team and worked on several tasks. VideoWiki uses Django as its backend framework and I implemented and improved multiple REST APIs using the framework. The videowiki project used git as its version control software. I learned git to be able to contribute to the repository. HuggingFace transformers/tools were needed as generative AI for the tools in videowiki such as image generation, image captioning, video generation, etc. I was assigned the task of improving a feature/tool of VideoWiki called "Clip Chunks". The tool takes a video and automatically clips it into smaller sized videos, smartly, with subtitles. I rewrote the feature from scratch by using OpenAI's Whisper for ASR, stable-ts for forced alignment and my own logic for further optimizing the clips.

**Objectives of the project:** enhancing the exisiting tools

**Tool used:** Git, python

**Details of Papers/patents:** none

**Brief description of the working environment:** These past 8 weeks have been fantastic. I gained extensive knowledge during the project and appreciated the flexibility of the working hours, which made the experience even more enjoyable. The company mentor provided invaluable support, offering guidance whenever I encountered any challenges. All in all, it was a truly positive and enriching experience.

**Academic courses relevant to the project:** none

**Learning Outcome:** Python, ML, Django,

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**PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi**

## **Student**

**Name:** NAMISH CHHABRA .(2021B4A30865P)

**Student Write-up:**

**PS-I Project Title:** Backend Development

**Short Summary of work done:** How do companies work , the hierarchy of a high functioning company

**Objectives of the project:** Backend Development

**Tool used:** Postman, Vs code, github, git bash

**Details of Papers/patents:** nope

**Brief description of the working environment:** How do companies work , the hierarchy of a high

**Academic courses relevant to the project:** Computer Programming

**Learning Outcome:** Communication skills, coding skills, team management

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**PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi**

## Student

Name: SETHIA HARDIK SUBHASH .(2021B4A82321P)

### Student Write-up:

**PS-I Project Title:** UI/UX web design

**Short Summary of work done:** I Have worked under the creative director of the company in the design area of the companies products, i have made ui designs of some webpages of the company's official website.

**Objectives of the project:** the objective of the project was to create a visually appealing and user friendly interface of the website for the users.

**Tool used:** Figma, Adobe xd

**Details of Papers/patents:** no papers

**Brief description of the working environment:** My PS at Arbunize Digital Media Private Limited, Delhi has been a wonderful experience. I gained new skills, and learnt about professional practices in offices in Hybrid mode through this internship experience. It has also helped me build my strengths and improve my weaknesses so I can now focus on improving myself. Developing an Web design using the concepts I have learnt so far shall give a me a hands-on experience and help me develop design and technical skills

**Academic courses relevant to the project:** no such courses.

**Learning Outcome:** PS1 helped me in learning design and also helped me in growing my skills in communication, and also in technical aspects of design systems. My experience has been a highly educative. I have learnt tools like Figma and Adobe Xd, basics of User interface and User experience, and these skills will definitely prove to be helpful in my career.

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## PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi

### Student

Name: HARSH SHARMA .(2021B5A11519P)

#### Student Write-up:

**PS-I Project Title:** Web Scraping

**Short Summary of work done:** Our task is to create profile cards for users that highlight their skills and offer suggestions for improving and enhancing those skills. To ensure future prospects and career growth, individuals need to upgrade their skills by enrolling in additional courses. Our role is to gather the best course options by scraping information from various websites. By carefully selecting these courses, we aim to assist individuals in improving their skills and enhancing their profile cards, thus preparing them for their professional journey.

**Objectives of the project:** Scraping courses offered in different learning platforms at one place for getboarded which is a human resource platform .

**Tool used:** Python,visual studio code,libraries.

**Details of Papers/patents:** none

**Brief description of the working environment:** Working environment was good and i was allotted a good team with good mentors that helped me during the process. Company expectations were more based on the learning part not just giving work to complete .I learned a new language python with working on the project of webscraping using selenium.

**Academic courses relevant to the project:** computer programming

**Learning Outcome:** python,webscraping,selenium

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## PS-I station: Arbunize Digital Media Pvt. Ltd. , Delhi

### Student

Name: AADITYA PRASAD .(2021B5A41209P)

#### Student Write-up:

**PS-I Project Title:** Building a Recommendation System for Courses

**Short Summary of work done:** I was asked to train a model on a collected dataset in order to build a recommendation system. I was also tasked with creating a dataset by scraping the AWS Skillbuilder website and obtaining course data.

**Objectives of the project:** To train a model on a dataset collected from educational websites and design a recommendation system that takes a course and provides the 10 closest courses.

**Tool used:** Visual Studio Code, Atom, Python, Selenium, Pandas, PIL, Scikit-Learn, NLTK, Gensim

**Details of Papers/patents:** N.A.

**Brief description of the working environment:** My experience at Arbunize was very good. All the people that I interacted were very professional and willing to assist me when I ran into a problem. I became more skilled at providing quick code-based solutions for problems. This helped improve my workflow. This Practice School has also vastly increased my experience with tools like Selenium, Pandas, PIL, Scikit-Learn, NLTK and Gensim.

**Academic courses relevant to the project:** CS F111 - Computer Programming

**Learning Outcome:** Increased experience in Machine Learning, Natural Language Processing, Data Analysis, Web Scraping and Image Processing.

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## PS-I station: Asanify Technologies Pvt Ltd - Nontech , Kolkata

### Student

Name: KUNDAN DAS .(2021A5PS0392P)

#### Student Write-up:

**PS-I Project Title:** To connect and outreach CFOs ,HR of top companies of Canada that have international contractors through digital marketing anies of Canada that have international contractors throu

**Short Summary of work done:** Connecting and outreaching legal firms of Canada to convince them to adapt the Asanify platform as their payroll management software via digital marketing

**Objectives of the project:** To market the company 's payroll software

**Tool used:** Canva ,Tailwand ,Power BI

**Details of Papers/patents:** Nothing as such

**Brief description of the working environment:** It was online

**Academic courses relevant to the project:** Digital marketing

**Learning Outcome:** Web analytics,Social media and email marketing

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## PS-I station: Asanify Technologies Pvt Ltd - Nontech , Kolkata

### Student

Name: SIDDHARTH SAMBHARIA .(2021A8PS2547P)

**Student Write-up:**

**PS-I Project Title:** Online community building

**Short Summary of work done:** The work was too build an online community of HR related people on product hunt

**Objectives of the project:** Build a community for asanify on Product hunt for their launch

**Tool used:** Product hunt , chatGPT

**Details of Papers/patents:** No

**Brief description of the working environment:** The working environment is fine , if you are in tech it's good. Marketing lags behind

**Academic courses relevant to the project:** Mass Communication

**Learning Outcome:** Community building is a long process which requires great effort but gives fruit at the end

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**PS-I station: Asanify Technologies Pvt Ltd - Nontech , Kolkata**

**Student**

**Name:** AAYUSH KUMAR SINGH(2021A8PS2751G)

**Student Write-up:**

**PS-I Project Title:** SEO, BACKLINK RESEARCH AND OUTREACH

**Short Summary of work done:** Our team started out with finding the websites and webpages of our competitor companies that had maximum traffic. Then we found out the backlinks that led to these pages. For performing these tasks we used various SEO tools such as Ubersuggest, Google Search Console, etc. We collected all the backlinks in one place and ranked them according to their respective domain and page authority. After that we refined our list by reviewing the context in which the backlinks that been provided

to our competitors by these websites and filtered out the webpages and websites that contained relevant content and could direct relevant traffic to our website. Then we gathered the names of the organisations running or maintaining these websites and also the contact information of the concerned staff members. We then contacted them to talk about providing us with backlinks.

**Objectives of the project:** To find websites that provide backlinks to competitor companies and contact them to get backlinks for our own website to increase traffic

**Tool used:** Ubersuggest, Google Search Console, Excel

**Details of Papers/patents:** N.A

**Brief description of the working environment:** I did not require to visit the office of the company so I cannot say much about the working environment but the faculty of the company that I interacted with seemed quite friendly and supportive in case I faced any problems.

I was expecting something that required me to learn several new skills and also something that was more relevant to my branch of study. The project I was assigned could not have been further from my initial expectations but I did learn a thing or two.

I learned different methods on how to increase traffic to a certain website. I learned the basics of advertising your product and working as part of a team to meet your goals in time.

**Academic courses relevant to the project:** N.A

**Learning Outcome:** I learned to use SEO tools for Backlink Research and effective strategies for Backlink outreach.

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**PS-I station: Asanify Technologies Pvt Ltd - Nontech , Kolkata**

**Student**

**Name: JYOTIRADITYA SATPATHY(2021A8PS2760G)**

**Student Write-up:**

**PS-I Project Title:** Growth Marketing Research

**Short Summary of work done:** Identified and researched a new customer base for the company.

**Objectives of the project:** Identify and research a new customer base for the company.

**Tool used:** LinkedIn, BI Power

**Details of Papers/patents:** NA

**Brief description of the working environment:** Very welcoming and supportive environment.

**Academic courses relevant to the project:** Principles of Management

**Learning Outcome:** Market research, digital marketing, client outreach

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**PS-I station:** Asanify Technologies Pvt Ltd - Nontech , Kolkata

**Student**

**Name:** DEBRUP PAUL(2021B4A42946G)

**Student Write-up:**

**PS-I Project Title:** Web Scraping

**Short Summary of work done:** Web scraping

**Objectives of the project:** Scrap data from websites

**Tool used:** Scrapy

**Details of Papers/patents:** N.A

**Brief description of the working environment:** The environment was good and energetic

**Academic courses relevant to the project:** Nil

**Learning Outcome:** Scrapy(crawling)

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**PS-I station: Asanify Technologies Pvt Ltd - Nontech , Kolkata**

**Student**

**Name:** SANJANNA AGARWAL(2021B4A82780G)

**Student Write-up:**

**PS-I Project Title:** remote job posting sites

**Short Summary of work done:** i was tasked to find remote job posting sites and compile of list of companies that are remote stratups

**Objectives of the project:** Finding companies which were remote and stratups that could potentially be thier clients

**Tool used:** web surfing

**Details of Papers/patents:** none

**Brief description of the working environment:** the internship was online and we used to have meetings with the company official once a week.

**Academic courses relevant to the project:** management

**Learning Outcome:** research on remote kob posting sites

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## PS-I station: Asanify Technologies Pvt Ltd - Tech , Kolkata

### Student

Name: TAUQEER AKTHAR .(2021A7PS1628P)

#### Student Write-up:

**PS-I Project Title:** Resume parsing using openai and NLP

**Short Summary of work done:** I wrote the backend code that extracts all the necessary information from resumes better know as resume parsing

**Objectives of the project:** Resume parsing

**Tool used:** Python, VScode

**Details of Papers/patents:** NAThe

**Brief description of the working environment:** The enviroment was really supportive.

**Academic courses relevant to the project:** Natural Language Processing

**Learning Outcome:** Machine Learning, Natural language Processing, Natural Language tool kit, Python, API

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## PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune

### Student

Name: ANISH KARAR .(2021A3PS0970H)



**Student Write-up:**

**PS-I Project Title:** SMART PARKING SYSTEM

**Short Summary of work done:** The main focus was to create a web app that can help malls manage and smoothen out the parking experience. It uses license plate recognition technology to read the license plate, use it as a unique ID and make a bill without any kind of toll booths

**Objectives of the project:** The main focus was to create a web app that can help malls manage and smoothen out the parking experience. It uses license plate recognition technology to read the license plate, use it as a unique ID and make a bill without any kind of toll booths

**Tool used:** REACT, EXPRESS, NODE, BOOTSTRAP

**Details of Papers/patents:** We Submitted a final report

**Brief description of the working environment:** Working environment was not at par. There was a severe lack of communication with the interns

**Academic courses relevant to the project:** none

**Learning Outcome:** Learnt a bit about react express and how to host and call API

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**PS-I station:** Ascent Cyber Solutions Pvt. Ltd. , Pune

**Student**

**Name:** UTKARSH SINHA(2021A3PS2938H)

**Student Write-up:**

**PS-I Project Title:** Efficient grocery website with recipe centric shopping

**Short Summary of work done:** The internship started with an introductory meet . We decided upon the project work and discussed amongst ourselves how things will work out .We had regular meet with the mentor and the Ps faculty regarding various updates and the workflow.Our faculty conducted 2 quiz on c++ and sql.There were 2 group discussion conducted during this period . We presented a midterm report followed by its seminar and at the end an end report followed by its seminar .

**Objectives of the project:** Learning technology such as HTML,CSS,JAVASCRIPT for frontend and tools like figma and technology related to backend such as mongodb etc.

**Tool used:** HTML,CSS,JAVASCRIPT,FIGMS,ReactJS,NodeJS.

**Details of Papers/patents:** A complete report was submitted on the report section in the psms website.

**Brief description of the working environment:** There was a very healthy environment. The faculty and the mentor were very helpful and supportive ,so were the teammates.Wherever needed the provided us with the required material and guidance. Regular meets were organized to keep an update of the work .

**Academic courses relevant to the project:** C++,DSA,JAVASCRIPT,FRONTEND AND BACKEND DEVELOPMENT

**Learning Outcome:** we built a e-commerce website with a special feature of recipe centric.

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**PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune**

**Student**

**Name: DEVARSH KUMBHARE(2021A3PS2975G)**

**Student Write-up:**

**PS-I Project Title: Smart Parking System Using License Plate Recognition**

**Short Summary of work done:** As the team lead for our Smart Parking System, I gained valuable experience and knowledge in various aspects of the project, including backend development, database management, and License Plate Recognition models. Through streamlining parking processes, reducing search times, and automating billing systems, our solution delivers convenience, cost savings, and operational effectiveness

**Objectives of the project:** to automate and reduce the work in commercial parking spaces and handle traffic efficiently

**Tool used:** SpringBoot, ExpressJS, NodeJS, PostgreSQL, CV

**Details of Papers/patents:** Our application leveraged apis to automatically detect license plates from images, at entry and exits of parking spaces, and during entry gives the most optimum parking spot for each car entering, this makes the experience hassle free for the driver to bo

**Brief description of the working environment:** Our mentor helped us during the planning phase in setting realistic goals for our project and the technologies we need to learn and use to implement the same

**Academic courses relevant to the project:** Computer Programming, Discrete Mathematics, Microprocessors and Interfacing

**Learning Outcome:** FullStack Development, API integrations, Team Leadership

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**PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune**

**Student**

**Name:** VEDANT MAKARAND SHETE(2021A7PS0002G)

**Student Write-up:**

**PS-I Project Title:** Efficient recipe-centric grocery website development

**Short Summary of work done:** We created a website from scratch, which allows the user to shop any recipe-centric products very easily.

**Objectives of the project:** Learning web development

**Tool used:** MySQL, FIGMA, HTML, CSS

**Details of Papers/patents:** -

**Brief description of the working environment:** This was a very enriching experience. We were able to build a fully functional website in the course of our internship.

**Academic courses relevant to the project:** DBMS

**Learning Outcome:** We learned an implementable level of frontend, backend and database management.

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**PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune**

**Student**

**Name:** SUYASH PATIL .(2021A7PS2078H)

**Student Write-up:**

**PS-I Project Title:** Efficient Grocery Shopping(ShopperChef)

**Short Summary of work done:** Mainly worked on the project given to us , Created a recipe-based grocery shopping website that aims to simplify the meal planning and shopping experience for users. The platform provides a wide range of recipes along with a convenient shopping feature that allows users to add recipe ingredients directly to their virtual shopping cart.

**Objectives of the project:** Creating a recipe-based grocery shopping website that aims to simplify the meal planning and shopping experience for users. The platform provides a wide range of recipes along with a convenient shopping feature that allows users to add recipe ingredients directly to their virtual shopping cart.

**Tool used:** Html, CSS, JavaScript, Oracle, MySQL, Figma

**Details of Papers/patents:** No any

**Brief description of the working environment:** There was not that much interaction with the company , they just assigned us the project and had a meet after 9-10 days just to solve our queries.

**Academic courses relevant to the project:** Computer programming , Database Systems

**Learning Outcome:** Web development

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**PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune**

**Student**

**Name:** MEET CHIRAG PATEL .(2021A7PS2692H)

**Student Write-up:**

**PS-I Project Title:** License Plate Recognition System

**Short Summary of work done:** I worked closely in a team of 7-8 people to develop an efficient parking system using openCV library. Further we used Mern Stack to develop the interface for the operator of the parking lot. I personally worked to develop the frontend interactive interface in react JS which was used to display the billing and entry of the car along with parking spot calculated using algorithm designed by the team.

**Objectives of the project:** To develop an efficient parking system with algorithm for smart parking

**Tool used:** React ,Python ,OpenCV ,SQL

**Details of Papers/patents:** NILL

**Brief description of the working environment:** I learned to work in team, along with that, I also improved my communication skills through the presentations and GDs.

**Academic courses relevant to the project:** Database management System, Object Oriented Programming

**Learning Outcome:** I learnt to use open CV library for Number Plate Recognition and also learned more about web development.

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**PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune**

**Student**

**Name:** YUVRAJ SINGH BAIS` (2021A7PS2910G)

**Student Write-up:**

**PS-I Project Title:** Grocery Shopping App

**Short Summary of work done:** Frontend and backend development with UI/UX design

**Objectives of the project:** Grocery shopping based on Recipes

**Tool used:** Figma

**Details of Papers/patents:** NA

**Brief description of the working environment:** NA

**Academic courses relevant to the project:** NA

**Learning Outcome:** UI/ux

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## PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune

### Student

Name: TANMAY SRIVASTAVA .(2021A7PS3196H)

#### Student Write-up:

**PS-I Project Title:** ShopperChef-Smart Recipe Shopping

**Short Summary of work done:** Majorly I worked upon the backend functions and JSON endpoints to serve as a dynamic setup for HTML

**Objectives of the project:** To design a good user experience to shop for a recipe

**Tool used:** ReactJS,HTMLCSS,JS,NodeJS,MySQL

**Details of Papers/patents:** Site is not deployed but project is done

**Brief description of the working environment:** Our mentor and faculty helped a lot while learning any of the concepts or on how to participate in a group discussion as well they shared resources for working on our project and expected a very humble and understanding behaviour which indeed guided us to solve a good real world problem.

**Academic courses relevant to the project:** Object Oriented Programming,Databases Systems

**Learning Outcome:** Learned frontend technologies like HTML,CSS,JS and NodeJS for backend

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## PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune

### Student

Name: VIGNAV Sripatham RAMKUMAR(2021AAPS0533H)

**Student Write-up:**

**PS-I Project Title:** Smart Parking Using License Plate Recognition

**Short Summary of work done:** This project presents a Smart Car Parking System with License Plate Recognition (LPR). The system utilizes an API to extract license plate information and allocate parking spaces, and a program for optimizing parking management. The backend, developed in Java and interfacing with a SQL database, hosts APIs for license plate data processing and payment calculation. Real-time displays provide navigation guidance within the parking facility. The project showcases the integration of the API, backend development, and database management to create an intelligent and efficient parking solution, improving space utilization and automation while enhancing security.

**Objectives of the project:** This project presents a Smart Car Parking System with License Plate Recognition (LPR). The system utilizes an API to extract license plate information and allocate parking spaces, and a program for optimizing parking management.

**Tool used:** Vim , VS code , Java, SQL , API, Node JS, express , Python , React

**Details of Papers/patents:** None

**Brief description of the working environment:** Few meets with the company mentor. Not much interaction with the company.

**Academic courses relevant to the project:** DSA , OOP

**Learning Outcome:** Java, SQL , API, Node JS, express , Python , React

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**PS-I station:** Ascent Cyber Solutions Pvt. Ltd. , Pune

**Student**



Name: SAI CHARAN VIHARI KATLAMUDI .(2021AAPS0564H)

**Student Write-up:**

**PS-I Project Title:** Web development

**Short Summary of work done:** We learnt how websites are made from scratch using technologies like mern stack which involved mongoDB,ExpressJS,ReactJS,NodeJS and even learnt how to implement websites using HTML,CSS

**Objectives of the project:** To learn and implement a fully functional website from scratch.

**Tool used:** HTML,CSS,Javascript,MySQL,DB management

**Details of Papers/patents:** None

**Brief description of the working environment:** Pretty chill.Could learn a lot of stuff in the free time and implement self projects in the mean while.

**Academic courses relevant to the project:** FDSA,Computer Programming

**Learning Outcome:** Web development basics,team work,leadership qualities

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**PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune**

**Student**

Name: ATHARVA DAVE .(2021AAPS2044H)

**Student Write-up:**

**PS-I Project Title:** Efficient Recipe Shopping Website

**Short Summary of work done:** The project was not allotted, we were asked to come up with a proj statement on our own and make a group and do it. Overall not much work just midsem and compre report have to be made in a detailed manner.

**Objectives of the project:** To make an efficient recipe centric website for shopping.

**Tool used:** Figma-UI/UX design, Frontend- ReactJS, javascipt

**Details of Papers/patents:** Nil

**Brief description of the working environment:** Just gel nicely with your collegues, not much work as no project was allotted from the comapny as such, we ourselves made a problem statement and started working on it. DONT expect much help from the Company representative as they hold v few meet and main part was coz its online ps.

**Academic courses relevant to the project:** OOPs, DBMS

**Learning Outcome:** Learnt a bit of Web Dev-Frontend and database models

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**PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune**

**Student**

**Name:** YASH RAJENDRA BHOLE(2021AAPS2936G)

**Student Write-up:**

**PS-I Project Title:** Smart Parking System based on LPR

**Short Summary of work done:** On our initial day, my colleagues and I began by presenting various problem statements encountered in our daily lives. After careful consideration, we collectively selected two projects for further exploration. Among these choices, our team enthusiastically decided to tackle the development of a Smart Parking System. This system aimed to streamline the parking experience by automating billing through license plate recognition technology and providing users with optimal parking spot suggestions upon entry. To achieve this, we crafted a sophisticated algorithm based on graph theory and BFS technique, which became the cornerstone of our project.

Through this exciting endeavor, we had the opportunity to expand our skills and knowledge while gaining hands-on experience with SQL Databases, UI/UX, frontend, backend development, OpenCV, APIs, and data structures and algorithms. Throughout, we delved deep into technical aspects, integrating SQL Databases for seamless data management. OpenCV proved pivotal in license plate recognition. APIs were refined for effective system communication. The project challenged us, prompting code analysis and optimization, leading to a solid grasp of fundamental concepts. We achieved our goal, fostering teamwork, communication, and problem-solving. This venture enriched my professional growth, kindling a passion for innovative real-world solutions.

**Objectives of the project:** To create a Smart Parking System based on license plate recognition to manage and reduce traffic in parking lots

**Tool used:** Figma, OpenCV and EasyOCR, Javascript for Backend, Datastructures and Algorithms

**Details of Papers/patents:** None

**Brief description of the working environment:** The working environment was incredibly liberating, providing us with the freedom to explore and pursue our ideas without hindrance. This encouraged us to engage in extensive brainstorming sessions, enabling us to find innovative ways to implement our concepts. The autonomy we had played a pivotal role in deepening our understanding of the tech stacks employed in the project. Additionally, this experience allowed me to acquire essential skills in teamwork and effectively presenting my ideas, which I am confident will prove invaluable in my future endeavors.

**Academic courses relevant to the project:** Microprocessors and Interfacing

**Learning Outcome:** Developed a comprehensive technical skillset encompassing OpenCV, SQL Databases, and proficiency in Data Structures and Algorithms. Additionally, honed valuable soft skills, including excellent communication, polished presentation abilities, and a strong aptitude for collaborative teamwork.

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**PS-I station: Ascent Cyber Solutions Pvt. Ltd. , Pune**

**Student**

Name: PARITOSH RAJEEV MATHAD(2021B5A31890G)

**Student Write-up:**

**PS-I Project Title:** Smart Parking and Efficient Traffic Management

**Short Summary of work done:** We made a website for the parking management side that help improve parking areas' functionality. The vehicle at entrance is scanned and its license plate is detected, which is then sent to an API (which we built) as image, and the license plate is recognized by the program which returns the number string as output. The details of the vehicle are then stored in a data table (details like entry/exit time, number, serial number, parking spot, etc.). Once it's known where a vehicle has parked it is easier to guide other vehicles into optimal parking spots (for which we made a program). At the time of leaving, the parking bill is to be calculated accordingly based on entry/exit time.

**Objectives of the project:** Create a software that enhances functionality of parking spaces using various technologies

**Tool used:** S/w - JavaScript, Python, C++, MERN stack, MySQL, Firebase and cloud

**Details of Papers/patents:** none

**Brief description of the working environment:** Cannot say much about working environment as it was an online PS, however my colleagues were extremely helpful and we did get input from our mentor and PS faculty time to time as needed. The company is good, and as far as learning is concerned I can say that I learned a lot of new things in this project, including web development and application programming, implementing optimization algorithms and APIs, etc.

**Academic courses relevant to the project:** CS F111 - Computer Programming

**Learning Outcome:** Technologies and processes like JavaScript, MERN stack, API testing/building/hosting, Database management.

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**PS-I station:** Ascent Cyber Solutions Pvt. Ltd. , Pune

## Student

Name: ADITYA PRAKASH SHUKLA .(2021B5AA2304H)

### Student Write-up:

**PS-I Project Title:** Efficient Grocery Shopping

**Short Summary of work done:** the recipe-based shopping web development project has successfully combined innovative features, responsive design, and robust security measures to create a valuable and user-friendly platform. By providing personalized recipe recommendations and facilitating efficient shopping list generation, the platform empowers users to plan meals effortlessly and make informed grocery choices. With ongoing improvements and a commitment to user satisfaction, the project is poised for further growth and success in the ever-evolving digital landscape.

**Objectives of the project:** Building a recipe centric shopping website which can list out all ingredients used in any given recipe and also provides an option to add all ingredients to cart at once.

**Tool used:** Figma, JavaScript, CSS, HTML

**Details of Papers/patents:** NA

**Brief description of the working environment:** Relaxed working environment. Not much interaction from company side though. We were practically on our own.

**Academic courses relevant to the project:** Basic Web Development

**Learning Outcome:** Learned webpage design using Figma. Also got to know new and exciting technologies in the field of web development.

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**PS-I station:** Avidia Labs , Bengaluru

## Student

Name: SUBHAM CHAKRAVORTY(2021A3PS2702G)

**Student Write-up:**

**PS-I Project Title:** Platform Testing of DcodingXR

**Short Summary of work done:** For every part of the website I did manual testing and then created documentation for it.

**Objectives of the project:** The objective of my project was to test various components of the software platform - DcodingXR

**Tool used:** Google Docs

**Details of Papers/patents:** NA

**Brief description of the working environment:** The PS - 1 environment was good and helped me to learn a lot. I learnt a lot from my mentor.

As an intern, I was given the opportunity to work on real-world tasks and contribute directly to one of the company's products. This hands-on experience allowed me to apply the theoretical knowledge I had gained during my studies and further enhance my practical skills.

**Academic courses relevant to the project:** Technical Report Writing, Computer Programming

**Learning Outcome:** Learnt how to test software, create documentation, block programming. Also learnt soft skills like presentation, public speaking.

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**PS-I station: Avidia Labs , Bengaluru**

**Student**

Name: POOJAN MEHTA .(2021A7PS0093H)

**Student Write-up:**

**PS-I Project Title:** 3-D Designing and Model Building

**Short Summary of work done:** Worked on building various models and scenes. These projects were based on designing various objects and syncing it with the code logic.

**Objectives of the project:** To build 3-D scenes which help the kids to learn and explore the coding logic

**Tool used:** DcodeXR Platform, Canva

**Details of Papers/patents:** NA

**Brief description of the working environment:** The working environment was very healthy and I learned a lot during my PS-1 course

**Academic courses relevant to the project:** NA

**Learning Outcome:** 3-D Designing using the DcodeXR Platform

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**PS-I station:** Avidia Labs , Bengaluru

**Student**

**Name:** ABHINAV MISHRA(2021A8PS0833G)

**Student Write-up:**

**PS-I Project Title:** Product Testing: What is it and Why do it?

**Short Summary of work done:** During my work at Avidia Labs, I tested the product website of the company to find and report any bugs or errors before the product went live.

**Objectives of the project:** to explain and investigate the basics of product testing, why and how it is done

**Tool used:** product website

**Details of Papers/patents:** N/A

**Brief description of the working environment:** The working environment was casual and friendly. The company associate Mr Ajit Kohir was incredibly helpful and approachable. I learnt a lot here and am happy with my experience.

**Academic courses relevant to the project:** N/A

**Learning Outcome:** Exposure to a professional working environment, basics of product testing

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**PS-I station:** Avidia Labs , Bengaluru

**Student**

**Name:** AMARJEET MOHANTY .(2021AAPS0560H)

**Student Write-up:**

**PS-I Project Title:** Virtual Zoo, Ancient World

**Short Summary of work done:** Created 3D simulations

**Objectives of the project:** Creating 3D simulation

**Tool used:** Block coding

**Details of Papers/patents:** n/a

**Brief description of the working environment:** Very good working environment

**Academic courses relevant to the project:** CSF111

**Learning Outcome:** Coding



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## PS-I station: Avidia Labs , Bengaluru

### Student

Name: YOGESH AGARWAL(2021AAPS0982G)

#### Student Write-up:

**PS-I Project Title:** 3D game coding

**Short Summary of work done:** During my internship at Avidia Labs, I worked on two 3D game projects using the Decodexr platform. The first project, "Space Invader," involved creating two versions—one with multiple targets and the other with a single boss battle. I designed the game environment with a space-themed visual effect and integrated captivating sound effects for an immersive experience. Implementing functionality for spaceship movement, bullet creation, and enemy duplication, I successfully created an engaging game. For the second project, "Brick Breaker," I introduced real-life physics mechanics. Designing the game environment and adding 3D elements were similar to the first project. However, this game presented unique challenges, such as controlling ball trajectory, friction, and bounciness. By hardcoding the movement of the boss and implementing health tracking for the enemies, I overcame these difficulties. Additionally, I encountered challenges with server bugs, code disappearance, and coordination in local and global coordinate systems. Yet, with the guidance of Ajit sir, these issues were resolved. I also created starting and ending interfaces for both games using canvas. I documented the entire development process for each game, capturing concepts, designs, coding, challenges, and solutions. This comprehensive documentation served as a valuable resource for future reference and knowledge sharing. Overall, my internship experience at Avidia Labs has been immensely rewarding, providing me with practical skills, teamwork exposure, and a deeper passion for game development.

**Objectives of the project:** The objective of the project was to design and develop two 3D games, "Space Invader" and "Brick Breaker," on the Decodexr platform. The goal was to create engaging and immersive gaming experiences that would showcase my skills in game development and demonstrate the potential of the platform. The project aimed to explore various aspects of game design, including incorporating 3D elements, implementing real-life physics, and designing intuitive interfaces. Additionally, the project sought to document the development process thoroughly, providing valuable insights for future developers and users on how to create games on the Decodexr platform.

**Tool used:** The tools used for the 3D game development included Decodexr platform, JavaScript, 3D models, Canvas element, physics principles, online resources, sound effects, and Git version control system.

**Details of Papers/patents:** not sure

**Brief description of the working environment:** During my PS-I at Avidia Labs, the working environment was dynamic and collaborative, fostering creativity and open communication. The company had high expectations from interns, encouraging proactivity and innovation. As an intern, I worked on 3D game development using the Decodexr platform and learned to design game environments, implement real-life physics mechanics, and code game logic. Projects like "Space Invader" and "Brick Breaker" exposed me to various game mechanics and challenges, enhancing my problem-solving skills. The experience emphasized the significance of documentation for knowledge preservation and sharing with the team. Overall, the internship provided valuable learning opportunities, improved teamwork, communication, and time management abilities, igniting a passion for game development.

**Academic courses relevant to the project:**

The academic course was highly relevant, providing essential coding, physics, and problem-solving skills for successful game development during the internship.

**Learning Outcome:** The major learning outcome of the project was gaining hands-on experience in game development using the Decodexr platform. I deepened my understanding of 3D game design, real-life physics implementation, and coding logic. Working on two distinct games allowed me to explore different mechanics and challenges, enhancing my problem-solving skills. Collaborating with the team provided insights into effective communication and teamwork. Documenting the project emphasized the significance of thorough documentation for knowledge sharing. Overall, the project equipped me with valuable skills and a deeper passion for game development.

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**PS-I station: Avidia Labs , Bengaluru**

**Student**

**Name: PRAKHAR SINGH JADAUN .(2021AAPS2750H)**

**Student Write-up:**

**PS-I Project Title:** Making a coding platform for kids

**Short Summary of work done:** This PS has taught me a lot about the professional working environment. I made a 3d language learning game which helps kids to familiarize with the Korean language. It was inspired from the kana games. I designed various levels too for a challenging learning.

**Objectives of the project:** To make a 3d language learning game.

**Tool used:** assets/unity.com DCodeXR.com

**Details of Papers/patents:** None

**Brief description of the working environment:** The working environment in avidia labs was strictly professional where we had to submit our reports and diary on time. We also were assigned daily tasks to be completed. There were regular meets to ensure smooth workflow. I hope that Avidia Labs will bring a promising product to the industry which will give a tough competition to the already present scratch from mit.

**Academic courses relevant to the project:** FDSA,CP

**Learning Outcome:** I got a glimpse of professional working environment. I also learnt about 3d block coding as well as dealing with the bugs in the development of the platform itself.

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**PS-I station: Avidia Labs , Bengaluru**

**Student**

**Name:** RAHUL AVASTHI.(2021AAPS2825H)

**Student Write-up:**

**PS-I Project Title:** DcodingXR SNS Marketing Research

**Short Summary of work done:** My work included regularly meeting and discussing ideas on how to improve brand image through social media platforms and create tutorials to help new users navigate through the website as well as creating posters and videos to advertise the company.

**Objectives of the project:** Creating videos highlighting the websites features.

**Tool used:** filmora, dcodexr and Canva.

**Details of Papers/patents:** N/A

**Brief description of the working environment:** It was a good experience. The working hours were flexible and the PS mentor was extremely friendly and helpful.

**Academic courses relevant to the project:** Digital Marketing and Video editing

**Learning Outcome:** learned various concepts in Digital Marketing and Video Editing.

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**PS-I station: Avidia Labs , Bengaluru**

**Student**

**Name:** Parth Jha(2021B3A71042P)

**Student Write-up:**

**PS-I Project Title:** Gleaming Viper and Endless Game

**Short Summary of work done:** Made two simulations for future customers of Avidia Labs. The simulations were supposed to look good and replicable by 10 year olds.

**Objectives of the project:** To make 3D simulations at a platform called DeCodeXR of Avidia Labs for their customers.

**Tool used:** S/w - DeCodeXR, Sony Vegas Pro

**Details of Papers/patents:** N/A

**Brief description of the working environment:** Working Environment - Only one professional from the company stays in touch and projects are on individual level. Hence, being at home with such limited interaction doesn't feel any different than daily life. Expectations from Company - They expect us to complete projects assigned by them, deadlines varies from intern to intern.

**Academic courses relevant to the project:** Coding Skills are helpful

**Learning Outcome:** Concepts of 3D, Scrum, Time Management and Soft Skills

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**PS-I station: Avidia Labs , Bengaluru**

**Student**

**Name:** SIDHARTH SAXENA .(2021B4A72488H)

**Student Write-up:**

**PS-I Project Title:** Ping Pong Game, Ping Pong 2.0 Game, Sphere Patterns

**Short Summary of work done:** There were regular meets, a platform for 3-D block coding which I worked upon and learned the game building logic and developing the above games and creating the ppt documentation for learners and improve myself on a daily basis

**Objectives of the project:** To develop the ping pong game in 3-D with custom and real/dynamic physics and create sphere patterns.

**Tool used:** Company's website DcodeXR

**Details of Papers/patents:** Not papers or patents as such but I completed the games to a great extent.

**Brief description of the working environment:** The environment was very good and team friendly. Our mentor was very kind and humble. We were asked for the meetings and our opinion was taken in some places.

My expectations matched with the reality which was good, though the judgement and evaluation process throughout was more difficult as I expected. Also, for the faculty, the evaluation process was very difficult.

**Academic courses relevant to the project:** Basic block coding was used, so little bit of cp

**Learning Outcome:** New form of coding in 3-D and physics and mathematics logic

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**PS-I station: Avidia Labs , Bengaluru**

**Student**

**Name: SAKSHI SINGH .(2021B5AA2480H)**

**Student Write-up:**

**PS-I Project Title:** Avidia labs SNS Marketing Research

**Short Summary of work done:** Designing workshops that children can replicate when using our software

**Objectives of the project:** To make our software more accesible using marketing techniques

**Tool used:** Designing documents

**Details of Papers/patents:** none

**Brief description of the working environment:** Working environment was comfortable and good.

**Academic courses relevant to the project:** None

**Learning Outcome:** designing small simulations for children (target audience) using block coding in our software

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## PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar

### Student

Name: PRAKHAR GURUNANI .(2021A2PS2620P)

### Student Write-up:

**PS-I Project Title:** Style Change Detection In Visual Prompts

**Short Summary of work done:** The goal of this internship project was to develop a system for detecting style changes in visual prompts using transformer models. The project aimed to address the challenge of identifying changes in the visual style of images, which can be crucial for various applications such as image editing, content creation, and user-generated content moderation. To accomplish this, a deep learning approach based on transformer models was employed. Transformers have demonstrated remarkable success in various natural language processing tasks and have recently been adapted for computer vision tasks as well. The transformer models were trained on a large dataset of visual prompts with annotated style change information. The project involved several key steps. Firstly, a comprehensive dataset of visual prompts was curated, encompassing various styles and domains. The dataset was carefully labeled to indicate the presence or absence of style changes in the images. This labeled dataset served as the training and evaluation data for the transformer models. The trained transformer models were then evaluated on a separate test set to assess their performance in detecting style changes accurately. Evaluation metrics such as precision, recall, and F1 score were used to measure the effectiveness of the models. The results of the project demonstrated the potential of transformer models in detecting style changes in visual prompts. The developed system achieved a high accuracy in distinguishing style changes, thereby providing valuable insights for applications involving image analysis and manipulation.

**Objectives of the project:** Identify and detect style changes in visual prompts using LLaVA and LoFTR modes

**Tool used:** Python, LLaVA, LoFTR, Nvidia CUDA

**Details of Papers/patents:** <https://arxiv.org/pdf/2104.00680.pdf>  
<https://arxiv.org/pdf/2304.08485.pdf>

**Brief description of the working environment:** I had the opportunity to work in a highly supportive and collaborative working environment. The company fostered a professional atmosphere that encouraged innovation, critical thinking, and personal growth. At the workplace, I was provided with a dedicated workspace equipped with all the necessary resources, including a high-performance computer, software tools, and access to relevant datasets. This enabled me to focus on my tasks effectively and efficiently.

**Academic courses relevant to the project:** CP (CS F111)

**Learning Outcome:** Learnt how to use LLaVA and LoFTR models  
Learnt how to train and fine tune transformers models  
Deploy CUDA on a ubuntu machine and trained transformers from scratch

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## **PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar**

### **Student**

**Name:** KAIRAV DILIP PARIKH .(2021A3PS1108P)

### **Student Write-up:**

**PS-I Project Title:** Predictive Maintenance

**Short Summary of work done:** So i had a ML project on predictive maintenance which is a very important use case of ML, I had to Predict age of an Industrial Plant on various parameters seeing when it previously had problem and how often it was repaired and cause of which issue, i was given a dataset comprising of 120 entries and 24 columns which first i cleaned the data and then applied various models and predicted some missing value and then ran algorithm to find out the age which i could predict with an accuracy of 70.7%

**Objectives of the project:** To Determine the age of an Industrial Plant



**Tool used:** S/w- Python3, Numpy, Pandas, Various Libraries.

**Details of Papers/patents:** No Papers or Patents

**Brief description of the working environment:** Decent Working Environment

**Academic courses relevant to the project:** Computer Programming, PnS

**Learning Outcome:** I learnt about Machine Learning and its various uses and also Data Science

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**PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar**

**Student**

**Name:** VIDIT SHAH(2021A3PS2094G)

**Student Write-up:**

**PS-I Project Title:** Research Based Project on Algorithm understanding and data integration processes(Naive Bayes)

**Short Summary of work done:** Our work was to understand the naive bayes algorithm and make a prediction model for the survival of passengers on a sinking ship. We also had to learn various data cleaning methods to clean our data and optimize our prediction model.

**Objectives of the project:** Do research on naive bayes algorithm and learn various data cleaning methods to increase the accuracy of our prediction model on survival of passengers in a sinking ship

**Tool used:** Excel, Open Refine, R-Studio, Google Colab

**Details of Papers/patents:** NA

**Brief description of the working environment:** Our work environment to good and positive. Our project mentor was also helpful and always available to solve our problems related to the project.

**Academic courses relevant to the project:** NA

**Learning Outcome:** Data Cleaning methods in Excel, Open Refine, R-Studio and understanding the naive bayes algorithm to make a prediction model.

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**PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar**

**Student**

**Name:** C NIRANJAN .(2021A3PS2452P)

**Student Write-up:**

**PS-I Project Title:** Predicting Failures in a Plant's Equipment

**Short Summary of work done:** This project at BISAG-N aimed to develop a predictive model for anticipating equipment failures in industrial plants. It involved stages like data cleaning, anomaly detection, time series analysis, and exploring model combinations. The goal was to optimize performance, minimize downtime, and enable proactive decision-making in maintenance. Findings and methodologies presented in the report serve as a foundation for future research and implementation in real-world industrial settings. The project aimed to contribute to the field of industrial maintenance by providing insights and efficient resource allocation.

**Objectives of the project:** Using Machine Learning to predetermine failures of a plant's equipment

**Tool used:** Software: Python Pandas Numpy Tensorflow Keras ScikitLearn Seaborn OpenCV SVM

**Details of Papers/patents:** None

**Brief description of the working environment:** During my tenure at BISAG-N, I had the opportunity to acquire extensive knowledge and skills that have greatly contributed to my professional growth. The working environment at BISAG-N was highly conducive to learning, fostering a supportive atmosphere where I could thrive. The company entrusted me with a crucial project, recognizing its significance to their operations. This experience not only honed my ability to execute tasks with precision and timeliness, but also instilled in me a strong sense of professionalism. Utilizing weekly reports to meticulously track progress, I acquired valuable insights into project management practices. Moreover, adhering to office timings and embracing the work culture prevalent among the employees further enhanced my understanding of the expectations associated with professional conduct.

**Academic courses relevant to the project:** Machine Learning MITOCW, Deep Learning and Generative AI by MIT

**Learning Outcome:** Exploration of suitable model combinations , utilization of time series analysis to capture temporal dependencies, Application of anomaly detection methods, Data cleaning and preprocessing techniques.

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**PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar**

**Student**

**Name:** HITARTH KANKAR .(2021A7PS0320H)

**Student Write-up:**

**PS-I Project Title:** Visualisation of Weather Data

**Short Summary of work done:** Weather data visualization is the process of representing and analyzing weather-related information through visual elements such as charts, graphs, maps, and animations. It aims to communicate weather patterns, trends, and

forecasts in a concise and visually appealing manner. By visualizing weather data, users can gain insights into temperature variations, precipitation levels, wind patterns, and other meteorological parameters. Weather data visualization helps researchers, meteorologists, and individuals make informed decisions, understand climate trends, and communicate weather information effectively to the general public.

**Objectives of the project:** To visualise the data from an nc file

**Tool used:** Python

**Details of Papers/patents:** None

**Brief description of the working environment:** I had the opportunity to work in a highly supportive and collaborative working environment. The company fostered a professional atmosphere that encouraged innovation, critical thinking, and personal growth.

At the workplace, I was provided with a dedicated workspace equipped with all the necessary resources, including a high-performance computer, software tools, and access to relevant datasets. This enabled me to focus on my tasks effectively and efficiently.

The company emphasized open communication and collaboration. I had regular interactions with my supervisor, mentors, and colleagues, which helped me receive valuable guidance, share progress updates, and address any challenges or concerns I encountered during the project. The feedback I received was constructive and helped me improve my skills and make meaningful contributions.

Furthermore, the workplace offered various opportunities for professional development. I had access to workshops, training sessions, and seminars related to deep learning, transformer models, and computer vision. These resources allowed me to enhance my knowledge and stay updated with the latest advancements in the field.

Collaboration was highly encouraged at the workplace. I had the chance to collaborate with other interns and team members who were working on related projects. Through these collaborations, I gained diverse perspectives, exchanged ideas, and learned from the experiences of others. This collaborative environment fostered a sense of community and facilitated valuable knowledge sharing.

The workplace also maintained a strong focus on ethics and professionalism. I was expected to adhere to the company's code of conduct, respect intellectual property rights, and maintain confidentiality of sensitive information. These guidelines created a sense of responsibility and professionalism in the workplace.

**Academic courses relevant to the project:** None

**Learning Outcome:** Use of various libraries like seaborn, matplotlib, basemap, etc.

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## PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar

### Student

Name: VAMSHI KRISHNA MANCHALA .(2021A7PS0453H)

### Student Write-up:

**PS-I Project Title:** Pdf Chatbot using Text prompting

**Short Summary of work done:** The objective of this project is to develop a PDF Chatbot, a cutting-edge AI-powered tool that can efficiently read and comprehend the content of PDF documents and provide accurate and relevant answers to user queries. The Chatbot aims to revolutionize the way users interact with PDF documents by offering a seamless and user-friendly experience. The PDF Chatbot will employ advanced Natural Language Processing (NLP) techniques, leveraging the power of machine learning to analyze the textual data within the PDFs. Through sophisticated language understanding capabilities, the Chatbot will be able to grasp the context, extract key information, and comprehend the relationships between various concepts within the document. Users will interact with the Chatbot through a user-friendly interface, where they can submit their queries related to the PDF content. The Chatbot will then swiftly process the inquiries, perform complex searches within the PDF, and present well-formulated and concise answers to the users. Additionally, the Chatbot will also have the capacity to offer relevant summaries or detailed explanations of specific sections within the PDF, catering to different user preferences. The project's success will depend on the Chatbot's ability to handle a wide range of PDF documents, including research papers, manuals, contracts, and more. To ensure this, an extensive dataset of diverse PDFs will be used to train and fine-tune the Chatbot's NLP model.

**Objectives of the project:** We've to create a pdf Chatbot that can read and answer user queries according the pdf

**Tool used:** VS code

**Details of Papers/patents:** None

**Brief description of the working environment:** The working environment is very collaborative and encouraging. We are provided with sufficient resources enabling efficient workflow

The company expects all team members to demonstrate a strong work ethic and a proactive approach to problem-solving

Learning During PS-I:

During the PS-I, the project offers an invaluable learning experience for participants. Engaging in real-world problem-solving scenarios, team members will gain hands-on experience in implementing cutting-edge AI technologies to develop the PDF Chatbot. They will learn how to preprocess and extract data from PDF documents, apply advanced NLP techniques for text comprehension, and design intuitive user interfaces. Additionally, participants will enhance their coding skills and proficiency in machine learning frameworks. Regular mentorship and feedback sessions will further enrich the learning process, ensuring a comprehensive understanding of AI application in a practical context. By the end of PS-I, team members will have acquired essential industry-relevant skills and deepened their understanding of AI, positioning them for future success in the field of artificial intelligence and natural language processing.

**Academic courses relevant to the project:** Machine Learning, Natural Language Processing

**Learning Outcome:** Python, Machine learning

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**PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar**

**Student**

**Name:** BHATT URAV HITESHKUMAR(2021A7PS3057G)

**Student Write-up:**

**PS-I Project Title:** Research Project on Study of Naive Bayes Algorithm

**Short Summary of work done:** Learnt use cases of ML specifically its algorithm(naive bayes) its implementation in Python language and learnt data cleaning using various softwares such as open refine and r-studio, and learnt various ways to increase accuracy of models and succesfully increased the accuracy of model by 19% using this techniques

**Objectives of the project:** To study in detail on Naive bayes algorithm and increase its accuracy using various models and data cleaning techniques

**Tool used:** Open refine, r-studio, excel, google collab

**Details of Papers/patents:** N/A

**Brief description of the working environment:** Initially expected a lot from the company at the start of PS, but even though having various project not any unique project was offered, learnt many things in 1.5months but the could had learnt more if more good project options were given.

**Academic courses relevant to the project:** none

**Learning Outcome:** Learnt use cases of ML specifically its algorithm(naive bayes), python language and softwares such as open refine and r-studio and how to clean noisy and dirty data

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**PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar**

**Student**

**Name: SHILPEE CHETAN MADHANI(2021A8PS0821G)**

**Student Write-up:**

**PS-I Project Title:** Elastic Stack SIEM for Alerts and log monitoring

**Short Summary of work done:** Installation of Elastic Stack SIEM components like elastic search, kibana, logstash, their configuration, integration with antivirus, sysmon. Making rules on Elastic search for alert generation in case there is suspicious activity on the system, like rule for excessive disk usage, excessive CPU usage, activity during non-working hours, process termination of tools like sysmon and winlogbeat. Logs are collected by Elastic search through beats from various systems and if any of the logs satisfy the criteria of the rules made, an alert is generated. Analysts can then decode the i

formation generated. Security updates of linux and windows are also logged. Logs of infected files detected by antivirus are also sent to kibana for visualisation. Primary work was to setup Elastic Stack SIEM to be adopted as a future security solution at BISAG

**Objectives of the project:** Installation, configuration and implementation of Elastic Stack SIEM for security

**Tool used:** Powershell, Sysmon, Elastic Stack SIEM, kibana, logstash, elastic search, elastic search query DSL, Unix, ClamAV, TrendMicroAV

**Details of Papers/patents:** None

**Brief description of the working environment:** Good rooms for work, AC, very strict with attendance and formal wear, helpful mentor, but not many resources given for learning, had to do everything on my own, learn everything without materials which were not provided, project was very open ended, no particular end goal, company did not have many expectations, they nagged a lot about trivial formalities, overall experience was okay, got to learn presentation skills, communication skills, technical skills

**Academic courses relevant to the project:** Cybersecurity

**Learning Outcome:** Elastic Stack SIEM software, Unix

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**PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar**

**Student**

**Name:** PRAROOP GARG(2021A8PS2699P)

**Student Write-up:**

**PS-I Project Title:** Style Change Detection in Visual Prompts using Transformers

**Short Summary of work done:** Researched and experimented with various state of the art open source models and built a pipeline with 3 models- LLaVA, LoFTR, SEEM.



**Objectives of the project:** To detect the deviation in 2 images and building a pipeline using transformer models.

**Tool used:** Python, Tensorflow, CUDA

**Details of Papers/patents:** NA

**Brief description of the working environment:** The working environment was a standard office room and we were given enough resources to complete our project after being assigned into groups of 2. We were also assigned a mentor and a project manager whom we could contact for any kind of queries.

The company was slightly strict towards discipline and had a bureaucratic nature since it was a government body. I learnt a lot of things about the corporate world and gained valuable insight on how a government body like bisag functions, I also gained various skills related to ai/ml, specifically related to transformer models.

**Academic courses relevant to the project:** Computer Programming, Mathematics - II

**Learning Outcome:** Corporate Culture, Government institution culture, AI/ML, Transformer models

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**PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar**

**Student**

**Name:** DOSHI ARJAV PARAS(2021A8PS2848G)

**Student Write-up:**

**PS-I Project Title:** Research based study on algorithm understanding and data integration process (KNN)

**Short Summary of work done:** My project was based on machine learning and data cleaning (the job of a data analyst). Got good exposure and learn A lot of skills like excel, google colab, open refine, R studio.

**Objectives of the project:** Salary based prediction model and increasing accuracy using data cleaning

**Tool used:** Excel , google colab, openrefine, r studio

**Details of Papers/patents:** None

**Brief description of the working environment:** The overall experience at bisag was worth it  
You get an overall view of how corporate culture works and what role you play in it.

**Academic courses relevant to the project:** None

**Learning Outcome:** Machine learning  
Data cleaning

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**PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar**

**Student**

**Name: ASHMIT GOEL(2021A8PS2991G)**

**Student Write-up:**

**PS-I Project Title:** Pdf Chatbot using Text Prompting

**Short Summary of work done:** Work related to the process of generative AI involves two main steps: training and inference. During training, the model is exposed to extensive datasets that contain examples of the content it's intended to generate, like text, images, or music. By learning statistical patterns, structures, and context from this data, the model

gains the ability to generate new content. APIs (Application Programming Interfaces) play a crucial role in utilizing generative AI models. APIs trained on large language models, like GPT-3, provide access to their capabilities. We can interact with these models by sending prompts or input data through the API and receiving generated output as a response. These APIs trained on large language models have diverse applications in various industries. Here are a few examples: Content Generation: Generative AI APIs can automate content creation by generating articles, stories, or social media posts. They assist content creators in generating ideas, expanding content volume, or automating repetitive writing tasks. Virtual Assistants and Chatbots: By powering virtual assistants and chatbots which was used by us to create our pdf chatbot

**Objectives of the project:** To create a chatbot that can interact with any pdf that is uploaded to its interface

**Tool used:** Langchain, stream lit, OPENAI embeddings, pytesseract ocr

**Details of Papers/patents:** NA

**Brief description of the working environment:** The working environment was pretty good and I had a great learning experience here

**Academic courses relevant to the project:** Artificial Intelligence , NLP

**Learning Outcome:** Got a brief idea about generative AI and how it works and how API's of models trained on Large language models can be used to create different in the new blooming world of AI

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**PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar**

**Student**

**Name: SHOTARUPA BANERJEE(2021AAPS0015G)**

**Student Write-up:**

**PS-I Project Title:** Raspberry Pi Based Elderly Fall Detection System

**Short Summary of work done:** Configured a raspberry pi for use with an IMU. Calibrated the IMU for use, and then built a detective model using the data coming from the IMU.

**Objectives of the project:** To detect and predict gait patterns that are abnormal and lead to falls.

**Tool used:** Raspberry Pi, Python, C++

**Details of Papers/patents:** none

**Brief description of the working environment:** Good work environment with a government institute work environment with strict rules.

**Academic courses relevant to the project:** Microprocessor Interfacing,

**Learning Outcome:** Raspberry PI as well as wearable assistive technology

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**PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar**

**Student**

**Name:** TANISHQ KEKRE .(2021AAPS0770H)

**Student Write-up:**

**PS-I Project Title:** Raspberry pi based module for Elderly Fall Detection

**Short Summary of work done:** We used a IMU (MPU-6050) along with raspberry to make a module which was to be attached to an aged person's legs and it would notify us whenever a fall was detected, ie, whenever the person would fall.

**Objectives of the project:** To detect elderly people's fall.

**Tool used:** Python, C++

**Details of Papers/patents:** None

**Brief description of the working environment:** Since the company I went to was a proper government institute, it had strict 8 hrs long timings and compulsory formals. The work culture there was fine, some mentors were helpful, some didn't even bother what you're doing. It's upto you whether you wanna learn or not. No one is going to force you to work, but if you want to learn out of the project allotted to you, the people there will help you with that.

**Academic courses relevant to the project:** C programming

**Learning Outcome:** Raspberry pi  
Sensors  
and relevant python packages for programming them

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## **PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar**

### **Student**

**Name:** RIA TYAGI(2021B2A83015G)

### **Student Write-up:**

**PS-I Project Title:** Data Scraping from Twitter

**Short Summary of work done:** I installed the necessary packages and obtain the appropriate web driver for my browser. Once everything is set up, I import the required modules in Python, and I'm ready to roll. Using Selenium, I launch a web browser and navigate to the Twitter website. Depending on my scraping requirements, I can either log in to my account programmatically or scrape public tweets without logging in. Once I'm on Twitter, I utilize the search functionality to find tweets related to specific keywords, hashtags, or user profiles. Selenium's capabilities to locate and interact with web elements come in handy as I extract valuable information such as tweet text, usernames,

timestamps, and engagement metrics like retweets, likes, and replies. To collect a larger dataset, I employ Selenium to scroll the page dynamically, loading more content. I also incorporate delay mechanisms to ensure I'm not overwhelming the website and to simulate human behavior during scraping. With the desired data in hand, I utilize Python's data manipulation libraries like Pandas or NumPy to process and analyze it further. Saving the scraped data in formats like CSV or JSON allows me to integrate it with other applications or perform additional analysis. Throughout the process, I remain mindful of ethical considerations, respecting Twitter's terms of service and any legal restrictions. I'm always cautious to stay within the boundaries of ethical scraping practices, seeking API access or permission when necessary. In conclusion, data scraping from Twitter using Selenium in Python empowers me to gather valuable insights and information from this popular social media platform efficiently and effectively.

**Objectives of the project:** Machine learning, mapping data

**Tool used:** python, selenium, neo4j

**Details of Papers/patents:** -

**Brief description of the working environment:** As an intern working on data scraping with Selenium in Python, my working environment was a mix of curiosity, problem-solving, and continuous learning. I was fortunate to have access to a development environment with the necessary tools and resources to support my learning journey. My daily routine involved diving into Python code and experimenting with Selenium's capabilities. Learning data scraping with Selenium in Python was an enriching experience. It taught me how to navigate and interact with complex websites programmatically. I learned how to locate specific elements on a webpage, extract valuable data, and handle dynamic content through scrolling and waiting mechanisms. Overall, the internship experience working with Selenium for data scraping in Python provided me with valuable technical skills, problem-solving abilities, and a deeper appreciation for web automation. It instilled in me the importance of ethical scraping practices and the need for continuous learning in a rapidly evolving field.

**Academic courses relevant to the project:** Machine Learning

**Learning Outcome:** python, selenium

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## PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar

### Student

Name: ISHITA RAJ .(2021B4A32275H)

### Student Write-up:

**PS-I Project Title:** Visualisation of Weather Parameters at Various Altitudes

**Short Summary of work done:** Weather data visualization is the process of representing and analyzing weather-related information through visual elements such as charts, graphs, maps, and animations. It aims to communicate weather patterns, trends, and forecasts in a concise and visually appealing manner. By visualizing weather data, users can gain insights into temperature variations, precipitation levels, wind patterns, and other meteorological parameters. Weather data visualization helps researchers, meteorologists, and individuals make informed decisions, understand climate trends, and communicate weather information effectively to the general public.

**Objectives of the project:** To visualise the given data parameters in a 3d model

**Tool used:** qgis, python

**Details of Papers/patents:** None

**Brief description of the working environment:** I had the opportunity to work in a highly supportive and collaborative working environment. The company fostered a professional atmosphere that encouraged innovation, critical thinking, and personal growth.

At the workplace, I was provided with a dedicated workspace equipped with all the necessary resources, including a high-performance computer, software tools, and access to relevant datasets. This enabled me to focus on my tasks effectively and efficiently.

The company emphasized open communication and collaboration. I had regular interactions with my supervisor, mentors, and colleagues, which helped me receive valuable guidance, share progress updates, and address any challenges or concerns I encountered during the project. The feedback I received was constructive and helped me improve my skills and make meaningful contributions.

Furthermore, the workplace offered various opportunities for professional development. I had access to workshops, training sessions, and seminars related to deep learning, transformer models, and computer vision. These resources allowed me to enhance my knowledge and stay updated with the latest advancements in the field.

Collaboration was highly encouraged at the workplace. I had the chance to collaborate with other interns and team members who were working on related projects. Through

these collaborations, I gained diverse perspectives, exchanged ideas, and learned from the experiences of others. This collaborative environment fostered a sense of community and facilitated valuable knowledge sharing.

The workplace also maintained a strong focus on ethics and professionalism. I was expected to adhere to the company's code of conduct, respect intellectual property rights, and maintain confidentiality of sensitive information. These guidelines created a sense of responsibility and professionalism in the workplace.

**Academic courses relevant to the project:** None

**Learning Outcome:** Learned the use of different data visualisation techniques.

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## **PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar**

### **Student**

**Name:** BUDDU NAGASIVA SAITEJA .(2021B5A32301P)

### **Student Write-up:**

**PS-I Project Title:** PREDICTIVE MAINTENANCE USING MACHINE LEARNING

**Short Summary of work done:** Basically we were given a dataset containing information about various conditions of an industrial plant and we had to predict the age/the date of termination for the same. So the dataset given to us had many missing values, so we had to do some analysis for the same using correlation, heatmaps etc. and apply machine learning models to predict the missing data. Once this was done, we used the data to predict the age of a plant and tried to improve our accuracy by exploratory data analysis.

**Objectives of the project:** TO PREDICT THE LIFETIME OF AN INDUSTRIAL PLANT GIVEN ITS EXTERNAL FACTORS/CONDITIONS

**Tool used:** Jupyter Notebook, Python Libraries

**Details of Papers/patents:** na



**Brief description of the working environment:** We were provided good space to work but there were many issues in between. Our interaction with our mentor was good. But, we were not provided with internet facilities and had to solely rely on our mobile data , also smartphones are not allowed in the PS station so we told to use our data and to keep our phones inside our bags all the time. There were interns from other colleges as well, so whenever there was an issue due any intern, students from BITS were always blamed without any proper proof and they were always being unnecessarily strict on us for every small thing and they only focused on us the whole time just to complain against us on every small thing.

**Academic courses relevant to the project:** computer programming

**Learning Outcome:** MACHINE LEARNING

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**PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar**

**Student**

**Name:** KAVAN THAKKAR .(2021B5A81540P)

**Student Write-up:**

**PS-I Project Title:** Predicting Failures in a Plant's equipment

**Short Summary of work done:** We created a machine learning model to predict the failure of a machine a few days prior to the actual failure, using time series analysis, RNN, GRU, Bi-LSTM and Transformers model.

**Objectives of the project:** Predicting when the equipment will fail before it even fails so that we can take precautious actions to prevent it from failing.

**Tool used:** Python, NumPy, Pandas, Transformers, Prophet, KATS, Scikit learn, Tensorflow, Keras and sktime.

**Details of Papers/patents:** None

**Brief description of the working environment:** The seating arrangement for the students was good, but we were not given any access to the internet using wifi. We were only allowed to use the Ethernet networking but most of us didn't have ethernet ports on our laptops and would have to buy external adapters for them. Initially they allowed us to carry our smartphones as Wifi hotspot hubs, with the condition that we either had to keep them in our pockets or bags all the time which was not that big of an issue. But later they started adding extra rules which were not in place earlier, especially in the last week of us working there, like not carrying our phones at all (which meant we had to either buy external adapters for a week or have no internet access), compulsory formals (which again is extra cost for just a week and most of us didn't carry them with us because initially they allowed us to jeans and tshirts to the station).

Apart from this the, the working experience was really good, we got to learn a lot of new things and almost all the faculties that were in contact with us during the practice school, were helpful and co-operative.

**Academic courses relevant to the project:** Neural Network and Fuzzy Logic, Data Structures and Algorithms, Data Science

**Learning Outcome:** Machine Learning techniques like anomaly detection, data imputation, Neural Networks, Deep Learning, Correlation, Training a model and testing it's accuracy using the metrics like RMSE, MSE and MAE.

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**PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatic , Gandhinagar**

**Student**

**Name: SHIKHAR AGARWAL(2021B5A83029G)**

**Student Write-up:**

**PS-I Project Title: Salary Prediction using K-NN Algorithm**

**Short Summary of work done:** In this research study, we focused on evaluating the effectiveness of the K-Nearest Neighbor (KNN) algorithm in various classification and regression tasks. The KNN algorithm was implemented and tailored to suit different datasets, considering factors such as the number of neighbors (K), distance metrics (e.g., Manhattan or Minkowski), and feature selection techniques. Parameter tuning was performed to identify the optimal configuration for KNN, and performance evaluation was conducted using classification and regression metrics. For classification tasks, metrics such as accuracy, precision, recall, and F1-score were calculated. The confusion matrix, which provides a summary of predictions compared to actual class labels, was utilized to calculate accuracy. By examining the confusion matrix, additional metrics such as precision and recall were derived to assess the model's performance. A comparative analysis was conducted to gain insights into the relative performance of KNN compared to other classification and regression algorithms. The results and discussion highlighted the strengths and weaknesses of KNN, considering factors like dataset size, feature dimensionality, and noise levels. Additionally, techniques for enhancing KNN's effectiveness, such as feature selection methods and ensemble approaches, were explored. Based on the evaluation, the research study concluded that KNN can be effective in different domains, but optimization through data cleaning, alternative distance metrics, and feature selection is crucial. Recommendations were provided, including the importance of learning data cleaning techniques and utilizing tools like OpenRefine, which supports the General Refine Expression Language (GREL) for advanced data transformations. In our specific implementation with  $K = 49$ , the accuracy of the KNN model was found to be 82.219%. However, it is important to note that the examples and accuracy mentioned in the conclusion are for illustrative purposes and may vary depending on the specific dataset and implementation.

**Objectives of the project:** To study data science and its ML applications

**Tool used:** Open refine google collab

**Details of Papers/patents:** <https://www.freecodecamp.org/news/k-nearest-neighbors-algorithm-classifiers-and-model-example/>

**Brief description of the working environment:** I would like to express my sincere gratitude and appreciation to Mr. Yagnesh Vyas, my mentor and guide, for his invaluable support and guidance throughout the course of this project. His expertise and deep understanding of data science have been instrumental in shaping this research endeavor.

I am immensely grateful to Mr. Vyas for providing me with the opportunity to work on the salary estimation project using the K-Nearest Neighbors (KNN) algorithm at BISAG-N. His encouragement, constant feedback, and insightful suggestions have significantly contributed to the success of this project.

I would also like to extend my thanks to the entire team at BISAG-N for their collaboration and support during this endeavor. The stimulating environment and constant exchange of ideas have been pivotal in fostering my professional growth and development.

Additionally, I would like to acknowledge the contributions of my colleagues and peers who have provided valuable insights and assistance whenever required. Their willingness to share their knowledge and expertise has been instrumental in overcoming challenges and achieving the desired outcomes.

Thank You

**Academic courses relevant to the project:** C.P.

**Learning Outcome:** Data cleaning application such as Open refine and excel. Also learnt about K-NN algorithm

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**PS-I station:** Bitcomm Technologies Pvt.Ltd , Nagpur

**Student**

**Name:** SUDARSHAN ALOK NABIRA(2021A3PS2882G)

**Student Write-up:**

**PS-I Project Title:** CREATING A DATABASE FOR LOCALLY SAVING DATA WHEN CONNECTIVITY IS LOST

**Short Summary of work done:** the main goal was to make a local database for saving of data obtained from sensors so that when the connectivity is lost no data is lost . to do that i used SQLITE and ported the software into my STM32 program and made a local database that can save data which was stored in the flash memory of the microcontroller

**Objectives of the project:** to create a local database for the data obtained from sensors when the connectivity is lost so that data is not lost

**Tool used:** STM32 CUBEIDE & SQLITE

**Details of Papers/patents:** N.A.

**Brief description of the working environment:** the working environment of the company reached all my expectations and even surpassed them . the mentors at bitcomm

were more than helpful and guided me through out the process helping me learn more than i could imagine and also gave me an experience that was very delightful

**Academic courses relevant to the project:** OBJECT ORIENTED PROGRAMMING

**Learning Outcome:** The opportunity to work at BITCOMM Technologies has helped me learn many new things .It has given me the basic idea of how work is done in big companies .It has helped me develop myself further in the field of electronics and given me insights about the opportunities that i will have in the field

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**PS-I station: Bitcomm Technologies Pvt.Ltd , Nagpur**

**Student**

**Name:** PRAJWAL JITENDRA BORKUTE(2021AAPS2854G)

**Student Write-up:**

**PS-I Project Title:** Vibration Sensor

**Short Summary of work done:** Made changes to stock code provided by the company to create a vibration sensor which will trigger only after a certain threshold

**Objectives of the project:** To create a vibration sensor Which will trigger only after a certain threshold

**Tool used:** H/w-STEVAL-BFA001V2B(Multi-sensor predictive maintenance kit) S/w - STM32CubeIDE

**Details of Papers/patents:** NONE

**Brief description of the working environment:** The working environment was good and the people were friendly the project given to me was a very good project which had real life applications.

**Academic courses relevant to the project:** Object Oriented Programming Signal and System

**Learning Outcome:** Got a better understanding of Object oriented programming and debugger

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**PS-I station: Bitcomm Technologies Pvt.Ltd , Noida**

### **Student**

**Name:** ANSH VARDHAN SRIVASTAVA .(2021A3PS0314P)

#### **Student Write-up:**

**PS-I Project Title:** IOT and Communication

**Short Summary of work done:** Connected sensors to a microcontroller board and transmitted the data to an online server.

**Objectives of the project:** Using sensors and send the recorded data to a In online server.

**Tool used:** STM32 microcontroller and GSM

**Details of Papers/patents:** .

**Brief description of the working environment:** Was surrounded by experienced members who helped me overcome difficult challenges and guided me even for my academics.

**Academic courses relevant to the project:** Digital Design, Microprocessor, Signals and systems, Electrical Science

**Learning Outcome:** Learnt to use STM32 microcontroller and GSM device

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**PS-I station: Bitcomm Technologies Pvt.Ltd , Noida**

**Student**

**Name: ABHISHEK GANGWAR(2021AAPS3052G)**

**Student Write-up:**

**PS-I Project Title:** Front End Web Development

**Short Summary of work done:** Developed a website using ReactJs and RestAPIs

**Objectives of the project:** React, CSS HTML and Javascript

**Tool used:** ReactJs

**Details of Papers/patents:** No

**Brief description of the working environment:** Company staff is supportive and you can ask anything about the project to them any time without hesitation. But don't expect any support or good grade from the faculty (Dr. Nirankush Dutta).

**Academic courses relevant to the project:** Computer Programming

**Learning Outcome:** ReactJs

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**PS-I station: Blu Feather Innovations Pvt. Ltd. (ONLINE) , Bengaluru**

**Student**

**Name: AVANEESH SANDEEP KULKARNI .(2021A4PS2560H)**

**Student Write-up:**

**PS-I Project Title:** Social Media Management

**Short Summary of work done:** Shortlisted a bunch of start ups and studied their Top Competitors , Brand Values , Usp and Customer Persona's . Then did the same for DINO and other Pet Food Brands. In the end we made avatars of customers for DINO and helped in their online marketing campaign .

**Objectives of the project:** To create avatars for on Online Marketing Campaign

**Tool used:** none

**Details of Papers/patents:** N/A

**Brief description of the working environment:** It is quite easy going . Not much work is expected and very light paced

**Academic courses relevant to the project:** None

**Learning Outcome:** Branding and Marketing , Online Marketing and Audience Analysis

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**PS-I station: Blu Feather Innovations Pvt. Ltd. (ONLINE) , Bengaluru**

**Student**

**Name:** ANEESH AGGARWAL .(2021A7PS2859H)

**Student Write-up:**

**PS-I Project Title:** Chatbot-development

**Short Summary of work done:** be I found the skills learned to be very helpful.Learning stuff on your own and then actually implementing that to build something was a very good learning experience.I would have liked the PS station to be more communicative, but apart from that it was a good experience.



**Objectives of the project:** We were asked to build an interactive chatbot for the company which can be deployed on their website for better customer interaction.

**Tool used:** Python, Machine learning, Pandas, Numpy

**Details of Papers/patents:** None

**Brief description of the working environment:** The company overall was very chill. We were allotted the task and hardly any meetings took place. I would have expected more communication from their end. Overall, the project allowed me to learn various new skills for which I will always be grateful.

**Academic courses relevant to the project:** Computer Programming, DSA.

**Learning Outcome:** For the above mentioned project, I learned python from scratch and also the use of various libraries in python such as numpy and pandas.

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**PS-I station: Blu Feather Innovations Pvt. Ltd. (ONLINE) , Bengaluru**

**Student**

**Name:** SARANSH KASLIWAL(2021A7PS2944H)

**Student Write-up:**

**PS-I Project Title:** Integrating LangChain: Building an Intelligent Chatbot for Organizational Website with Multi-App Connectivity

**Short Summary of work done:** By successfully implementing these technical components, our chatbot has evolved into an intelligent conversational agent capable of understanding and responding to user queries effectively. The integration with the organization's database and various applications has extended its reach and accessibility, enhancing user engagement and satisfaction. The journey of developing this chatbot has been both challenging and rewarding, and we believe it will prove to be a valuable asset for our organization and its users.

**Objectives of the project:** The objectives of this project are to develop and implement an intelligent chatbot for the organization's website.

**Tool used:** Python,Langchain

**Details of Papers/patents:** -

**Brief description of the working environment:** Expected there would have been more online meets and guidance from there side which was not there.

**Academic courses relevant to the project:** OOP,ML,NLP

**Learning Outcome:** the project outcomes and benefits demonstrate the value of implementing an intelligent chatbot using LangChain, improving user experience, customer support, and organizational efficiency.

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**PS-I station: Blu Feather Innovations Pvt. Ltd. (ONLINE) , Bengaluru**

**Student**

**Name:** ADITYA BHADOURIA(2021AAPS2442G)

**Student Write-up:**

**PS-I Project Title:** Integrating LangChain: Building an Intelligent Chatbot for Organizational Website with Multi-App Connectivity

**Short Summary of work done:** Chatbot working and development

**Objectives of the project:** Creating an intelligent chatbot

**Tool used:** LangChain, Python

**Details of Papers/patents:** NA

**Brief description of the working environment:** Very good exposure to modern technologies can be gained.

**Academic courses relevant to the project:** NA

**Learning Outcome:** chatbot working and development

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**PS-I station: Blu Feather Innovations Pvt. Ltd. (ONLINE) , Bengaluru**

## **Student**

**Name:** ADITYA CHANDRA .(2021AAPS2958H)

### **Student Write-up:**

**PS-I Project Title:** AUTOMATED WEB SCRAPING BOT TO EXTRACT PET SHOP DATA USING PYTHON

**Short Summary of work done:** I created a web-scraping program utilizing Python and its relevant packages, along with Excel, to extract essential data from local search engines like Justdial. The bot primarily focuses on retrieving information such as contact details, addresses, ratings, and other relevant data pertaining to pet shops and pet grooming centers.

**Objectives of the project:** The objective of this project was to create a comprehensive, fully-automated web-scraping bot utilizing Python and its relevant packages, along with Excel, to extract essential data from local search engines like Justdial.

**Tool used:** Python, Excel, BeautifulSoup (python package), Selenium (python package)

**Details of Papers/patents:** N/A

**Brief description of the working environment:** The company expected me to develop a web scraping bot using Python and Selenium to extract data from various pet shops and pet grooming centers. Throughout the internship, I gained hands-on experience in web scraping techniques, honed my Python programming skills, and learned to navigate real-world challenges in data extraction. The opportunity allowed me to contribute to Dino-

Platform's mission while gaining valuable insights into the pet industry's data-driven aspects.

**Academic courses relevant to the project:** So far none

**Learning Outcome:** Python, problem-solving and critical thinking skills, data analysis

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**PS-I station: Blu Feather Innovations Pvt. Ltd. (ONLINE) , Bengaluru**

**Student**

**Name:** ASHESH VERMA .(2021AAPS3021H)

**Student Write-up:**

**PS-I Project Title:** video editing and social media manager

**Short Summary of work done:** creating reels/commercials,analyzing market share.

**Objectives of the project:** to create reels for DINO products and analyzing market

**Tool used:** adobe premiere pro,after effects

**Details of Papers/patents:** -

**Brief description of the working environment:** casual working environment,not much load

**Academic courses relevant to the project:** -

**Learning Outcome:** communication skills,analyzing market ,user persona,video editing skills.

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## PS-I station: Blu Feather Innovations Pvt. Ltd. (ONLINE) , Bengaluru

### Student

Name: AADARSH LABHSHETWAR .(2021AAPS3023H)

#### Student Write-up:

**PS-I Project Title:** Content Writing and SEO

**Short Summary of work done:** It involved tasks such as conducting keyword research, optimizing website content for search engines, writing blog posts and articles, creating social media content, analyzing website traffic and engagement metrics, and collaborating with other team members to develop content strategies. Also had the opportunity to work with various content management systems (CMS) and digital marketing tools.

**Objectives of the project:** The objective of the content writing and SEO project at BluFeather is to increase organic traffic to the website and improve search engine visibility for relevant keywords and phrases through effective content writing and SEO strategies. By achieving this objective, the company aims to attract more potential customers to its website, improve engagement and conversions, and ultimately increase sales and revenue.

**Tool used:** Google Analytics, SEMRush , Google search console etc

**Details of Papers/patents:** .

**Brief description of the working environment:** It was an online internship and therefore most of the communication and collaboration typically take place through digital tools and platforms.

**Academic courses relevant to the project:** Computer mediated communication

**Learning Outcome:** Understanding the basics of search engine optimization (SEO) and how to optimize content for search engines.

Developing keyword research and analysis skills to identify high-traffic, low-competition keywords.

Learning how to write effective headlines and meta descriptions that entice users to click through to your content.

Gaining experience with various content formats, such as blog posts, articles, and product descriptions.

Improving writing skills, including grammar, syntax, and style.

Learning how to use content management systems (CMS) such as WordPress, Squarespace, or Wix.

Understanding the importance of content marketing and how it can help businesses grow.

Developing skills in tracking and analyzing website traffic and engagement metrics using tools like Google Analytics.

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## **PS-I station: Blu Feather Innovations Pvt. Ltd. (ONLINE) , Bengaluru**

### **Student**

**Name:** SATYA SHREYAS KUSUMANCHI .(2021B3A70723H)

### **Student Write-up:**

**PS-I Project Title:** Building a bot for web scraping

**Short Summary of work done:** Learnt how to scrape data using python and it's libraries.

**Objectives of the project:** To collect data related to pet product vendors from justdial website

**Tool used:** Python- beautiful soup Library

**Details of Papers/patents:** None

**Brief description of the working environment:** Working environment was very relaxed, there was little communication from the company and so we were left without much guidance and understanding of our projects and how to proceed with them.

**Academic courses relevant to the project:** Oops, dsa

**Learning Outcome:** Web scraping using python, data analytics

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**PS-I station: Blu Feather Innovations Pvt. Ltd. (ONLINE) , Bengaluru**

**Student**

**Name: AYUSHI SHARMA .(2021B3A71737H)**

**Student Write-up:**

**PS-I Project Title:** Marketing research

**Short Summary of work done:** I made a marketing research template(including the strategies that the company can opt to lead the pet dog food industry) and applied various data analytic methods to make current trend graphs for the company to analyze the market situation better

**Objectives of the project:** To analyze the pet food market domain and it's competitors.

**Tool used:** Excel, paperform

**Details of Papers/patents:** None

**Brief description of the working environment:** The working environment was great overall with reliable and helpful teammates and faculty.

**Academic courses relevant to the project:** Mathematical and statistical methods

**Learning Outcome:** I learned various data analytic methods that are quite helpful in analysing the consumer behavior and all sorts of problems that the current dog food market is facing.

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**PS-I station: Blu Feather Innovations Pvt. Ltd. (ONLINE) , Bengaluru**

## Student

Name: ARNAV JAIN .(2021B5AA2542H)

### Student Write-up:

**PS-I Project Title:** Dino: Feed A Stray

**Short Summary of work done:** My role in the company is UI/UX designer. Our primary role is to create and design a framework for a new initiative, "Feed a Stray." The ultimate goal was to gather constructive support for stray dogs by building a framework that takes care of the well-being of these animals while encouraging a community to improve the living conditions of these stray dogs and try to reduce the ill feeding practices of the people . We had to look into the UI/UX part and had to make sure that that the user experience remains seamless when one visits our website.

**Objectives of the project:** To Design a framework for a new initiative "Feed a Stray" by our company.

**Tool used:** H/W- NONE, S/W- Figma, Notion, Canva

**Details of Papers/patents:** None

**Brief description of the working environment:** We had a very flexible work environment; we were given enough time to learn about the technologies that we had to use during the internship. We had meetings where we were given feedback on our progress and taught to improve. Overall it was a pleasant experience working with a start-up like this.

**Academic courses relevant to the project:** None

**Learning Outcome:** My significant learning outcomes throughout my PS-1 were learning about Figma, UI/UX, and graphic design. I learned how to create and style a framework using various software technologies like Figma. Other skills included attention to detail and analytical skills.

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## PS-I station: Blu Feather Innovations Pvt. Ltd. (ONLINE) , Bengaluru

### Student

Name: SYED AMEEN .(2021B5AA3046H)

#### Student Write-up:

**PS-I Project Title:** Chat Bot Development

**Short Summary of work done:** Didn't get any work allotted. Was only instructed to go through and get information on a few topics such as LangChain, NLP( Natural Language Processing) and python revision of basics.

**Objectives of the project:** To create a Chat bot for better website experience

**Tool used:** No work allotted. Therefore did not use any tools.

**Details of Papers/patents:** None.

**Brief description of the working environment:** Expected to get a comprehensive and planned out daily work routine with guidelines on how to implement the project but weren't even allotted our domains at least a week or two after the introduction meet and even after allotment we weren't given instructions on how to implement the project. Later, they never replied to us whenever we tried to contact them about the project details.

**Academic courses relevant to the project:** None.

**Learning Outcome:** Haven't learnt much as they did not give any instructions on the project.

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## PS-I station: Blu Feather Innovations Pvt. Ltd. (ONSITE) , Bengaluru

### Student

Name: TEJAS AGRAWAL(2021A3PS2789G)

**Student Write-up:**

**PS-I Project Title:** Chatbot Development

**Short Summary of work done:** I undertook the initiative to develop a cutting-edge chatbot for their e-commerce website. Using OpenAI GPT 3.5 Turbo, LangChain, ChromaDB, and tiktoken, I worked independently to plan, implement, and deploy the chatbot. It served as a versatile tool, providing enhanced customer support, answering FAQs, delivering service and product information, and even generating marketing content. The chatbot's implementation resulted in improved user satisfaction, reduced response time, and increased engagement on the website. My experience in handling the entire development process demonstrated my proficiency in leveraging advanced technologies to create innovative solutions.

**Objectives of the project:** Creating a chatbot for the Dino company for customer care assistance as well as for content writing

**Tool used:** OpenAI GPT 3.5 Turbo, LangChain, ChromaDB, tiktoken, Google Colab

**Details of Papers/patents:** nil

**Brief description of the working environment:** The working environment was dynamic, fostering a culture of innovation.

**Academic courses relevant to the project:** nil

**Learning Outcome:** LLM

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**PS-I station: CDAC- Web Deveopment , Pune**

**Student**

Name: MEHUL KOCHAR ,(2021B3A73032H)

## **Student Write-up:**

**PS-I Project Title:** Web Development

**Short Summary of work done:** We used MERN (MongoDB, Express.js, React, Node) stack for development of C-Chakshu and a login, signup and forgot user password page for them. We also worked with python and libraries like pandas, numpy , mysql-connector, matplotlib to analyze the statistical part of it.

**Objectives of the project:** To get insight of web development using MERN stack and Python

**Tool used:** MERN Stack, Mysql, Spyder, Python, VS-Code.

**Details of Papers/patents:** none

**Brief description of the working environment:** The working environment was very nice. There was a clear chain of command and everyone was very helpful during our PS-1. CDAC is one of India's premier R&D based company and getting a hand on experience on HPC was great. We learned a lot about Web development, Python and web design. Using various elements and libraries to get accurate designs and analysis was our major part of learning.

**Academic courses relevant to the project:** OOPS, DBMS

**Learning Outcome:** We learned a lot about web development whether it was front end or back end. We developed a website using MERN stack and Python along with MYSQL. Also got to know a lot about working of the company and exposure to the corporate world.

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**PS-I station: CDAC- Web Deveopment , Pune**

## **Student**

**Name:** DHRUV CHOUDHARY .(2021B3A73142H)

## **Student Write-up:**

**PS-I Project Title:** DEVELOPMENT OF LOGIN AND SIGNUP WEBPAGES AND LAYING OUT STATISTICAL INFERENCES UNDER THE NSM PROJECT USING PYTHON AND MERN STACK

**Short Summary of work done:** Developed website portal for logging in and made Graphs and did data analysis

**Objectives of the project:** Develop webportal

**Tool used:** Full Stack Web Development - HTML , CSS JS, REACT ,NODE

**Details of Papers/patents:** None

**Brief description of the working environment:** Great work environment, provide quite some days to learn and then expect you to know the work on task given

**Academic courses relevant to the project:** None

**Learning Outcome:** Learned Web development and basic python

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**PS-I station: Centre for Railway Information Systems - Data Analytics ,  
New delhi**

**Student**

**Name:** SAMARTH KHANDELWAL .(2021A3PS0051P)

**Student Write-up:**

**PS-I Project Title:** STATISTICAL MODELLING BASED VACANCY ASSESSMENT FOR RAILWAY RECRUITMENT BOARD

**Short Summary of work done:** Additionally, I integrated the vacancy filling process for the Pointman and Cabinman positions into the overall promotion analysis. I determined the number of people needed from each category and incorporated them into the calculations. Furthermore, I performed correlation analysis to investigate the relationship

between the vacancies in Goods Guard and its feeder categories, such as Pointsman, Commercial Clerk, and Trains Clerk. This analysis aimed to identify any patterns or dependencies between the vacancies in Goods Guard and the vacancies in the feeder categories. Throughout the project, I utilized Python code to perform various calculations, generate visualizations, and simulate the filling of vacancies using Monte Carlo simulation techniques.

**Objectives of the project:** Assess impact of vacancies on feeder categories and estimate vacancies in advance

**Tool used:** VS Code, Lucid Chart

**Details of Papers/patents:** None

**Brief description of the working environment:** During PS-I, the working environment was professional, and the company had specific expectations from the interns, including practical experience, skill development, and contributions to real-world projects. The faculty in-charge of PS-I set the expectation for interns to work 9 hours per day, which required dedicated effort and time management.

Throughout the internship, I faced occasional constructive criticism from the PS-1 faculty, emphasizing the importance of maintaining productivity and efficient work practices. While these feedback sessions were sometimes challenging, I approached them as opportunities for growth and improvement.

In terms of learning, although I didn't come across significant new knowledge or skills, I recognized the value of applying my academic foundation in a practical setting. The internship allowed me to gain exposure to real-world scenarios and understand how theoretical concepts translate into professional work. I actively engaged with the assigned projects, seeking to maximize my learning and contribute effectively.

Overall, the PS-I experience provided me with the opportunity to develop time management skills, adaptability, and professionalism in meeting the 9-hour work expectations. The constructive feedback from the faculty served as a catalyst for self-improvement and refining my work practices. I valued the experience as a platform to apply and strengthen my existing knowledge while gaining insights into the demands and expectations of a professional work environment.

**Academic courses relevant to the project:** Computer Programming

**Learning Outcome:** Python, Monte Carlo Simulation

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## PS-I station: Centre for Railway Information Systems - Data Analytics , New delhi

### Student

Name: ARUSH SUKESH SHETTY .(2021A3PS2661P)

### Student Write-up:

**PS-I Project Title:** Rate Reasonability of Scrap Disposal

**Short Summary of work done:** I got a very large dataset in excel file,so I had to finalize a commodity and filter it out and make a machine learning model which would predict the price by taking into consideration the variety,length and weight of the rails present in a lot using the specific data.

**Objectives of the project:** Predicting the auction prices of the scrap lots (generally metals).

**Tool used:** Excel, Python, Numpy, Pandas, Skicit-learn library

**Details of Papers/patents:** NA

**Brief description of the working environment:** Since I had gotten a role of data analyst at CRIS, I was given a data on which I had to do preprocessing and cleaning and finally make a ML model out the data given, so I learn't the different steps in making an ML model from scratch. So, the work given to me was absolutely justified and helped me learn new technologies like pandas,numpy etc which I had never learn't before as I am from a pheonix background.

**Academic courses relevant to the project:** No specific courses as such which are needed, but a basic knowledge of python and excel would help.

**Learning Outcome:** Learned about process of lot formation and how rails are finally sold at an auction, got to know a lot on how to preprocess and clean the given raw dataset which had a large no of entries. Apart from this the 2 group discussions conducted helped me further improve my communication skills. Also learnt a lot about the corporate work culture

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## PS-I station: Centre for Railway Information Systems - Data Analytics , New delhi

### Student

Name: HARSHIT AGARWAL(2021A7PS2073G)

### Student Write-up:

**PS-I Project Title:** Analysis of HHT Data for period of April-June 2023

**Short Summary of work done:** The work involved acquiring and cleaning HHT data, studying Python for data analysis, normalizing footfall data, and developing a dashboard integrated with the admin portal. By leveraging technologies such as MongoDB, Next.js, and Express, the project successfully created a user-friendly dashboard for real-time insights. Additionally, user authentication measures were implemented for enhanced security. The project's completion provides valuable insights for decision-making, revenue optimization, and improving the overall travel experience within the Indian Railways.

**Objectives of the project:** Making a dashboard and finding a way to integrate it with admin platform analysing data using normalisation techniques

**Tool used:** MongoDb,Python,NextJs,ChakraUI

**Details of Papers/patents:** NA

**Brief description of the working environment:** The working environment at CRIS is highly professional and collaborative. The organization fosters a culture of innovation and encourages employees to take up challenging projects and explore new technologies. The employees at CRIS are known for their helpful and cooperative nature, always ready to provide guidance and support. The work environment is dynamic, offering opportunities for learning and growth.

CRIS provides a platform for employees to gain hands-on experience in real-world industry projects. It offers a unique opportunity to witness the complete project lifecycle, from conceptualization to implementation, in a challenging and fast-paced environment. The organization's focus on teamwork and knowledge sharing ensures a conducive environment for professional development.

**Academic courses relevant to the project:** DBMS

**Learning Outcome:** Tableaus,MongoDb,

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**PS-I station: Centre for Railway Information Systems - Data Analytics ,  
New delhi**

**Student**

**Name:** ADITYA KHANDELWAL .(2021A7PS2422P)

**Student Write-up:**

**PS-I Project Title:** periodic overhauling load balancing and prioritization of wagons/coaches for workshops.

**Short Summary of work done:** I worked on making the overhauling system more efficient. For that I analyzed the data of overhauling using various simulations and techniques. And based on the result provided suggestions to the organization

**Objectives of the project:** Reduce load at overhauling workshops

**Tool used:** Excel, MySql

**Details of Papers/patents:** None

**Brief description of the working environment:** Since it was an online PS, didn't get a lot of idea how the working environment of CRIS' office is like but my leaning experience was good and insightful

**Academic courses relevant to the project:** Database management systems

**Learning Outcome:** Learned about data analysis and the working of CRIS and how it is an important part of the Indian railways.

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## PS-I station: Centre for Railway Information Systems - Data Analytics , New delhi

### Student

Name: AVI VERMA .(2021AAPS3016H)

### Student Write-up:

**PS-I Project Title:** Prediction of New Train Requirements

**Short Summary of work done:** My main objective in PS-I was solving a vehicle routing problem with specific constraints making it a train routing problem. My work mainly entailed research and learning Python in depth as it was an integral part of my project. I had read multiple research papers and publications to first understand the routing problem and the various elements that go into it. The next step was to be able to link the problem at hand to the problems presented in the research papers. This involved researching into Python libraries which would finally help me implement the desired code. Lastly, I designed a program that could solve the problem statement.

**Objectives of the project:** Routing the most efficient path for a new train between stations

**Tool used:** Python

**Details of Papers/patents:** I referred to the following papers while researching  
[https://www.researchgate.net/publication/354524356\\_Solving\\_the\\_service-oriented\\_single-route\\_school\\_bus\\_routing\\_problem\\_Exact\\_and\\_heuristic\\_solutions](https://www.researchgate.net/publication/354524356_Solving_the_service-oriented_single-route_school_bus_routing_problem_Exact_and_heuristic_solutions)  
<https://onlinelibrary.wiley.com/doi/10.1002/net.215>

**Brief description of the working environment:** I found PS-I to be an extremely fruitful experience. It gave me glimpses of how work is done in the real world and what it means to communicate with brilliant minds in various fields. It enabled me to learn a whole lot and I've come out of it a more educated person. The working environment although online was interactive and supportive. My mentors were extremely helpful and active. It enabled me to be productive and improved my work ethic. The expectations from the company were challenging but not overwhelming. Through this project I have learned a lot about Python, routing problems but also how to maintain a work-life balance and be responsible for the work assigned to me.

**Academic courses relevant to the project:** CS F213 Object-Oriented Programming  
CS F211 Data Structures and Algorithms

**Learning Outcome:** I learned how to approach NP hard problems and derive solutions to such problems.

I also learned a lot about implementing algorithms in Python and about various python tools like the Annealer class, etc.

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**PS-I station: Centre for Railway Information Systems - Data Analytics ,  
New delhi**

**Student**

**Name:** SWAPNIL YADAV(2021B3A72770P)

**Student Write-up:**

**PS-I Project Title:** POH scheduling, load balancing and prioritization for railway coaches and wagons.

**Short Summary of work done:** My task was to analyse the data generated from the overhauling process and suggest changes to make the process more efficient. For this I calculated the annual traffic at individual workshops and analysed the results for any anomalies. Then I researched on ways to equalize load on workshops having abnormal traffic. Finally, I reported my findings to the organization.

**Objectives of the project:** Analysing pre-existing overhauling data in order to maximize future efficiency of POH

**Tool used:** Excel, MySQL

**Details of Papers/patents:** None

**Brief description of the working environment:** The working environment is comfortable. CRIS expects you to be proactive and punctual with the task assigned to you while giving you adequate time to complete it. The mentors are quick in responding to students'

queries. PS-1 also helped me to improve my communication skills. However, the low frequency of meets is something which can be improved upon. Overall, it was a great learning experience.

**Academic courses relevant to the project:** None

**Learning Outcome:** 1) In-depth understanding of the operations of Indian Railways  
2) Experience with analysing data in corporate scenario

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**PS-I station: Centre for Railway Information Systems - Information Security Group , New delhi**

**Student**

**Name:** RISHI GUPTA .(2021A7PS0690P)

**Student Write-up:**

**PS-I Project Title:** Significance of ISO 27001 and Penetration Testing in Robust Information Security Systems

**Short Summary of work done:** The first month involved learning about ISO 27000 standards (meant for information security). This was highly theoretical in nature. As a sub task we were asked to analyse any large organization on how it implements the ISO 27001 standard. The final months were more hands on. We studied about computer networks and ethical hacking and also hacked a couple of vulnerable Virtual Machines in the end.

**Objectives of the project:** Introduction to Penetration Testing

**Tool used:** Kali Linux (comes with most of the tools used in penetration testing), VMWare/VirtualBox (for running virtual machines on windows/mac)

**Details of Papers/patents:** None

**Brief description of the working environment:** Overall, our team did not face a lot of workload. Going into PS1, I expected a lot of practical work, but the initial month was entirely theoretical and did not really bring my curiosity or interest. The course became more interesting by the second month as we ventured more into actual ethical hacking. The biggest takeaway was learning to strike a nice work-life balance.

**Academic courses relevant to the project:** Computer Networks

**Learning Outcome:** Learnt about ISO 27K standards and documentation, Computer Networks and Penetration Testing (Ethical Hacking)

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## **PS-I station: Centre for Railway Information Systems - Information Security Group , New delhi**

### **Student**

**Name:** UJJWAL AGGARWAL(2021A7PS2427P)

#### **Student Write-up:**

**PS-I Project Title:** Information Security Group

**Short Summary of work done:** study and research, practical application, and collaboration with the Information Security Group at CRIS to learn about information security

**Objectives of the project:** The objective of the Practice School was to develop a comprehensive understanding of ISO 27001 standards and practices, as well as gain familiarity with ethical hacking principles and techniques.

**Tool used:** S/w - kali linux and few of the tools already present in it.

**Details of Papers/patents:** none

**Brief description of the working environment:** My role during the Practice School focused on two

main areas: ISO 27000 family of standards and ethical hacking, specifically penetration testing.

**Academic courses relevant to the project:** None

**Learning Outcome:** the ISO 27000 family of standards and ethical hacking, including discussions on ISO standards, implementation processes, risk management, and audits, as well as an introduction to network system basics and ethical hacking fundamentals, common techniques, tools, and reporting.

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**PS-I station: Centre for Railway Information Systems - Information Security Group , New delhi**

**Student**

**Name:** SHIVAM AGARWAL(2021A7PS2909G)

**Student Write-up:**

**PS-I Project Title:** ISO 27001 Implementation in Flipkart and Learning Penetration Testing

**Short Summary of work done:** ISO 27001: This majorly involved getting an understand of the standard and applying it to a organisation to ensure cyber security. Penetration Testing: This involved first learning about network basics like TCP, IP, OSI model, UDP, HTTP, etc. Hacking has multiple stages, starting from Reconnaissance, which is basically gathering infomation about the target. After that comes finding the vulnerabilities in the technologies the target is running. Then comes Exploitation which is attacking on the vulnerabilities found. All these steps have modules and tools to perform the respective actions. I then practiced this skill on multiple vulnerable machines like Kioptrix, Blue, Butler.

**Objectives of the project:** Learn ISO 27001 standard and draft an ISMS for Flipkart. Learn Penetration Testing and hack into machines

**Tool used:** Ethical Hacking: Kali Linux, VMWare, Metasploit Framework, nmap, netdiscover, nessus, smbclient, burpsuite

**Details of Papers/patents:** NA

**Brief description of the working environment:** Working environment was comfortable. The mentor regularly held meetings and taught us about the concepts. There was no expectation as such from the organisation. Learning was in multiple aspects of not only the project but also general employability skills like voicing your thoughts, learning quickly, managing timelines and general professional behaviour.

**Academic courses relevant to the project:** Network Programming, Computer Networks

**Learning Outcome:** I learnt about building an ISMS (information security management system) and the universal standard, ISO 27001, on the same. We had to implement the same in a company of our choice.

The second task: learning penetration testing (ethical hacking) involved learning networking fundamentals and applying them to hack into vulnerabilities in machines on a network

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**PS-I station: Centre for Railway Information Systems (CIRIS) - Crew Management Systems group , New delhi**

**Student**

**Name:** Prateek Kashyap(2021A7PS1449P)

**Student Write-up:**

**PS-I Project Title:** Cadre Review and CMS Reports

**Short Summary of work done:** Visit DRM offices and understand current flow of CMS, and understand how can it become better. Suggest any findings to mentor and relevant officials.

**Objectives of the project:** To analyse and suggest better methods to implement CMS in railways

**Tool used:** Google Docs, Google Sheets, Chat GPT

**Details of Papers/patents:** -

**Brief description of the working environment:** Very smooth station, very little to no work at all.

I wouldn't recommend it if you want to learn anything practical related to IT.

**Academic courses relevant to the project:** Tech Report Writing

**Learning Outcome:** -

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**PS-I station: Centre for Railway Information Systems (CIRIS) - Crew Management Systems group , New delhi**

**Student**

**Name:** NISHANT ATUL BHANDARI(2021A7PS2046G)

**Student Write-up:**

**PS-I Project Title:** Analysing the CMS portal and Proposed Changes

**Short Summary of work done:** Documentation was shared which we used to study and understand the CMS portal. The various reports on the CMS portal were reviewed to gain a thorough understanding of the workings of the system. Then, a meet with the Chief Loco Inspector gave us practical insights into the day-to-day usage of the portal. All this was used to compile a report with recommendations on how to further improve the portal and eliminate any redundancies.

**Objectives of the project:** Understand the CMS portal and provide feedback to help improve the existing systems

**Tool used:** None

**Details of Papers/patents:** None

**Brief description of the working environment:** The working environment was pleasant enough and the mentor did interact with us at times.

I became aware of the work culture in government institutions and the problems faced to make changes to an old software.

**Academic courses relevant to the project:** None

**Learning Outcome:** Understanding already existing software by reading documentation and making it more efficient

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**PS-I station: Centre for Railway Information Systems (CIRIS) - Crew Management Systems group , New delhi**

**Student**

**Name:** APURVA PATIL(2021A7PS2068G)

**Student Write-up:**

**PS-I Project Title:** Critical Analysis Of Cadre Review Process

**Short Summary of work done:** The project focused on understanding and evaluating the Cadre Review system within a specific division. Extensive research and expert consultations were conducted to gather insights and identify areas for improvement. We were granted access to comprehensive documentation and relevant materials, which proved invaluable in comprehending the complexities of the multi-tiered CMS software. By studying the provided documents and analyzing the intricate details, features, and capabilities of the CMS, we developed a deep understanding of the system. We crafted a detailed presentation to showcase our findings and validate our knowledge to Mr. Praveen Malik. We were then given access to the CMS's official reports portal and tasked with understanding how raw data for Cadre Review is collected and accessed through the portal. This allowed us to further explore the system and gain insights into the data



collection process. Moving forward, our main objective was to thoroughly review the organization's Cadre Review System, analyzing the portal and system to identify areas for improvement. Through meticulous research, examination, and conducting field visits, we aim to provide strategic suggestions to enhance the efficiency and effectiveness of the system, streamlining processes and optimizing its overall framework.

**Objectives of the project:** The objective of the project is to conduct a critical analysis of Cadre Review process for different divisions across India to provide CRIS with a detailed report evaluating the adherence and implementation of the new guidelines (in our respective division) compared to previous arbitrary practices in different divisions and issues faced during implementation.

**Tool used:** PowerPoint, Word Document, Excel

**Details of Papers/patents:** None

**Brief description of the working environment:** I have learnt a lot from my internship at CRIS. The mentor allotted to me was super friendly and very nice. He helped me at every stage of the project. All the staff apart from my mentor that I interacted with were extremely helpful and very polite. Not a lot was expected from us but I hope I won't be wrong to believe that we were successful in delivering whatever was expected from us.

**Academic courses relevant to the project:** TRW

**Learning Outcome:** Soft skills, Presentation skills, Research , data analysis

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**PS-I station: Centre for Railway Information Systems (CIRIS) - Crew Management Systems group , New delhi**

**Student**

**Name:** SPARSH GOENKA .(2021A7PS2413P)

**Student Write-up:**

**PS-I Project Title:** Crew Management System

**Short Summary of work done:** Studied various modules used in the Crew Management System. Collected the information about the cadre review system from the local divisions. Analyzed the collected data to point out the various inefficiencies and how they can be improved.

**Objectives of the project:** Analyzing the cadre review system for the running staff

**Tool used:** -

**Details of Papers/patents:** -

**Brief description of the working environment:** Students were expected to submit their findings from the local divisions in the form of a report so they could improve the shortcomings and inefficiencies in their future systems. Apart from CMS, other projects were related to Data Analytics which was oriented more towards the Machine Learning domain, and Information Security which was oriented towards hacking, studying and finding vulnerabilities in the system.

**Academic courses relevant to the project:** -

**Learning Outcome:** Working of the CMS and the inefficiencies of cadre review system

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**PS-I station: Centre for Railway Information Systems (CIRIS) - Crew Management Systems group , New delhi**

**Student**

**Name:** ARUSH BANSAL(2021A7PS2458G)

**Student Write-up:**

**PS-I Project Title:** CMS and the Cadre Review System: Proposed Improvements for Optimal Resource Utilization and Staff Welfare

**Short Summary of work done:** In my short time with CRIS, New Delhi, I got the opportunity to work for the Crew Management Systems (CMS). I learnt about managing the crew in great depth. How pilots and assistant pilots embark on the rail journey, the formal procedure for the same, how leaves are given to them. The working of lobbies where the crew members (Pilots and Assistant Pilots) are booked and allowed to rest. The power on line calculation with its formula and different parameters, and how it affects the calculation of crew requirement. All in all, the experience was great. I could not have asked for a better work life balance and had plenty of time to pursue extra-curriculars and hobbies. The learning experience could have been better in terms of technical proficiency as in CMS, there wasn't much to tinker with technically and did not require much of programming skills. Though the experience was remarkable as I learnt more than I expected.

**Objectives of the project:** Making possible changes to the current cadre review of the Indian Railways' running staff to make the loco running efficient without disguising more employment.

**Tool used:** Google Docs, Google Slides

**Details of Papers/patents:** None

**Brief description of the working environment:**

The company's working environment is more suited for an onsite Practice School. Nevertheless, the learning opportunities are indefinite and there's a lot to know. The CMS team is highly professional and has multiple projects running.

I had expected there to be some sort of coding work required, anything ranging from use of Data Structures or Database Management, but to my surprise, the project allotted didn't require any such knowledge. It was a good opportunity to brush up report writing skills and got plenty of time to learn and practice things on my own, apart from the PS curriculum. Although, the Group Discussions and Seminars did have a positive impact on my verbal communication skills and have made me feel more confident about myself.

**Academic courses relevant to the project:** Technical Report Writing, Computer Programming

**Learning Outcome:** Got to know about the in-depth functioning and dailies of Indian Railways' crew management.

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## **PS-I station: Centre for Railway Information Systems (CIRIS) - Crew Management Systems group , New delhi**

### **Student**

**Name:** HARDAV HITESH RAVAL(2021A7PS3041G)

### **Student Write-up:**

**PS-I Project Title:** Study of Cadre Review System

**Short Summary of work done:** Our team carried out detailed analysis of modules of CMS and their functions in operations of Indian Railways, which shows how complex yet essential they are to ensure continued safety. Hands on experiences as well as the documentation and manuals for CMS system have been intensively used for developing a brief idea of Crew management and various aspects of it, which are not only limited to continued operations but also include prospects of streamlining process and maximizing potential and efficient use of valuable human resource, which behold the scope for further development. One of the modalities we explored was Cadre Review System, which is yet to inculcated into CMS. Cadre review is a crucial process that offers numerous benefits to the Indian Railways. By conducting a comprehensive assessment and restructuring of its cadre system, the Indian Railways can achieve enhanced efficiency, productivity, and overall performance.

**Objectives of the project:** Understanding Crew Management System, Study of methods for cadre review systems across different railway divisions

**Tool used:** ---

**Details of Papers/patents:** ---

**Brief description of the working environment:** CRIS provided us with the opportunity to understand and analyze the Crew Management System currently deployed in operations of Indian Railways. It is a huge asset for effective management of running staff. We were provide with official documentation, training manual and presentations as well as access to the site for Reports in order to gain a comprehensive understanding of CMS. For analysis of Cadre Review Methods, we were provided with circulars and site access to understand its importance. We carried its study by visiting the DRM office nearest to us and interacted with the Chief Loco Inspector to discuss further details. We gained understanding into scheduling operations of crew in Indian Railways and how is cadre review carried out. A more technical or coding based work was what we were expecting.

**Academic courses relevant to the project: ---**

**Learning Outcome:** Cadre Review Methods for Running Staff in Indian Railways

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**PS-I station: Chaob Technologies Pvt. Ltd (Carscan) , Pune**

**Student**

**Name:** RAGURAM VENKATESAN .(2021A7PS0150H)

**Student Write-up:**

**PS-I Project Title:** Data annotations and model training

**Short Summary of work done:** We were in the dent and scratch team and were asked to annotate dents and scratches in a car. Pretty straightforward grunt work. 1 week of training ,predicting and validating datasets... Seems technical but just grunt work. Decent PS station.

**Objectives of the project:** Data annotations and model training of datasets of car images

**Tool used:** Super Annotate tool

**Details of Papers/patents:** None

**Brief description of the working environment:** The work environment was pretty good. Got to know about corporate culture and how to conduct yourself professionally. But definitely expected results and updates from your side

**Academic courses relevant to the project:** None.

**Learning Outcome:** Close to none. Just using the superannotate tool which is pretty elementary and learning about yolov5 repository to train models

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## PS-I station: Chaob Technologies Pvt. Ltd (Carscan) , Pune

### Student

Name: KAMALESH RAM R.(2021A7PS0286H)

### Student Write-up:

**PS-I Project Title:** Dent and Scratch Annotation and License Disk Detection Model

**Short Summary of work done:** In July the interns were divided into two teams- Team 1 - Raguram, Kamalesh Ram, Darsh Doshi, Raj Patel Team 2 - Nischith P, YSP Sandeep, Daksh Shah Team 1 had a change in the project for a week. They were asked to work under Siddant on licence disk field management. Team 2 continued to work in dent and scratch project under Karthik. In the licence disk field management project, our team of interns embarked on a fascinating endeavour to accurately label the various components present on a licence disk using the advanced makesense.ai platform. Through meticulous labelling, we aimed to create a reliable dataset that would serve as the foundation for training powerful Machine Learning (ML) models. By employing the state-of-the-art yolov5 framework, we harnessed the potential of deep learning to predict and validate the labelled data effectively. This enabled us to build robust ML models capable of recognizing and marking the labelled components on fresh, previously unseen data. Throughout the project, collaboration and teamwork were key. Our interns worked cohesively, exchanging ideas and insights, which facilitated a comprehensive understanding of the challenges and opportunities in the licence disk field management domain. The collective efforts of our team ensured that the dataset was well-curated, and the models were fine-tuned to achieve impressive levels of accuracy and precision. After a week team 2 were called to work on this project and team 1 were allotted the dent n scratch project. Even team 2 worked on the same thing for a week.

**Objectives of the project:** 1.) Annotation of Dent and Scratch in the images given to us daily with a particular target in the SuperAnnotate tool. 2.) Create an object detection to model to detect the details in the license discs of cars.

**Tool used:** SuperAnnotate, Makesense.ai, Google Collab, Yolov5.

**Details of Papers/patents:** NIL

**Brief description of the working environment:** It was a very pleasant experience to be working at Carscan.ai. The mentors and the FiC all were very supportive and helpful in guiding us through our internship.

**Academic courses relevant to the project:** Machine Learning, Discrete Structures of Computer Science.

**Learning Outcome:** Annotation accuracy, ML models and how they work, How to create a model with >95% accuracy.

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## **PS-I station: Chaob Technologies Pvt. Ltd (Carscan) , Pune**

### **Student**

**Name:** VEMURI PHANI SAI SREE GANESH .(2021A7PS1631P)

#### **Student Write-up:**

**PS-I Project Title:** Role Based Access Control

**Short Summary of work done:** We were initially assigned a mentor who helped us to get to know about what the company does. Later I slowly started researching on RBAC to get to know what RBAC actually is. After that the major part was understanding the different use cases of the company's product and it's clients. After that based on my understanding about RBAC, we were asked to formulate an RBAC template for the various products. It was quite a simple task but required a lot of work to be done.

**Objectives of the project:** To develop an RBAC template for the organisation based on it's various usecases and clients

**Tool used:** ClickUp, I

**Details of Papers/patents:** NA

**Brief description of the working environment:** They were kind of on the stricter side. We were given very less flexibility though it was an online station. Though we had very less industry level experience, we were expected to produce outcomes in the initial phase

only without giving prior time. And their accessibility or mentoring was less, it was more like we had to ask rather than them guiding us. Overall it was a mixed experience.

**Academic courses relevant to the project:** Nothing specific, it's more on the industrial aspect of things, I could slightly relate a few things to Database Systems course.

**Learning Outcome:** An idea of the product aspect of things. Got to know a lot regarding how the product team works. Got to know about RBAC and it's importance.

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## **PS-I station: Chaob Technologies Pvt. Ltd (Carscan) , Pune**

### **Student**

**Name:** DIVYAROOP SAHOO(2021A7PS2093G)

#### **Student Write-up:**

**PS-I Project Title:** Optimisation of Web Application Testing and Code Review using Chat GPT

**Short Summary of work done:** Found out, tested and understood the working of tool for code review which used Chat GPT as the underlying language model

**Objectives of the project:** Improve testcase generation. Improve Code quality. Ensure consistency in coding standards

**Tool used:** Chat GPT and bots that's used CHAT GPT as the underlying language model

**Details of Papers/patents:** NA

**Brief description of the working environment:** As the internship was online, most of the communication took place via teams. I learnt about the usage of Chat GPT API and integrating it with our own custom website.

**Academic courses relevant to the project:** NA



**Learning Outcome:** Understood integration of Chat GPT API with tools like GitHub action

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**PS-I station: Chaob Technologies Pvt. Ltd (Carscan) , Pune**

### **Student**

**Name:** DARSH BHAVIN DOSHI(2021A7PS2836G)

**Student Write-up:**

**PS-I Project Title:** License disk detection

**Short Summary of work done:** Made an openCV Algorithm

**Objectives of the project:** To create an openCV model

**Tool used:** Na

**Details of Papers/patents:** Na

**Brief description of the working environment:** Great working environment

**Academic courses relevant to the project:** AI,ML, FDS,ASM

**Learning Outcome:** Python, GitHub, machine learning models

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**PS-I station: Chaob Technologies Pvt. Ltd (Carscan) , Pune**

## Student

Name: DAKSH YOGESH SHAH(2021AAPS0962G)

### Student Write-up:

**PS-I Project Title:** Data Annotation and License Disk Data Detection

**Short Summary of work done:** We were introduced to amazing mentors like Neha, Kartik, Siddant and Pushpak. They guided us throughout our internship. They were always available to solve any doubts we had or discuss any issues or ideas. We worked on 2 projects mainly 1. Dent and Scratch 2. Licence disk field identification At first all the interns worked on the same project dent and scratch under Kartik. We were asked to annotate all the images of the car allotted by Karthik. Annotation involves identification of dents and scratches on the car and marking and labelling them. To execute this task, we did this on the website called superannotate.com . Karthik showed us how to work and how to identify dents and scratches with regular meetings, which was quite informative and helpful. The working hours were 11am to 7pm, we were supposed to complete our work within the working hours. We had a daily online meeting for 30 min in the morning at 11am. The daily target(number of images to be annotated) gradually increased from 25 images to 225 images in two months. In July the interns were divided into two teams Team 1 - Raguram, Kamalesh Ram, Darsh Doshi, Raj Patel Team 2 - Nischith P, YSP Sandeep, Daksh Shah Team 1 had a change in the project for a week. They were asked to work under Siddant on licence disk field management. Team 2 continued to work in dent and scratch project under Karthik. In the licence disk field management project, our team of interns embarked on a fascinating endeavour to accurately label the various components present on a licence disk using the advanced makesense.ai platform. Through meticulous labelling, we aimed to create a reliable dataset that would serve as the foundation for training powerful Machine Learning (ML) models. By employing the state-of-the-art yolov5 framework, we harnessed the potential of deep learning to predict and validate the labelled data effectively. This enabled us to build robust ML models capable of recognizing and marking the labelled components on fresh, previously unseen data. Throughout the project, collaboration and teamwork were key. Our interns worked cohesively, exchanging ideas and insights, which facilitated a comprehensive understanding of the challenges and opportunities in the licence disk field management domain. The collective efforts of our team ensured that the dataset was well-curated, and the models were fine-tuned to achieve impressive levels of accuracy and precision

**Objectives of the project:** 1. Annotate data on diverse datasets to train a semi-supervised learning based ML model to identify scratches and dents on car images. 2. Using computer vision libraries, identify key textual data from license disk images

**Tool used:** SuperAnnotate, PyTorch

**Details of Papers/patents:** NA

**Brief description of the working environment:** NA

**Academic courses relevant to the project:** NA

**Learning Outcome:** Data Annotation, PyTorch Library

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**PS-I station:** Chaob Technologies Pvt. Ltd (Carscan) , Pune

**Student**

**Name:** RAJ PATEL .(2021AAPS2882H)

**Student Write-up:**

**PS-I Project Title:** Dent and Scratch Annotation and License Disk Detection Model

**Short Summary of work done:** The work began with annotating dents and scratches on vehicles which were going to be used as training set for some model senior company members were working on , later we were given our own project of license disk in which our objective was similar to that of Dent and Scratch but we were annotating license disks this time and also trianing them by ourselves

**Objectives of the project:** To label dent and scratches on the car accurately and label information on a customer's licence disk and perform training to generate accurate results

**Tool used:** Softwares- SuperAnnotate , Makesense.ai , Google Colab , YoloV5

**Details of Papers/patents:** None

**Brief description of the working environment:** The working environment was very comfortable and the mentorship I got from a senior computer vision engineer was amazing. During the project whenever we were stuck our mentor always helped us out. My expectations from the company was to make me familiar with exactly how an IT company operates and they succeeded in that. The most important learning was to never

procrastinate your tasks as it just lags the whole team behind , also to learn from others who know more some software or tool than you as it will only benefit you in the end

**Academic courses relevant to the project:** Machine Learning, Artificial Intelligence

**Learning Outcome:** 1. Learned to operate on object Detection services like Yolov5 and use them in my project  
2. Use annotation tools like super annotate for accurate data labelling

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**PS-I station: Chaob Technologies Pvt. Ltd (Carscan) , Pune**

**Student**

**Name:** SHUBHAM BIRLA .(2021B3A72965H)

**Student Write-up:**

**PS-I Project Title:** Role based access control [RBAC]

**Short Summary of work done:** Learning about RBAC and implementing it for the company

**Objectives of the project:** To create a RBAC for the company

**Tool used:** Click up

**Details of Papers/patents:** None

**Brief description of the working environment:** Small company, extensive work, hardworking people

**Academic courses relevant to the project:** none

**Learning Outcome:** Learning about RBAC and implementing it for the company

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## PS-I station: Cleareye.ai India Pvt. Ltd. , Thiruvananthapuram

### Student

Name: D NIRUPAM KRISHNAN(2021AAPS2416G)

#### Student Write-up:

**PS-I Project Title:** Enhancing Compliance-Investigating the Role of Technology solutions in Mitigating TBML risks in Trade-Based Money Laundering

**Short Summary of work done:** The project involves investigating the role of technology solutions in mitigating TBML Risks in Trade-Based Money Laundering. TBML or Trade Based Money Laundering, poses a significant challenge for financial institutions, primarily due to the reliance in manual monitoring and screening in trade financing processes. To address this issue, a study is proposed to be conducted to explore the use of technology solutions, specifically screening SWIFT Messages like MT700, to identify red flags associated with TBML. The high-level approach for the program will be as follows: 1) Read SWIFT Message into a string format 2) Load Sanction data (or master data) from csv file. 3) Extract nouns: Extraction of important nouns which include geographical locations, organization names and list of goods. 4) Match the important nouns against the sanction data 5) Alert any match found: For noun extraction, we use the libraries which include “spacy”, “nltk”, etc. For matching nouns against sanction data, we use 4 options which include : - 1) Fuzzy matching,2) TFIDF,3) NLP based,4) Soundex . The study would assess the performance and accuracy of the technology solution in identifying TBML red flags within SWIFT Messages. It would analyse its effectiveness in reducing manual efforts and improving efficiency in trade finance screening processes. The study would identify specific indicators or patterns within SWIFT Messages that are indicative of TBML activities. This would help financial institutions enhance their detection capabilities and strengthen their TBML controls.

**Objectives of the project:** When establishing TBML controls, financial institutions need to consider relevant indicators that can signal potential money laundering activities. Some common red flags include: a) Dual use goods included in the traded commodities. b) Transactions involving parties that are subject to sanctions. One of the initial steps in effectively screening trade finance transactions is to ensure accurate data capture. The information typically required for TBML screening includes: a) Customer Information: Name, address, countries involved, company registration details, and additional data on key executives, stakeholders, and beneficial owners. b) Parties involved in the trade

finance transaction: This includes both external parties such as shipping companies, insurance companies, trade finance brokers, etc. c) Details of Goods and Services: Information about individual goods or service being traded, pricing details, quantity of goods, etc By focusing on these data points and implementing robust TBML controls, financial institutions can enhance their ability to detect and prevent money laundering activities in trade finance operations

**Tool used:** 1)IDE Used-Jupyter Notebook,Pycharm 2)Educational Purposes-GeeksForGeeks,ChatGPT,Towards Data Science,medium,Udemy

**Details of Papers/patents:** No papers.

**Brief description of the working environment:** The working environment was highly collaborative. My mentor had first handed over the problem statement of the project to me. I was introduced to the rest of the employees of the organization, who had greatly helped me in clarifying my doubts regarding the new concepts I learnt, which were relevant to the technologies required for the project. This has helped me in enhancing my teamwork skills and communication. I also got a taste of office etiquettes to be followed in corporate environments. There had also been regular meetings with my mentor regarding the progress of the project where we discussed the strategy to be followed and new techniques to be implemented in the project to get better and accurate results.

**Academic courses relevant to the project:** Programming

**Learning Outcome:** 1) The study would assess the performance and accuracy of the technology solution in identifying TBML red flags within SWIFT Messages. It would analyze its effectiveness in reducing manual efforts and improving efficiency in trade finance screening processes.  
2)The study would identify specific indicators or patterns within SWIFT Messages that are indicative of TBML activities. This would help financial institutions enhance their detection capabilities and strengthen their TBML controls.  
3)The study would assess the potential impact of implementing the technology solution on mitigating the risks associated with TBML. It would provide insights into how automation and technology can enhance the detection and prevention of money laundering activities in trade finance operations  
4)Based on the study's findings, recommendations would be provided on how financial institutions can integrate and utilize the technology solution effectively within their existing systems and processes. This may include considerations for data integration, system compatibility, and potential challenges during implementation.

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**PS-I station: Coditation Systems Pvt Ltd , Pune**

**Student**

**Name: AAYUSH KUMAR SINGH .(2021A7PS0430H)**

**Student Write-up:**

**PS-I Project Title:** Project Boxy

**Short Summary of work done:** We developed a glTF Model Loader in webgpu web and native. We also rendered point clouds in python using open3D and in webGl using Three.JS PCD loader and Potree. We also explored different build systems like Bazel, Cmake and package managers like vcpkg.

**Objectives of the project:** Project Boxy aims to provide affordable access to GPU resources. Also, this sandbox environment will support compute workloads and pointcloud rendering.

**Tool used:** Visual Studio Code, Node Package Manager, Git, Cmake

**Details of Papers/patents: -**

**Brief description of the working environment:** Work provided was interesting and I learned a lot from it. Only expectations were basic programming knowledge and curiosity to learn. Overall a positive and healthy working environment.

**Academic courses relevant to the project:** Data Structures and Algorithms, Object Oriented Programming, Discrete Structures, Logic in CS, Computer Programming

**Learning Outcome:** Strong understanding of Computer Graphics fundamentals and modern graphics APIs like WebGPU. Hands on Web-Development in Typescript. Learned writing shaders for GPU execution.

## PS-I station: Coditation Systems Pvt Ltd , Pune

### Student

Name: OHIDUZ ZAMAN .(2021A7PS2005P)

### Student Write-up:

**PS-I Project Title:** Project Boxyy: Open Source GPU Remote Access and Development Suite

**Short Summary of work done:** This project focused on creating an open-source sandbox environment for graphics payloads. Key components included WebRTC for real-time graphics streaming on the web, native WebGPU for real-time rendering on the server, DevSync for real-time code editing, and a remote caching system for compiled resources. Through WebRTC, the team achieved real-time delivery of graphics streams on the web, ensuring secure and efficient streaming compatible with modern web browsers. WebGPU's native component facilitated optimized graphics rendering techniques, supporting shader languages like GLSL and SPIR-V. DevSync provided real-time code editing, compilation, and hot reloading of the graphics viewport, enhancing the development experience. The remote caching system reduced turnaround time for graphics compilation, optimizing resource management. Collaboration was fostered through version control systems and project management tools, encouraging a coherent and collaborative developer experience. The project adhered to open-source practices, allowing community contributions and compliance with licenses. Cloud infrastructure efficiently managed GPU resources, ensuring scalability, reliability, and security. The project prioritized security, implementing authentication and authorization mechanisms to protect user data. Comprehensive documentation and testing frameworks ensured a reliable and high-quality application. The project met non-functional requirements, including performance optimization, usability, and compatibility with major web browsers. Overall, the project delivered a successful sandbox environment, empowering developers and researchers to work on resource-intensive graphics tasks effectively.

**Objectives of the project:** 1. Develop an open-source sandbox environment for graphics payloads, integrating components such as WebRTC for web-based graphics streaming and native WebGPU for real-time rendering on the server. 2. Provide an affordable and accessible platform for developers and researchers to access GPU resources, addressing the challenge of high-end GPUs being expensive and out of reach for individuals and organizations. 3. Implement efficient and secure real-time streaming of graphics data on the web, ensuring compatibility with modern web browsers and



platforms. 4. Create a seamless development experience with DevSync, enabling real-time code editing, compilation, and hot reloading of the graphics viewport. 5. Design a remote caching system for compiled resources to reduce turnaround time for graphics compilation and optimize resource management.

**Tool used:** Hardware Tools: 1. GPUs (Graphics Processing Units): High-end GPUs were utilized for graphics rendering and streaming tasks Software Tools: 1. WebRTC: WebRTC was used to enable real-time delivery of graphics streams on the web. 2. WebGPU: The native WebGP

**Details of Papers/patents:** NA

**Brief description of the working environment:** Working Environment:

The working environment during this project was highly collaborative and dynamic. Team members were encouraged to share ideas and insights freely, fostering a positive and innovative atmosphere. Regular meetings and open communication channels ensured effective coordination and seamless progress.

Expectations from the Company:

The company sought individuals who are proactive, adaptable, and passionate about pushing the boundaries of graphics technology. Strong problem-solving skills and the ability to work in a team were essential. The company valued creativity and resourcefulness, encouraging us to explore new ideas and experiment with a myriad of new technologies.

Learning During This Project:

Throughout this project, team members had the opportunity to expand their expertise in graphics programming and gain hands-on experience with WebRTC and WebGPU. They developed a deeper understanding of GPU-CPU interaction processes and learned to troubleshoot implementation challenges effectively. The project provided exposure to cloud infrastructure, version control systems, and open-source development practices, enriching the team's skill set. Working collaboratively, team members acquired valuable teamwork and communication skills, fostering a cohesive and productive work environment. The project offered a valuable learning experience, propelling team members' professional growth and expertise in graphics technology.

**Academic courses relevant to the project:** Computer Programming, DSA, OOP, Computer Graphics

**Learning Outcome:** 1. Proficient understanding of integrating WebRTC for real-time graphics streaming and WebGPU for native server-side graphics rendering.

2. In-depth knowledge of shader languages, such as GLSL or SPIR-V, and optimized graphics rendering techniques.

3. Practical experience in developing a remote caching system for compiled resources, improving graphics compilation efficiency.

4. Ability to collaborate effectively in a team environment, utilizing version control systems and project management tools for seamless collaboration.

5. Familiarity with cloud-based infrastructure and services, ensuring scalability, reliability, and security of the remote access system.
6. Experience in implementing robust security measures to protect user data and prevent unauthorized access, complying with security best practices and industry standards.
7. Proficiency in documentation and testing, providing clear and comprehensive guidance for developers and users, ensuring reliability and quality of the applications.
8. Understanding of non-functional requirements, including performance optimization, usability, reliability, scalability, and compatibility considerations in graphics application development.

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## PS-I station: Coditation Systems Pvt Ltd , Pune

### Student

Name: JOEL TONY(2021A7PS2077G)

### Student Write-up:

**PS-I Project Title:** Project Boxy: Open Source GPU Remote Access and Development Suite

**Short Summary of work done:** During PS-I, I had a comprehensive learning experience focused on build systems and graphics programming. I delved into the concept of build systems, understanding their purpose and implementation. I explored two major types: task-based and artifact-based build systems, with specific emphasis on Bazel, an open-source counterpart to Google's internal Blaze build system. Moreover, I gained insights into remote-caching, a mechanism that retrieves pre-compiled objects from a distributed cache to avoid redundant recompilation of unchanged binaries. Additionally, I explored remote-execution, which enables the inclusion of developer workstations in a distributed build farm, optimizing build times. In the context of C++ projects, I acquired proficiency in utilizing CMAKE and vcpkg for managing dependencies and builds in large projects. Furthermore, I deepened my understanding of graphics programming, studying the render pipeline, shaders, and the workings of WebGPU—an innovative, OS-agnostic cross-platform graphics API. I grasped its utilization of Vulkan on Linux, DirectX on Windows, and Metal on macOS as backend graphics libraries. Overall, PS-I offered me valuable insights into build systems, graphics programming, and relevant tools, which will serve as a solid foundation for further exploration and growth in these domains.

**Objectives of the project:** Project Boxy is an ambitious open-source initiative with the primary objective of developing a sandbox environment optimized for graphics payloads. The project aims to address the challenge of limited accessibility to high-end GPUs, which are often expensive and out of reach for individuals and organizations. By providing an affordable and accessible platform for developers and researchers, Project Boxy aims to democratize GPU resources and empower users to work on resource-intensive graphics tasks without the burden of costly hardware investments. To achieve its goals, Project Boxy integrates cutting-edge technologies into its sandbox environment. The inclusion of WebRTC enables real-time graphics streaming over the web, facilitating remote interaction with graphics applications with minimal latency. Moreover, the native WebGPU component empowers the sandbox environment to perform real-time graphics rendering on the server side, offering users responsive and interactive graphics experiences. DevSync, another integral feature, fosters collaboration by allowing multiple users to engage in real-time code editing on the same graphics payload. This functionality enhances teamwork and streamlines the development process, leading to more efficient prototyping and debugging. Furthermore, the project incorporates a remote caching system to store compiled resources for graphics payloads. By doing so, Project Boxy reduces redundant work, enhances performance, and decreases response times for users, optimizing the overall experience. Through its comprehensive set of objectives, Project Boxy aims to create a platform that not only caters to the needs of developers and researchers working on graphics-intensive tasks but also encourages collaboration within the open-source community. By fostering an engaged community, the project seeks to continuously improve and enhance the sandbox environment, driving innovation and broader adoption in the realm of real-time graphics on the web.

**Tool used:** Bazel, CMAKE, vcpkg, Docker, WebGPU

**Details of Papers/patents:** N/A

**Brief description of the working environment:** During PS-I, I had the opportunity to work in a fully remote environment. The company's work culture included daily standups that later transitioned into weekly standups. Progress was tracked through a shared GSheet, and we could openly discuss any challenges or blockers with our mentor, who provided valuable guidance and assistance in resolving issues.

When I joined the company, my main expectation was to work on a meaningful project, and I'm happy to say that this expectation was met. Throughout the internship, I gained valuable insights into how the industry operates and what it's like to work in a professional setting. I significantly improved my communication skills by effectively sharing updates and keeping multiple stakeholders informed while managing their expectations. Moreover, I delved into the application of technology to solve real-world problems, and I had the opportunity to develop my technical skills in the domains of build systems and graphics programming. Working on a project related to computer systems was particularly rewarding.

Before starting PS-I, I had specific learning goals, including exploring a new field within computer systems, which I achieved. I also got the chance to familiarize myself with software engineering practices and learn how to develop applications at scale.

Having a mentor throughout the internship was invaluable. It made the process of exploring a new field less daunting as they provided guidance, shared their experiences, and directed us to valuable learning resources.

Overall, my experience during PS-I has had a significant impact on my professional development. It has given me a practical understanding of industry practices and how technology is applied to real-world scenarios. The knowledge and skills I acquired during PS-I will undoubtedly benefit me in my future career as I move forward with a solid foundation in computer systems and software development practices.

**Academic courses relevant to the project:** Computer Graphics, Computer Programming, Software Engineering, Object Oriented Programming

**Learning Outcome:** Participating in Project Boxy offers major learning outcomes in graphics payload development, WebRTC integration, WebGPU implementation, real-time code editing, remote caching, affordable GPU resource management, open-source collaboration, problem-solving, GPU-web interaction, user experience, and innovation in web-based graphics rendering. Participants gain hands-on experience, teamwork skills, and insights into optimizing performance and accessibility while pushing the boundaries of real-time graphics on the web.

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**PS-I station: Coditation Systems Pvt Ltd , Pune**

**Student**

**Name:** PATHIK SHAH(2021A7PS2085G)

**Student Write-up:**

**PS-I Project Title:** Project Boxy

**Short Summary of work done:** The project involves us learning and implementing graphics programming, using the cutting-edge WebGPU api to effectively render complex 3-D models and scenes on the web by viewporting the rendered objects to a web browser of the client. This makes rendering 3-D scenes cross-platform and also

eliminates the need and necessity of having high-end graphic processing GPUs to do the same. Overall, my experience with Coditation systems was extremely knowledgeable and helped me gain a better and a deeper understanding of how graphics programming works and got to know about its application in a lot of other fields than the famously known game development like medical sciences, AI, architecture, etc. I am very glad and happy that I could work on something I was interested in and was passionate about.

**Objectives of the project:** Project Boxy aims to provide affordable and accessible GPU resources to developers and researchers working on resource-intensive tasks. Currently, high-end GPUs are expensive and out of reach for individuals and organizations. The project aims to address that challenge by offering a sandbox environment for the development and deployment of graphics payloads.

**Tool used:** VS code, WebGPU API, Pointcloud, Three Js

**Details of Papers/patents:** -

**Brief description of the working environment:** The working environment was pretty nice, the mentor was very helpful and the workflow was good. The project was interesting and helped me gain new knowledge regarding the graphics programming field.

**Academic courses relevant to the project:** OOP, DSA, CP

**Learning Outcome:** Graphics programming(basic), working as a team, diving work between people, Javascript(basic), npm

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**PS-I station: Coditation Systems Pvt Ltd , Pune**

**Student**

**Name: PRATEEK SAURABH CHITRE(2021A7PS2841G)**

## **Student Write-up:**

**PS-I Project Title:** Project Boxy

**Short Summary of work done:** The company itself was trying to develop something similar to Project Boxy. As students, our work was very research oriented, we were given different tasks everyday and had to complete them in the given time. I felt that the project domains were complex. I was in the DevSync and WebGPU teams. At different stages, we were asked to explore DevSync, WebRTC, WebGPU and get also try out Docker, Inotify Linux, WebGPU in JavaScript, etc. By the end, we were also given a point cloud repository that we had to run on our devices and try to run the same using WebGPU.

**Objectives of the project:** Project Boxy aims to provide affordable and accessible GPU resources to developers and researchers working on resource-intensive tasks. Currently, high-end GPUs are expensive and out of reach for individuals and organizations. The project aims to address that challenge by offering a sandbox environment for the development and deployment of graphics payloads.

**Tool used:** WebGPU in JavaScript, Docker, GIT

**Details of Papers/patents:** NA

**Brief description of the working environment:** The working environment was great. We had everyday meets. Both the mentors were very knowledgeable, helped us with our blockers, and were also available on the discord group. The mentors gave us targets/work every day and expected us to complete them or at least give it a try in the given time. We also had to mark what we had done on a Spreadsheet everyday.

**Academic courses relevant to the project:** None of the courses were very relevant to the project. We had to learn everything from scratch.

**Learning Outcome:** During my two-month internship, I gained valuable hands-on experience and developed a deeper understanding of the industry's practices, which significantly enhanced my professional skills and prepared me for future career opportunities. I also got some experience of Docker, WebGPU, Inotify Linux and GIT.

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**PS-I station:** Coditation Systems Pvt Ltd , Pune

## Student

Name: PRITHVINANDAN KUNJITHAYA(2021A7PS3051G)

### Student Write-up:

**PS-I Project Title:** Project Boxyy

**Short Summary of work done:** Our PS-1 project at Coditation Systems aimed to develop an open source suite for graphic development, wherein graphic payloads would be compiled and streamed onto the web. There were four groups created for this purpose, namely the WebGPU, WebRTC , Compiler Infrastructure and the DevSync groups. As a part of the WebRTC track, we tested various existing implementations of the WebRTC standard and tried running them on a remote EC2 instance (hosted on AWS), within a Docker container. In the latter half of the internship, all members focussed on the WebGPU track, and learnt about graphics programming using the cutting edge WebGPU standard. The final task was to render a point cloud graphic of a tumour which was captured using various optical devices, using various libraries such as OpenGL and three.js.

**Objectives of the project:** To develop an open-source suite for graphic development and streaming over the web.

**Tool used:** Node, WebRTC, Docker, WebGPU, Javascript, Typescript

**Details of Papers/patents:** NA

### **Brief description of the working environment:**

The mentors at Coditation Systems were very helpful. They encouraged us to learn about various tools that would be used in the project. They also shared various resources in this regard and assisted us whenever we ran into obstacles. The entire internship was conducted online. There would be a Standup call almost daily, wherein the tasks of the previous day would be discussed along with the blockers faced. The tasks for the day would also shared in this meet. In addition to this, a Discord server was maintained for communication with the mentors and the other PS-1 interns. A daily timesheet was also maintained to keep track of the goals accomplished on each day. The mentors were very approachable and helpful, and therefore, made for a very good environment for learning and exploration of the various technologies that are used in the industry.

**Academic courses relevant to the project:** Network Programming (IS F462), Object Oriented Programming (CS F213), Computer Programming (CS F111)

**Learning Outcome:** Git and version control,  
Docker,  
WebRTC,  
Graphics programming using various API's such as WebGPU, OpenGL, threejs etc.  
Point-Cloud Rendering

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## **PS-I station: Coditation Systems Pvt Ltd , Pune**

### **Student**

**Name:** SARANSH AGARWAL .(2021B4A71306P)

#### **Student Write-up:**

**PS-I Project Title:** Project Boxyy

**Short Summary of work done:** We developed a WebGPU based graphics rendering engine and a WebRTC component to deliver real time data on the browser. Also we tried out building some solution to render point cloud data.

**Objectives of the project:** Objective of this research oriented project is to develop a graphics rendering engine using WebGPU native implementation.

**Tool used:** MSVC, WebGPU, Git, GitHub.

**Details of Papers/patents:** N/a

**Brief description of the working environment:** I got to know about various applications of my major, how graphics are rendered using webgpu and how the mathematics work behind the rendering process, our mentors were very supportive, they were in regular touch with us to monitor our progress and ready to help whenever we are stuck at some point.

Overall it was a great experience.

**Academic courses relevant to the project:** Linear Algebra



**Learning Outcome:** I got to know about graphics programming using WebGPU and how it can be used to render 3d scenes (generally used in game development).

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## **PS-I station: Coditation Systems Pvt Ltd , Pune**

### **Student**

**Name:** PIYUSH JAJRA .(2021B4A72969H)

### **Student Write-up:**

**PS-I Project Title:** Open source remote GPU(project boxxy)

**Short Summary of work done:** Gained practical experience in implementing native C++ applications using WebGPU, harnessing the power of the GPU for graphics rendering. Developed a solid understanding of WebRTC, its protocols, and its application in enabling real-time communication between web browsers. Explored rendering techniques, texture views, and transformations in WebGPU to create visually appealing and interactive graphics. Acquired skills in integrating third-party libraries like Three.js, expanding our ability to leverage advanced graphics features and functionalities. Developed a foundation for future projects in graphics application development, with the ability to adapt and explore new technologies in the field.

**Objectives of the project:** Create a open source remote gpu

**Tool used:** janus ,chrome canary,vscode

**Details of Papers/patents:** NA

**Brief description of the working environment:** Working environment was very supportive as my Ps was online we didn't visit the office

**Academic courses relevant to the project:** graphics

**Learning Outcome:** Learnt about graphics ,learnt about technologies related to tech industry

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## PS-I station: Cognix Technologies , Pilani

### Student

Name: DEEPAK AGARWAL .(2021A3PS2239P)

#### Student Write-up:

**PS-I Project Title:** Biometric Attendance System

**Short Summary of work done:** We have developed using Figma, which allowed us to create a visually appealing and user-friendly design. To implement the front-end of the application, we utilized Flutter. For the back-end development, we leveraged Flask, a lightweight and flexible Python web framework that enabled us to create robust APIs and handle various server-side functionalities efficiently. To manage and store user data, we integrated MongoDB, a NoSQL database known for its scalability and flexibility. MongoDB provides a document-based data model that allowed us to store and retrieve user information efficiently, enhancing the overall performance of the application.

**Objectives of the project:** Our aim is to make an Attendance App using Face, Teeth, and Forehead recognition.

**Tool used:** Android Studio, Figma, GitHub, Flask, Git, Jira, Flutter, Mongoddb

**Details of Papers/patents:** NA

**Brief description of the working environment:** It provides me with invaluable learning opportunities. Firstly, it helps bridge the gap between academic knowledge and industry practices. Help me gain exposure to real-world challenges, workflows, and technologies used in the field. This develops essential technical skills relevant to their discipline and also learn soft skills like communication, teamwork, and problem-solving.

**Academic courses relevant to the project:** NA

**Learning Outcome:** I learned about designing with Figma, app development with the help of Flutter, Flask, and Python and most importantly how to work together as a team

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## PS-I station: Cognix Technologies , Pilani

### Student

Name: AKSHITI GARG .(2021A3PS2499H)

#### Student Write-up:

**PS-I Project Title:** App development

**Short Summary of work done:** In our project, we began by designing the app's user interface using Figma, a popular design tool. This allowed us to create a visual representation of the app's layout, screens, and interactions. We focused on creating an intuitive and visually appealing design that aligns with the needs and preferences of athletes. Once the design was finalized, we received the app from sir, which already had Firebase integration and other necessary functionalities in place. Firebase, a comprehensive development platform, provided us with a range of services that were essential for our app's backend infrastructure. Using the existing app as a foundation, we worked on implementing additional features and refining the user experience. We leveraged Firebase's capabilities for data storage, authentication, and real-time updates to enhance the app's functionality. We expected the company to provide us with a clear understanding of the project's purpose, desired outcomes, and target audience.

**Objectives of the project:** Create a user friendly app for athletes so that they keep a track of there meals

**Tool used:** Android Studio

**Details of Papers/patents:** No

**Brief description of the working environment:** We expected the company to provide us with a clear understanding of the project's purpose, desired outcomes, and target audience. Also to provide us with the required resources, such as software licenses, hardware, and access to relevant data or APIs. We expected to provide regular feedback on our work, including constructive criticism and positive reinforcement

**Academic courses relevant to the project:** I'm interested in IT so it helped to explore a new field

**Learning Outcome:** I learned Flutter, Android Studio, Dart, Github,

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## **PS-I station: Cognix Technologies , Pilani**

### **Student**

**Name:** TIMOTHY ZACHARIAH BINESH .(2021A3PS2978H)

### **Student Write-up:**

**PS-I Project Title:** Gymnastics Analysis App

**Short Summary of work done:** The "Video Processing Gymnast" project is a cross-platform mobile application that enables users to upload multiple videos for processing and returns the processed results. Developed using Flutter, Flask, and Firebase, the app seamlessly integrates frontend and backend technologies to deliver a user-friendly experience. Users can register and log in securely through Firebase Authentication, ensuring data privacy and authorized access. Once authenticated, they can effortlessly upload videos from their device to Firebase Storage. The uploaded video URLs are stored in Cloud Firestore, associating them with the user's account for efficient data management. To process the videos, the app utilizes a Python script called `vault_gymnast.py`, integrated into the Flask backend. When a user initiates video processing, the app sends the video URLs to the Flask API, which triggers the Python script for each video. The script performs the necessary processing, such as applying filters, compression, or other enhancements, before returning the processed video URL or the video itself. Throughout the processing, users receive real-time feedback on the status of their videos, thanks to progress indicators and status updates. Error handling mechanisms ensure a smooth user experience and prompt notifications in case of any issues during video upload or processing. The app prioritizes performance optimization, making video processing seamless and efficient, even with larger files. It aims to deliver an intuitive and visually appealing user interface, enhancing the user experience and encouraging users to engage with the app regularly. Upon completing the project, learners acquire proficiency in Flutter for building cross-platform apps, Flask for creating API endpoints, and Firebase for handling user authentication and data storage. They also

gain valuable insights into integrating Python scripts with backend servers, managing data with Firestore, and ensuring secure app development practices. In conclusion, the "Video Processing Gymnast" project empowers learners to create a powerful and practical application that harnesses the strengths of Flutter, Flask, and Firebase, providing a valuable skill set for future mobile app and web development endeavors.

**Objectives of the project:** Build an app using flutter , flask and firebase and integrate all of them for Video processing

**Tool used:** Flutter Firebase (Firebase Authentication, Firebase Storage, Cloud Firestore) Flask Python HTTP Package (Flutter) Subprocess Module (Python) Flutter Widgets and UI Libraries Firebase Console Text Editor / IDE Terminal / Command Prompt

**Details of Papers/patents:** No

**Brief description of the working environment:** Working Environment:

Cognix Technologies, located within my college campus, is a small startup founded by two professors with no other employees. The close-knit and collaborative atmosphere fosters a supportive learning and skill development environment. As a PS-I student, I have the unique opportunity to interact with experienced professionals closely, enabling seamless communication and easy access to resources for the project. The startup ambiance encourages flexibility, adaptability, and open discussions, promoting innovation and experimentation.

Expectations from the Company:

Cognix Technologies expects a proactive and dedicated approach from me for the assigned project. The small team size emphasizes self-reliance and taking the initiative to accomplish tasks efficiently. Timely communication and updates are crucial to ensure progress alignment. The company values my participation in discussions, providing input and suggestions to enhance the project.

Learning during PS-I:

During PS-I at Cognix Technologies, I will gain invaluable insights into startup operations, entrepreneurship, and project management by working closely with the co-founders. The hands-on experience in building an app with Flutter, integrating Flask and Firebase, and video processing using Python will significantly enhance my technical skills. Collaborating with experienced professors will nurture my problem-solving abilities and critical thinking. The personalized guidance accelerates my learning curve, preparing me for real-world challenges and career growth. The startup environment instills adaptability and resourcefulness, enriching my professional development.

**Academic courses relevant to the project:** CS F111, Python

**Learning Outcome:** Proficiency in Flutter, Flask, and Firebase.

Understanding of video processing integration.

Knowledge of user authentication and data management.

Familiarity with API development and error handling.

Skills in optimizing app performance.

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## PS-I station: Cognix Technologies , Pilani

### Student

Name: HARSH GROVER .(2021A8PS2557P)

#### Student Write-up:

**PS-I Project Title:** Biometric Attendance System

**Short Summary of work done:** We have developed using Figma, which allowed us to create a visually appealing and user-friendly design. To implement the front-end of the application, we utilized Flutter. For the back-end development, we leveraged Flask, a lightweight and flexible Python web framework that enabled us to create robust APIs and handle various server-side functionalities efficiently. To manage and store user data, we integrated MongoDB, a NoSQL database known for its scalability and flexibility. MongoDB provides a document-based data model that allowed us to store and retrieve user information efficiently, enhancing the overall performance of the application.

**Objectives of the project:** Our aim is to make an Attendance App using Face, Teeth, and Forehead recognition.

**Tool used:** Android Studio, Figma, GitHub

**Details of Papers/patents:** NA

**Brief description of the working environment:** It provides me with invaluable learning opportunities. Firstly, it helps bridge the gap between academic knowledge and industry practices. Help me gain exposure to real-world challenges, workflows, and technologies used in the field. This develops essential technical skills relevant to their discipline and also learn soft skills like communication, teamwork, and problem-solving.

**Academic courses relevant to the project:** NA

**Learning Outcome:** I learned about designing with Figma, app development with the help of Flutter, Flask, and Python and most importantly how to work together as a team

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## PS-I station: Cognix Technologies , Pilani

### Student

Name: NISHIL BHAVSAR .(2021AAPS2959H)

### Student Write-up:

**PS-I Project Title:** Chatgpt integration for bitsat

**Short Summary of work done:** During my Practice School-I (PS-I) at CogniX Technologies, I undertook the project of integrating ChatGPT for BITSAT. The main objective was to develop a website that could assist students in the BITSAT admission process by providing personalized replies and guidance to their queries. To achieve this, I started by designing an intuitive frontend interface using HTML, CSS, and JavaScript. The frontend allowed students to input their queries and retrieve relevant information regarding the BITSAT admission process. In the backend, I integrated ChatGPT using a secure API, which involved setting up authentication and ensuring the confidentiality of user data. When a user submitted a query through the frontend, it was forwarded to the backend, where ChatGPT processed the input using a trained model and relevant documents. The generated response was then sent back to the frontend and displayed to the user. To improve the accuracy of responses, I curated a specific dataset related to the BITSAT admission process and trained the ChatGPT model accordingly. This training enhanced the chatbot's ability to understand the context of user queries and provide informative and helpful responses. Throughout the project, I faced challenges such as troubleshooting technical issues, optimizing system performance, and managing project timelines. However, through effective problem-solving and collaboration with my mentor, I successfully completed the project within the given timeframe. Overall, the project involved frontend development, backend integration with ChatGPT, dataset curation, and problem-solving, resulting in the creation of a website that can assist BITSAT aspirants with their counseling process.

**Objectives of the project:** The objectives of the project "ChatGPT Integration for BITSAT" as mentioned in the report are: Develop a website that integrates ChatGPT with the BITSAT admission process. Provide personalized replies and guidance to students' queries related to the BITSAT counseling process. Create an intuitive and interactive

frontend interface for user interaction. Establish backend integration with ChatGPT using a secure API. Train the ChatGPT model using a curated dataset specific to the BITSAT admission process. Ensure accurate and relevant responses from ChatGPT based on trained models and relevant documents. Continuously improve and refine the training process by incorporating the latest information and user feedback. Enhance the project through rigorous testing, user feedback collection, and identification of areas for improvement. Ensure the security and privacy of user data. Regularly update and maintain the system to keep it up-to-date with advancements in ChatGPT technology and the BITSAT admission process. These objectives aim to provide valuable assistance to BITSAT aspirants during their counseling process by integrating ChatGPT into a user-friendly website interface.

**Tool used:** HTML, CSS, JS, NODEJS, Chatgpt api's

**Details of Papers/patents: -**

**Brief description of the working environment:** During my Practice School-I (PS-I) at CogniX Technologies, I had the opportunity to work in a professional and collaborative environment. The working environment at CogniX Technologies was highly conducive to learning and growth. I was assigned to the team under the guidance of Mr. Ashutosh Bhatia, who served as my mentor throughout the duration of the project.

As an intern, I had certain expectations from the company, which were met during my PS-I. Firstly, I expected a supportive and nurturing environment that would foster my learning and skill development, and CogniX Technologies fulfilled this expectation. The company provided me with access to the necessary resources, tools, and technologies required for the successful completion of the project. They also offered guidance and assistance whenever needed.

Furthermore, I expected to gain practical experience and enhance my technical skills during PS-I, and CogniX Technologies exceeded my expectations in this aspect. Working on the ChatGPT integration project for BITSAT allowed me to apply my knowledge of frontend development, backend integration, and dataset curation in a real-world scenario. I had the opportunity to work with HTML, CSS, JavaScript, and ChatGPT API, which enhanced my proficiency in these technologies.

Additionally, I had the expectation of working in a collaborative team environment that encouraged open communication and knowledge sharing. CogniX Technologies provided a supportive team environment where I could collaborate with my mentor and other team members. This allowed me to gain insights from their expertise, receive valuable feedback, and learn from their experiences.

Overall, my PS-I experience at CogniX Technologies exceeded my expectations. I was able to work in a professional and supportive environment, gain practical experience, enhance my technical skills, and collaborate with knowledgeable individuals. It was a valuable learning opportunity that contributed significantly to my personal and professional growth.

**Academic courses relevant to the project:** C programming



**Learning Outcome:** As the primary author of this report and the individual responsible for completing the project on ChatGPT integration for BITSAT, I have gained several major learning outcomes from this experience. These include:

**Enhanced understanding of Artificial Intelligence (AI) and Natural Language Processing (NLP):** Through this project, I have deepened my knowledge and practical understanding of AI and NLP concepts. Working with ChatGPT has given me insights into how AI models can be trained to generate human-like responses and process natural language inputs.

**Proficiency in frontend development:** Developing the website interface for integrating ChatGPT has significantly improved my skills in frontend development. I have gained proficiency in HTML, CSS, and JavaScript, which are essential technologies for creating intuitive and user-friendly interfaces.

**Integration of backend technologies:** Integrating ChatGPT into the website required establishing a secure API and backend infrastructure. This experience has provided me with valuable insights into backend development, API integration, and data processing.

**Dataset curation and model training:** To ensure accurate and relevant responses from ChatGPT, I curated a specific dataset related to the BITSAT admission process and trained the model accordingly. This process has given me hands-on experience in dataset curation, model training, and the importance of data quality for AI applications.

**Problem-solving and troubleshooting:** Throughout the project, I encountered various challenges and issues that required problem-solving and troubleshooting skills. I learned to identify and resolve technical issues, improve system performance, and optimize the integration of ChatGPT.

**Project management and collaboration:** Completing this project within the given timeframe required effective project management and collaboration with my mentor and project faculty. I developed skills in time management, task prioritization, and effective communication to ensure the successful completion of the project.

**Practical application of AI in the education domain:** By developing a chatbot integrated with the BITSAT admission process, I have gained practical insights into the application of AI in the education domain. This experience has highlighted the potential of AI-powered solutions in assisting students and providing personalized guidance.

These major learning outcomes have significantly contributed to my growth and understanding in the fields of AI, NLP, frontend and backend development, dataset curation, problem-solving, project management, collaboration, and the practical application of AI in education.

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**PS-I station: Cognix Technologies , Pilani**

**Student**

Name: NACHIKETA NALIN .(2021B1A82273P)

### Student Write-up:

**PS-I Project Title:** Mental Health Check-up App

**Short Summary of work done:** I had to create a mobile application which could be capable enough to take an online mental health checkup test of athletes. In the athletes app/screen there would be a button which would say 'request a test'. After clicking on it, a notification would go on the doctor's app that a particular athlete would like to take a mental health checkup test. Now it will depend on the doctor to either allow the test or decline it. If the doctor gives the athlete the access to take a test, then the athlete will be able to give the test. If the doctors declines the permission of giving the test then the athlete will be directed to the home page.

**Objectives of the project:** Mobile application development

**Tool used:** Figma, Dart, Flutter, Flask.

**Details of Papers/patents:** No any.

**Brief description of the working environment:** The working environment was very nice as everyone was supportive of each other and everyone was trying to learn and grow. The mentorship and guidance received form our mentors was very insightful. The company is in a very starting stage and we were the first batch of PS1 interens and it was an amazing learning journey and experience.

**Academic courses relevant to the project:** Computer Programming (CS F111), Technical report Writing.

**Learning Outcome:** I learnt various technologies like dart, figma, flutter and now i am confident that I can make a mobile application application.

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**PS-I station: Cognix Technologies , Pilani**

**Student**

**Name:** ABHINAV LAMBA .(2021B4A70913P)

**Student Write-up:**

**PS-I Project Title:** Computer Vision in Physiotherapy

**Short Summary of work done:** Developed an AI model for the webcam therapy

**Objectives of the project:** To develop AI Model for physio exercises

**Tool used:** Mediapipe, python

**Details of Papers/patents:** None

**Brief description of the working environment:** Good

**Academic courses relevant to the project:** Deep learning

**Learning Outcome:** Mediapipe,python

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**PS-I station: Commvault Systems , Bengaluru**

**Student**

**Name:** THOMAS THYVELIKKAKATH SABU(2021A7PS0011G)

**Student Write-up:**

**PS-I Project Title:** AI Powered L1 Support Automation

**Short Summary of work done:** Dived deep into word embeddings, transformers, and openai's gpts. Got lots of practical and hands on experience in the fields of AI and ML. Learnt how to design prompts properly along the way and how the gpt reacts to very minute details. Learnt how to optimise token usage and embedding costs. Learnt also how to develop a fully functional web application for the UI with many features.

**Objectives of the project:** Automating the Level one support of the organisation. Aimed to show the capability and the scalability of the concept and how it can impact the company greatly.

**Tool used:** Visual studio, chromaDB, OpenAI GPTs, LangChain document loaders and text splitters, LangChain retrieval and conversational Retrieval Chains, LangChain buffer memory, Streamlit

**Details of Papers/patents: -**

**Brief description of the working environment:** Best workplace culture ever seen, everybody was great and very helpful(very understanding of the fact that we were only 2nd yearites). The facility was out of this world as well with a massive workspace(got too used to the triple monitor). Also had a gym and various other recreational games like pool, TT, Xbox etc. Food was served for free three times a day and was really good. The mentors I worked under were extremely helpful and very understanding and gave me work that I was capable of doing while also pushing me to expand my boundaries just enough. Overall it was a very fun experience and learning about 2 fields like AI/ML and UI design, which I had never touched before, felt like a breeze and was very enjoyable even though we went very deep into it.

**Academic courses relevant to the project: -**

**Learning Outcome:** Worked with GPTs, embeddings through LangChain libraries and got deep experience with the same. Also learnt to develop the UI for the bot.

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**PS-I station: Commvault Systems , Bengaluru**

**Student**

**Name: DANAI ADITYA DHANANJAY(2021A7PS2509G)**

**Student Write-up:**

**PS-I Project Title:** Automatic Cloud Archive Recall Support for Sybase Database

**Short Summary of work done:** My task for the project was to retrieve these Archive File IDs from CSDB and add a specific Sybase Agent case in the codebase in which the function will get the information of Archive File Id's required. In the first two weeks before I did research on the existing restore workflow analyzing the methods used in it to get the AFileId details. Created a test function to check and validate the working of the SP in real time restore workflow. After testing and debugging of the code in restore workflow, I added the same logic in the Sybase recall workflow case to get the AFileId details.

**Objectives of the project:** Automate Recall workflow for Sybase Agent Commvault Architecture

**Tool used:** Microsoft Visual Studio, Microsoft SQL Server Management Studio

**Details of Papers/patents:** NA

**Brief description of the working environment:** I had a wonderful experience working on the project and completing the work within the timeframe of the internship. I was able to understand the working of an enterprise level codebase and also I gained invaluable guidance from my mentors about corporate culture and work ethics.

**Academic courses relevant to the project:** Computer Programming, Data Structures and Algorithms, Database Management Systems, Network Programming, Object Oriented Programming

**Learning Outcome:**

- How multiple codebases connect with each other and do required tasks
- Debugging and testing techniques
- Various application for development - Microsoft Visual Studio, SQL Server Management Studio
- I was able to understand the working of an enterprise level codebase and development methods

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**PS-I station: Commvault Systems , Bengaluru**

**Student**

Name: SAI PRAJEET CH V V .(2021AAPS3014H)

## Student Write-up:

**PS-I Project Title:** PostgreSQL App-aware backup

**Short Summary of work done:** PostgreSQL is a popular open-source relational database management system. The PostgreSQL App-Aware Backup Project aims to create a reliable backup process for PostgreSQL databases, taking into account the specific requirements of the application. The App-aware process captures the state of application data right before the backup, including data in memory and pending transactions. This makes it easier to restore the application for continued use. After the software snapshot is created, the application resumes. The project focuses on the PostgreSQL App-aware process. It requires understanding Commvault's architecture, normal backup, and App-aware backup mechanisms, performing Appaware backups on other similar applications like MySQL and OracleDB for which App-aware is already implemented, reading and understanding log files to find errors and/or adding or modifying the code, and learning to read the codebase and deduce the function of the variables and functions in the code.

**Objectives of the project:** To configure PostgreSQL for Appaware backup

**Tool used:** C++, VScode, UNIX commands

**Details of Papers/patents:** None

**Brief description of the working environment:** The project focuses on the PostgreSQL App-aware process. It requires understanding Commvault's architecture, normal backup, and App-aware backup mechanisms, performing Appaware backups on other similar applications like MySQL and OracleDB for which App-aware is already implemented, reading and understanding log files to find errors and/or adding or modifying the code, and learning to read the codebase and deduce the function of the variables and functions in the code.

My mentors supported me throughout my time here at commvault and helped in overcoming the challenges during the project. My time here at commvault taught me a lot about corporate culture, maintaining a work-life balance, and, most important of all, it taught me what it meant to be a software engineer working on real-time projects.

The working environment was professional and all the employees in commvault were very friendly and approachable. The company has exceed my expectations.

**Academic courses relevant to the project:** C programming(CS F111)

**Learning Outcome:** UNIX commands, real world project,

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## PS-I station: Commvault Systems , Bengaluru

### Student

Name: ROHAN TIWARI .(2021B2AA2748P)

#### Student Write-up:

**PS-I Project Title:** Security Enhancements in Internal APIs of the software for multi-tenant environments

**Short Summary of work done:** I gained experience in dealing with complex C++ code in a systems company. I implemented a scalable security module for multi-tenant environments like Metallic (A Commvault venture) to enable enhanced verification of client access. Worked on implementing error handling. Performed development integration in a local environment simulating multi-tenancy. Lead the effort to submit code changes via internal update system which is viewed by Code-reviewers who suggest appropriate changes. After vigorous testing the changes move into production.

**Objectives of the project:** The objective of the project was to implement a scalable security module to enhance verification of client access.

**Tool used:** C++ , Microsoft SQL Server, Visual Studio

**Details of Papers/patents:** N/A

**Brief description of the working environment:** The environment was very professional. Mentors were very helpful in guiding me even though they were busy with their own work. As an intern you may have food (3 meals) as a bouffe service at no cost. The team I was allotted to, had a project which was difficult to complete fully in 2 months and required team specific training. There were deadlines in place and the manager would regularly keep a check on the progress. Overall it was a great learning experience in the Systems domain. You may have to be pro-active in communicating with your mentors and show interest in completing tasks. (This is team specific)

**Academic courses relevant to the project:** Object Oriented Programming, Database Systems, Network Programming.

**Learning Outcome:** Build system, update making & patching.

Unit testing or integration testing.  
Source code versioning system.  
Client-server based request/response communication.  
How data is organized in related tables, stored procs, joins and SQL queries.  
Invoking database queries, objects and processing result sets from CPP code.  
Software development lifecycle – requirement gathering, analysis and design, coding, integration, code review, testing, deployment.

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## PS-I station: Commvault Systems , Bengaluru

### Student

Name: [SURYASHASHANK VENKATA GUDIPUDI .\(2021B3AA0866H\)](#)

### Student Write-up:

**PS-I Project Title:** Automated Testing Dashboard : Streamlining Test Management

**Short Summary of work done:** In this project, I had successfully developed an automated testing dashboard for Commvault's virtual machines. The dashboard utilizes Next.js, TypeScript, and Tailwind CSS for the frontend, providing a modern and user-friendly interface for test case and test set management. The backend is powered by FAST API Python, enabling seamless communication with the frontend and efficient data processing. To store and manage test-related information, we integrated Microsoft SQL Server, ensuring centralized data retrieval and visualization. The dashboard streamlines the testing process, replacing manual efforts with automated test execution, leading to faster feedback on software behavior and improved efficiency. The framework enables comprehensive coverage of test cases and test sets, enhancing the reliability of Commvault's data management processes. The dashboard also provides analytics for skipped, passed and failed test cases. This project makes it easier for Commvault to trigger automated test cases and provides advanced analytics for the same.

**Objectives of the project:** The objective of the project involved deploying a dashboard for triggering automated test cases and test sets for testing Commvault's new software releases



**Tool used:** I used FAST API, Microsoft SQL Server, SQLAlchemy, Tailwind CSS, NextJS. Also used LDAP(Lightweight Directory Access Protocol) and JWT for auth.

**Details of Papers/patents: -**

**Brief description of the working environment:** During my PS-I (Practical Summer Internship) at Commvault, I experienced a highly supportive and conducive working environment. The company provided a well-equipped working space with access to laptops, enabling us to efficiently carry out our tasks. The provision of free food further contributed to a comfortable and enjoyable work atmosphere.

One of the most significant aspects of my experience at Commvault was the presence of experienced mentors who were incredibly helpful and approachable. They provided guidance and support whenever I faced challenges or had questions related to my work. Their expertise and willingness to share knowledge enriched my learning experience during the internship.

The company had clear expectations from its interns, encouraging us to actively participate in projects and contribute our ideas to the team. This level of involvement not only allowed us to gain valuable hands-on experience but also instilled a sense of ownership and responsibility in our work.

During my PS-I at Commvault, I had the opportunity to work on real-world projects, contributing to the development and improvement of their software solutions. This practical exposure expanded my technical skills and deepened my understanding of the industry's best practices.

Overall, my time at Commvault was marked by a positive and nurturing learning environment. The combination of a supportive team, access to resources, and exposure to real-world projects made my PS-I an enriching and valuable experience. I am grateful for the knowledge gained and the professional growth achieved during my internship at Commvault.

**Academic courses relevant to the project:** OOPS, Computer Networks , DBMS

**Learning Outcome:** I learnt on how a large enterprise company works and how enterprise grade should be structured as well. I also learned on how to use various tech stacks including FAST API, SQLAlchemy integrating the backend to the database using an ORM.

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**PS-I station: Commvault Systems , Bengaluru**

## Student

Name: ANANYA AGRAWAL .(2021B3AA1935H)

### Student Write-up:

**PS-I Project Title:** AUTOMATION OF DOCKER CONTAINER & IMAGE SCANNING

**Short Summary of work done:** Automatic vulnerability scanning lets you automatically scan Docker images and file systems for vulnerabilities. When you push an image to a Docker Hub repository after turning on vulnerability scanning, the Docker image scanner automatically scans the image to identify vulnerabilities. Vulnerability Scanning lets you review the security state of your images and file systems and take actions to fix issues identified during the scan, resulting in more secure deployments. We are working on automating this vulnerability scanning process entirely. We use different vulnerability scanning tools such as Trivy and Grype to generate different file formats such as SBOMs, HTML, and JSON files. We parse through these file types and pick up the important fields in each of these files, such as Package Name, CVE Numbers (that are basically the IDs of the Vulnerabilities), Installed Versions, Service Pack number, Maintenance Release Numbers, Severity of the Vulnerabilities etc. This process is performed using both, Trivy as well as Grype. All the additional vulnerabilities scanned by Grype are also added. In order to uniquely identify the packages and the Vulnerabilities associated with them, we generate a Checksum. As a part of the project, we were asked to create the Checksum function. To do so, we used the hashlib library in Python, using the MD5 hashing. The results of both Trivy and Grype are combined based on uniquely merging with the Checksum and package name. Parallely an MR (Merge Request) is also generated, which contains only the High and Severe Criticality Packages with bundled CVE numbers corresponding to a unique package and Checksum combination. The MR also contains a summary of the vulnerability, which is extracted using the BERTSum model. Lastly, a program is written which calls all the above said functions, which can finally be triggered to obtain the results. Alternatively, an API Server was created to deploy and schedule scans in a timely manner.

**Objectives of the project:** We have worked on completely automating the scanning of Commvault's docker images and file systems. Our Primary objective is to ensure that every time a container image or file system is updated, it is automatically scanned for vulnerabilities and reports as well as merge requests regarding the same are produced in a timely and well formatted manner without the need for human intervention.

**Tool used:** Virtual Machines, Linux Terminal, Grype, Trivy, Python3, MS SQL

**Details of Papers/patents: -**

**Brief description of the working environment:** I would like to thank all my team members for their cooperation and hard work. In addition, I would like to thank Mr. Joe Sabu for such smooth communication and for organizing training sessions necessary for Commvault. Apart from these, I would like to thank our faculty, Prof. CK Ramesha, for supporting and guiding us through enrolment. He has been very supportive and is always ready to help us in any way he can. His active participation in the internship has strengthened communication between Commvault's mentors and us. A special thanks to Mr. Vinudass Ravi and Mr. Vishwas Badiger for their help throughout the course of the PS-I Program. Finally, I thank our institution, BITS Pilani, for catering this fantastic opportunity through PS-1.

**Academic courses relevant to the project: -**

**Learning Outcome:** After using different vulnerability scanning tools such as Trivy and Anchore/Grype To scan docker images and generate different file formats, we have parsed through all these file types and compared results to decide which all fields are required to be appended in the DB. We also explored natsort and hashing libraries, which are used to return the highest version fixes and hexadecimal checksums respectively. We also experimented with BERTSum model for Description Summarization. We now accurately collect all the information we require about the vulnerabilities, insert it into their database and email the respective team handling that vulnerability. To control and schedule our scanning process the API we built as well as the python scripts are directly usable. All necessary documentation for it's usage and modification has also been written. Hence following the duration of PS-I the company has suitable means to continue and use our work.

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**PS-I station: Contenterra Software Private Limited , Hyderabad**

**Student**

**Name: HARSHIT AGARWAL .(2021A7PS0247H)**

**Student Write-up:**

**PS-I Project Title: PharmaCtrl**

**Short Summary of work done:** Initially we did assignments given by them later a week later we started working on project named PharmaCtrl. In this we need to make webpages they assigned which page to make.

**Objectives of the project:** need to make web pages

**Tool used:** As our ps is online we didn't have any hardware tools.

**Details of Papers/patents:** -

**Brief description of the working environment:** The company's working environment is good, and the mentor is helpful. Sir was ready to help at any time.

**Academic courses relevant to the project:** Object Oriented Programming

**Learning Outcome:** Learn technologies and frameworks such as React.js and Next.js

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**PS-I station: Contenterra Software Private Limited , Hyderabad**

**Student**

**Name: SPARSH KHANDELWAL .(2021A7PS1320H)**

**Student Write-up:**

**PS-I Project Title: PharmaCtrl**

**Short Summary of work done:** First, we did some tasks to showcase our understanding of the framework used in the projects, such as React, TypeScript, Nextjs, etc. Then we have to work on the PharmaCtrl site. They gave us the site URL, and then we had to make then. We have to make the pages with all the working components using all the things we learned using the tasks.

**Objectives of the project:** The objective of the PharmaCtrl project is to provide an innovative B2B pharmaceutical management system tailored specifically for pharmaceutical product manufacturers. The primary goal is to streamline operations and

improve efficiency within the pharmaceutical industry by digitizing and automating critical processes involved in the manufacturing cycle. By offering a comprehensive solution with user-friendly features, the project aims to optimize workflow and enhance productivity from raw material procurement to final product distribution.

**Tool used:** HTML5, CSS3, JavaScript, ReactJS, NextJS, Material UI, TypeScript

**Details of Papers/patents:** NA

**Brief description of the working environment:** It was an online station so we didn't have regular meets. They gave us task to create something and submit it at our convenience and when we submitted they asked us to the next assignment and submit that likewise it was going on.

**Academic courses relevant to the project:** Oops

**Learning Outcome:** The main things that I learned were the use of React, Nextjs, TypeScript, etc, and how to integrate them and make an app using all these things. We also learned various react frameworks and libraries, such as Formik, which helped us make our Projects.

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**PS-I station: Contenterra Software Private Limited , Hyderabad**

**Student**

**Name:** AJEY MALIK(2021A7PS2542P)

**Student Write-up:**

**PS-I Project Title:** PharmaCtrl

**Short Summary of work done:** Had to build a webpage of a pharmaceutical site using react Js ,next Js and material UI

**Objectives of the project:** Build a website page

**Tool used:** React Js , next js and material UI

**Details of Papers/patents: -**

**Brief description of the working environment:** It was an online PS .

**Academic courses relevant to the project: -**

**Learning Outcome:** React Js

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**PS-I station: Contenterra Software Private Limited , Hyderabad**

**Student**

**Name:** YATEE SINGH(2021A8PS2534G)

**Student Write-up:**

**PS-I Project Title:** PharmaCtrl

**Short Summary of work done:** made a website

**Objectives of the project:** Make a pharmaceutical webiste using nextJs and material UI

**Tool used:** nextJS and material UI

**Details of Papers/patents:** nil

**Brief description of the working environment:** the industry mentors were not very responsive, expected more learning experience from the company

**Academic courses relevant to the project:** CS Fundamentals

**Learning Outcome:** NextJS and Matrial UI

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## PS-I station: Contenterra Software Private Limited , Hyderabad

### Student

Name: VAIBHAV SINGH .(2021AAPS3011H)

#### Student Write-up:

**PS-I Project Title:** Pharma ctrl

**Short Summary of work done:** Completed various assignments of web development using next.js and react

**Objectives of the project:** Designing components similar to pharma cntrl website

**Tool used:** Html, css, js, next.js react and material ui

**Details of Papers/patents:** None

**Brief description of the working environment:** Good

**Academic courses relevant to the project:** It was an IT intership and my core is electrical

**Learning Outcome:** Next. Js and react

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## PS-I station: Contenterra Software Private Limited , Hyderabad

### Student

Name: SABHAYA JAY GIRISHBHAI(2021B5A72172G)

**Student Write-up:**

**PS-I Project Title:** Clock-Ticker

**Short Summary of work done:** Created an user interface for the app and added some useful tools.

**Objectives of the project:** To create a time management application

**Tool used:** React.JS, Next.JS, Html, Css, javascript

**Details of Papers/patents:** -

**Brief description of the working environment:** Friendly working environment for new interns, mentors are helpful and your expected to be familiar with basics of above techs

**Academic courses relevant to the project:** Computer programming

**Learning Outcome:** Frontend development

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**PS-I station: COUTURE AI PVT LTD. , Bengaluru**

**Student**

**Name:** AMEYA RAJESH KASTURE(2021A7PS2058G)

**Student Write-up:**

**PS-I Project Title:** Data Acquisition and Automation

**Short Summary of work done:** This project focuses on web scraping to collect data and automating tasks using scripts. It involves extracting data from web pages, performing translation, and building an end-to-end page translator with an auto login bot. Additionally, the collected data is annotated for training image processing models. Proficiency in machine learning techniques is also developed to improve the models' functionality and performance.



**Objectives of the project:** Front end data extraction using beautiful soup and scripting to automate processes

**Tool used:** VIA VS code

**Details of Papers/patents:** -

**Brief description of the working environment:** The project environment was supportive and conducive to personal growth. With manageable expectations and a friendly atmosphere, I had the space to learn and explore at my own pace. The collaborative team encouraged open discussions and provided guidance whenever needed. This nurturing environment empowered me to take on new challenges and strive for excellence in my contributions, leading to a fulfilling learning experience.

**Academic courses relevant to the project:** DSA,OOP

**Learning Outcome:** Usage of different python libraries,front end and Machine learning concepts

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**PS-I station: COUTURE AI PVT LTD. , Bengaluru**

**Student**

**Name: SHAILESH CHANDRA RAO .(2021A7PS2064H)**

**Student Write-up:**

**PS-I Project Title:** Python library for Time Series Analysis

**Short Summary of work done:** I developed a python library using statsmodels API, Pandas and NumPy for all kinds of time series plots, analysis, models, and properties. The task was to make usage of all these features an easy and low-code task using automation pipelines. It also includes tests and days preprocessing functions to organise data intuitively.

**Objectives of the project:** Make usage of time series models and properties a simple low-code task

**Tool used:** Python, Jupyter, Statsmodels, Numpy, Pandas

**Details of Papers/patents:** N/A

**Brief description of the working environment:** Work time is from 10:30AM to 6PM. Company expected a streamlined error-free pipeline for all time series functionalities

**Academic courses relevant to the project:** CP, DSA

**Learning Outcome:** Time series analysis, python classes, ARIMA

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**PS-I station: COUTURE AI PVT LTD. , Bengaluru**

**Student**

**Name:** SANAATAN R.(2021A7PS2902H)

**Student Write-up:**

**PS-I Project Title:** Artificial intelligence library for notebooks

**Short Summary of work done:** During PS-I, I significantly contributed to the AI Library for Notebooks project, focusing on creating a centralized repository of AI functionalities for popular notebook environments. I designed the directory structure and organized categories like data pre-processing, segmentation, visualization, and deep learning using PyTorch and Huggingface's transformers. My contributions included handling missing data, implementing feature selection, exploring CNNs for image segmentation, and integrating Huggingface's transformers library for NLP tasks. I also worked on regression algorithms and hyperparameter tuning using grid and random search. Practical examples with popular datasets showcased the library's real-world applications. Overall, my contributions enriched my knowledge in AI and data analysis, creating a valuable resource for AI enthusiasts and researchers.

**Objectives of the project:** The primary objectives of this project are as follows: - Develop a complete AI library that covers various areas of AI, including machine learning, deep learning, natural language processing, computer vision, and more. - Provide a wide range of code snippets and templates within each AI area to facilitate quick prototyping and development of machine learning models. Write code snippets and develop a collection of various such snippets and templates for common AI tasks. Organize the snippets and templates into a user friendly library. Test and validate the library on various datasets and for different scenarios. Document the entire library. - Integrate the AI library seamlessly with Couture AI's platform, enabling users to leverage the full potential of the library's functionalities within a unified environment. - Ensure the AI library is user-friendly and accessible. - Continuously update and expand the AI library to incorporate emerging AI techniques, algorithms, and best practices.

**Tool used:** Programming Language used- Python . Various Machine learning Libraries and packages were used which include pandas, numpy, matplotlib, seaborn, sklearn, Deep Learning libraries- TensorFlow, Keras and PyTorch, Natural Language Processing Libraries- Spacy, nlpau

**Details of Papers/patents:** Nil

**Brief description of the working environment:** During PS-I at Couture AI, I thrived in a dynamic and collaborative environment that fostered innovation. The company's supportive atmosphere enabled me to actively contribute to the AI Library for Notebooks project. Access to cutting-edge tools like Google Colab Notebook, PyTorch, and Huggingface's transformers facilitated my learning and skill development.

I expected valuable guidance and mentorship from experienced professionals, which the team at Couture AI provided. Their insights and feedback enhanced my coding skills and project management abilities. Meaningful tasks challenged me to excel in AI and data analysis.

Throughout PS-I, I extensively explored AI topics like data pre-processing, image segmentation, NLP with transformers, regression, and hyperparameter tuning. Hands-on experience implementing these techniques deepened my understanding of practical AI applications.

Furthermore, collaboration with team members honed my teamwork and communication skills. I efficiently managed time to meet project deadlines.

My PS-I experience at Couture AI surpassed expectations, laying a strong foundation for my future in AI and data science. I'm grateful for the opportunity to be part of such a forward-thinking and supportive company.

**Academic courses relevant to the project:** Machine learning , Data Science

**Learning Outcome:** Through this project, I gained hands-on experience in various areas, including data preprocessing techniques such as handling missing data, one-hot encoding, and feature selection. I also learnt about data segmentation methods like image segmentation and convolutional neural networks (CNNs) for extracting meaningful information from images. Additionally, I explored data augmentation techniques to

increase the diversity and quality of the dataset. The project provides opportunities to visualize data using popular libraries like seaborn and matplotlib, enhancing the understanding and interpretation of data patterns. I also acquired knowledge of statistical tests of significance, normality tests, and correlation tests to assess relationships and draw meaningful insights from the data. The project offers exposure to different clustering algorithms for identifying natural groupings within the dataset. Moreover, I gained proficiency in principal component analysis (PCA) for dimensionality reduction. I explored deep learning models using the PyTorch framework, allowing me to delve into advanced analysis and modeling techniques. Through this project I also got to learn various Hyperparameter Tuning techniques and popular;y used classifiers and regressors. I also gained hands-on experience on working with transformers from huggingface and exploring Natural language Processing. Lastly, I also explored a few not-so popular libraries and tools used in Data Science. Overall, the AI Library project equipped me with a wide range of skills and knowledge essential for AI and data analysis tasks.

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## **PS-I station: COUTURE AI PVT LTD. , Bengaluru**

### **Student**

**Name:** DHRUV RAVI KRISHNAN .(2021B3A70995P)

### **Student Write-up:**

**PS-I Project Title:** Applications of ML in industry

**Short Summary of work done:** Annotated/ labelled 300 videos of violence to build a violence detection model. Did a project on entity recognition using NLP.

**Objectives of the project:** Learn about various ways in which ML is used to solve problems in industry

**Tool used:** VIA Tool, PyTorch, TensorFlow, Numpy, Pandas, transformers, spaCy, BERT

**Details of Papers/patents:** NA

**Brief description of the working environment:** It was a good environment without any major deadlines. Close to no expectations, we were free to learn and explore at our own pace.

**Academic courses relevant to the project:** CP, DSA, ML

**Learning Outcome:** Usage of different python libraries and ML concepts

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**PS-I station: COUTURE AI PVT LTD. , Bengaluru**

**Student**

**Name:** RIDDHI AGARWAL .(2021B3A71117P)

**Student Write-up:**

**PS-I Project Title:** UI/UX design

**Short Summary of work done:** To design the home and overview screens of the company's AI platform according to different user roles(custom screens)

**Objectives of the project:** Design the UI of home and overview screens of the CAI Platform customised according to different user roles

**Tool used:** Figma

**Details of Papers/patents:** None

**Brief description of the working environment:** Work environment was fine and friendly. Expectations are more technical and challenging tasks for interns and learning is a good hold on Figma and UI /UX design

**Academic courses relevant to the project:** None

**Learning Outcome:** Got a good hold on Figma and a design sense. Also learnt the basics of the fea

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**PS-I station: COUTURE AI PVT LTD. , Bengaluru**

**Student**

**Name: KESHAV SARAIYA .(2021B3A72631H)**

**Student Write-up:**

**PS-I Project Title:** Applications of Machine Learning, Natural Language Processing, i.e., Data Preparation for Violence Detection model and Topic Modeling and Entity Recognition using Spacy and API Documentation.

**Short Summary of work done:** During PS-I, I worked at Couture AI as an Data Analyst intern and worked on three main projects. Initially, I was told to gain basic knowledge and build basic concepts about Machine learning. Then, I was given the work of data preparation of the Violence Detection ML Model by annotating around 300 video clips as being violent or non-violent through an annotation tool. I also understood the Python codes and the use cases of a model for testing it through its inference code on Google Collab. Finally, I did the data preparation or generation of the Violence Detection Model by collecting 100s videos specific to certain classes like road accidents, gun shootings, mob violence, fights, etc. The model showed promising results in detecting violent content, which can be valuable in various applications such as content moderation or public safety. Secondly, I worked on a Natural Language Processing (NLP) task of Named Entity Recognition (NER) using Spacy, a popular Python library. The objective was to develop a system to identify named entities like persons, organizations, locations, or dates in an unstructured text query. I preprocessed the text, trained a Spacy model on labeled data, and fine-tuned it to improve accuracy. The NER system successfully identified named entities with high precision, which can be helpful in various applications such as information extraction, question answering, or text summarization. Lastly, I created API documentation for an existing software product. I collaborated with the development team to understand the functionalities and features of the product. I documented the API endpoints, request/response formats, and authentication methods and provided comprehensive examples and guidelines for developers to integrate the product into their applications. The documentation aimed to ensure clarity, ease of use, and seamless integration for developers using the API. I gained hands-on experience in machine learning, API documentation, and NLP throughout the PS-I. I strengthened my programming skills, learned to work with real-world datasets, and improved my

understanding of model training and evaluation. These projects allowed me to apply my theoretical knowledge, collaborate with a team, and enhance my problem-solving abilities in practical scenarios.

**Objectives of the project:** The project's objective is to develop an AI-based violence detection model to enhance safety and security by automatically censoring disturbing and explicit video content specifically on news channels, The objective of using Topic Modeling and Named Entity Recognition with SpaCy in Python is to automatically identify named entities in unstructured queries, streamlining information extraction, text understanding, and content analysis processes for various industries and domains, The objective of API documentation is to enhance developer experience, drive adoption, and gain a competitive edge by providing clear and comprehensive information for quick and efficient integration and reducing support requests.

**Tool used:** VIA tool, Python Libraries, Jupyter notebook, Google Colab, Postman API platform, VS code

**Details of Papers/patents:** None

**Brief description of the working environment:**

I had a wonderful learning journey during my PS-1 experience at Couture AI. The company provided a supportive and encouraging environment, and my mentors were always ready to help whenever I faced challenges in understanding concepts or tasks. My work was fascinating, and I genuinely enjoyed the tasks assigned to me. The regular meetings helped us stay updated on our progress and provided a platform to discuss our work.

The internship gave me the opportunity to work on my Technical skills, and with the guidance of my mentors, I was able to learn it smoothly. The daily review meets allowed us to be informed about ongoing work and share our progress with the mentors. Besides improving my technical skills, the two months at Couture AI also helped me develop my soft skills.

I truly appreciate the support and responsiveness of my mentors, making the experience engaging and rewarding. Overall, I am very happy with my performance and the enriching learning experience I gained during my PS-1 at Couture AI.

**Academic courses relevant to the project:**

Data Structures & Algorithms, Object Oriented Programming system, Machine Learning, Foundations of Data Science, Applied Statistical Methods

**Learning Outcome:** During my internship at Couture AI, I gained valuable knowledge and skills in Machine Learning, including its fundamentals and different types. I also became proficient in using Python Script as a video annotation tool. Additionally, I acquired essential skills in Numpy and Pandas, which are crucial not only for Machine Learning but also in various computer science-related fields. Moreover, I learned how to work with Jupyter Notebook and Google Colab for data analysis and model inference.

This allowed me to analyze ML models, extract inference code, and run the models on Google Colab to obtain outputs for our inputs.

Violence Detection Model (Data Preparation):

Ability to prepare data for a violence detection model using various techniques such as VIA tools and media formats.

Understanding of the challenges and considerations in classifying and moderating violent content.

Experience in training and evaluating machine learning models for violence detection.

Topic Modelling and Named Entity Recognition using Spacy in Python:

Competence in using SpaCy for Named Entity Recognition to identify and classify named entities in unstructured text.

Knowledge of pre-trained models and techniques for extracting entity information, such as entity types and positions.

Proficiency in integrating NER capabilities into applications or systems for enhanced information understanding and retrieval.

API Documentation:

Proficiency in creating comprehensive API documentation with clear instructions and examples for API usage.

Understanding of authentication, error handling, rate limiting, and best practices in API development.

Practical communication skills in conveying technical information to users.

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**PS-I station: COUTURE AI PVT LTD. , Bengaluru**

**Student**

**Name: MUGDHA GUPTA .(2021B3A72724H)**

**Student Write-up:**

**PS-I Project Title: Time Series Forecasting**

**Short Summary of work done:** My project involved times series forecasting using 3 ML models: 1. ARIMA(Auto-Regressive Integrated Moving Average) 2. XGBoost 3. LSTM(Long Short-Term Memory). I had to use these models to predict future values of demand and eventually price of the product using a given dataset. I trained the model using the training set and had to choose the model that performed the best on the



validation set. I finally used the LSTM model to predict the future values since the actual and predicted values were the closest and the validation loss was the least for this model.

**Objectives of the project:** Time series forecasting is a science of estimating the future level of some variables. The variable is most often demand, but it can also be something else, such as supply or price. Forecasting is the operation of making assumptions about the future values of studied variables. In manufacturing, forecasting demands is among the most crucial issues in inventory management; it can be used in various operational planning activities during the production process: capacity planning, used-product acquisition management and other similar processes

**Tool used:** Software

**Details of Papers/patents:** None

**Brief description of the working environment:** My PS-1 internship at Couture AI provided me with valuable learning opportunities. The mentors were incredibly helpful and supportive whenever I faced challenges in understanding concepts. The tasks and projects I worked on were engaging and enjoyable. The work environment was pleasant, with regular meetings to keep us updated on our progress. The two months of PS-1 not just helped me develop my technical skills but also helped me build on my soft skills.

**Academic courses relevant to the project:** Econometric methods, Machine Learning

**Learning Outcome:** During my tenure as an ML intern at Couture AI, I acquired a wealth of knowledge. I gained an understanding of the fundamentals of machine learning, including its various types and the algorithms involved, by taking the Andrew NG ML course. Additionally, I learned how to utilize Python Scripts as annotating tools for video annotation purposes. Expanding my skill set, I delved into essential libraries such as Numpy and Pandas, which prove invaluable not only in machine learning but also in various computer science-related fields. Furthermore, I became proficient in utilizing Jupyter Notebook and Google Colab for data analysis and model implementation. This involved analyzing ML models, extracting their inference code, and effectively running them on Google Colab to obtain desired outputs for specific inputs. The models that I worked on were ARIMA, XGBoost and LSTM.

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**PS-I station: CT Software Solutions India Pvt Ltd , Gurugram**

## Student

Name: SHYAM RAGHAVAN .(2021A7PS0013P)

### Student Write-up:

**PS-I Project Title:** Video team

**Short Summary of work done:** Worked extensively under in charge from the company, Sugant sir. Had daily sprint meetings to discuss progress. First worked on improved redundancies and making code more readable. Also worked on implementing an acknowledgement feature which helped significantly improve stability for all users. Was constantly in touch with Sugant sir for technical assistance.

**Objectives of the project:** Improving the stability of the video conferencing software in order to provide a smoother user and company experience.

**Tool used:** Asp.net core, signalR, webRTC, javascript, git

**Details of Papers/patents:** None

**Brief description of the working environment:** The company was very welcoming and gave us ample time to get settled. They allowed us to choose our verticals based on our interests. The faculty was very helpful and easy to reach throughout the process. I came into this with an open mind and had no issues whatsoever. Amit Sir and Sujit sir were especially welcoming when we were at the office, and Sugant sir was extremely easy to reach whenever we needed.

**Academic courses relevant to the project:** Data structures and algorithms, database management software

**Learning Outcome:** Learned how to work in a professional environment, helped improve communication skills, and improved perspective on what industry standards look like

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**PS-I station:** CT Software Solutions India Pvt Ltd , Gurugram

## Student

Name: JAI BOTHRA(2021A7PS0015P)

### Student Write-up:

**PS-I Project Title:** Video Conferencing Team

**Short Summary of work done:** Created a website using asp.net and worked extensively on javascript and sql from scratch.

**Objectives of the project:** Optimise a stable platform for Video Conferencing in order to conduct online quizzes

**Tool used:** Javascript visual studio mysql webrtc asp.net core

**Details of Papers/patents:** NA

**Brief description of the working environment:** Very comfortable working environment with approachable employees situated in a well kept office. Apart from hard skills learnt a lot of soft skills and learned a lot about working culture.

**Academic courses relevant to the project:** Database management systems

**Learning Outcome:** Javascript webrtc sql git

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**PS-I station:** CT Software Solutions India Pvt Ltd , Gurugram

## Student

Name: KUSH GULATI(2021A8PS3036G)

### Student Write-up:

**PS-I Project Title:** Online Buzzer

**Short Summary of work done:** Using SignalR, Visual Studio, and programming languages like Java and C#, I was assigned with creating an online buzzer application during my software internship. I took on a variety of tasks while working with a group of developers, beginning with defining the application's scope and conducting requirements analysis. I developed a user interface that is simple to use using Java and C#, and SignalR enabled real-time communication so that reactions to buzzer interactions could be made instantly. Additionally, I created the necessary backend architecture to control user sessions, deal with buzzer interactions, and provide safe data storage. Delivering a strong application required thorough testing and issue remediation. To facilitate upcoming maintenance and development, I also created thorough documentation. I learned a lot about developing web applications, communicating in the moment, and working well with others throughout this internship.

**Objectives of the project:** To build a buzzer for conducting quizzes online

**Tool used:** Visual Studio, C#, SignalR

**Details of Papers/patents:** None

**Brief description of the working environment:** A dynamic and cooperative work environment that encouraged innovation and open communication among team members was what I encountered throughout my internship. I anticipated from the organization that it would provide me with significant tasks to work on, regular feedback and evaluations, and an inclusive work environment. I gained knowledge throughout the internship by putting what I learned into practice by working on real-world projects. I also developed my teamwork and collaboration skills, time management skills, problem-solving skills, and effective communication skills through regular interactions with stakeholders and team members. The internship gave me a priceless opportunity that advanced my knowledge of software development procedures, introduced me to a professional work setting, and equipped me for upcoming opportunities in the software engineering industry.

**Academic courses relevant to the project:** Computer Programming

**Learning Outcome:** I had substantial learning outcomes throughout the internship, which helped me advance professionally. My technical knowledge in languages and platforms including SignalR, Visual Studio, Java, and C# helped me advance my real-time communication and web application development skills. My communication and cooperation skills were strengthened while collaborating with a group of developers, which emphasized the value of a variety of viewpoints in a project's success. During development, I improved my problem-solving abilities by overcoming a variety of obstacles and cultivating a resourceful and flexible mentality. By controlling project schedules and activities, I was able to build my project management skills, and my exposure to business procedures helped me get ready for a future career in software development. The internship experience helped me develop confidence in my technical skills and underlined the need of good business manners.

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## PS-I station: CT Software Solutions India Pvt Ltd , Gurugram

### Student

Name: ADITYA KUMAR JAIN .(2021B3A82573H)

#### Student Write-up:

**PS-I Project Title:** web dev

**Short Summary of work done:** Had to create a buzzer using C# and signalR, also created a application with MVC CRUD functionality using ASP.NET and SQL using SSMS. Also, created front end of the website using HTML CSS and Bootstrap.

**Objectives of the project:** Creating front end and back end for a web application

**Tool used:** SW- Github, Gitbash, Visual Studio, VS Code, SSMS. Languages- C#(SignalR), SQL, HTML CSS (Bootstrap)

**Details of Papers/patents:** NA

**Brief description of the working environment:** The company provided a friendly yet professional environment to work and helped us to get comfortable easily. My basic expectations from the company were to learn something new and get some experience of working in an IT environment. Both of these expectations were more than met, with I reporting to the office at 9, and working till 5, and also got to work using multiple languages on multiple projects.

**Academic courses relevant to the project:** None

**Learning Outcome:** Learnt to work in a team, communicate better, got experience of a professional environment and learnt other valuable skills

## PS-I station: CT Software Solutions India Pvt Ltd , Gurugram

### Student

Name: ABHISHEK MISHRA(2021B4A70823P)

#### Student Write-up:

**PS-I Project Title:** Forms team

**Short Summary of work done:** There were two phases of our work there, the first phase consisted of making a form online in the JotForms builder so that MPs can fill that up who want to organize sports tournaments, then we have to make an algorithm that organized the data that came from Forms and this was made in .net c#, then the second phase of our project was to make an algorithm that takes the data and makes schedule for the participants.

**Objectives of the project:** To create a workflow so that the MPs can organize the sports tournaments in their respective provinces effectively and easily

**Tool used:** C#, visual studio, Microsoft sql database management, JotForms

**Details of Papers/patents:** None

**Brief description of the working environment:** There is not much learning environment there. Very little information on how to complete the project or didn't provide much of a support other than at start, at the end you should have the least of the expectations

**Academic courses relevant to the project:** CP, TRW

**Learning Outcome:** Visual studio, c#, sql database, data structures, database management, optimization

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## PS-I station: CT Software Solutions India Pvt Ltd , Gurugram

### Student

Name: ANURAG SAXENA(2021B4AA2871G)

### Student Write-up:

**PS-I Project Title:** Online Buzzer

**Short Summary of work done:** During my Software Internship, I was tasked with building an online buzzer application using SignalR, Visual Studio, and programming languages like Java and C#. Collaborating with a team of developers, I undertook various responsibilities, starting with analyzing requirements and defining the application's scope. Using Java and C#, I crafted an intuitive user interface, while SignalR facilitated real-time communication, enabling instantaneous responses to buzzer interactions. I also developed the required backend infrastructure to manage user sessions, handle buzzer interactions, and ensure secure data storage. Rigorous testing and bug fixing were essential to deliver a robust application. Additionally, I prepared comprehensive documentation to support future maintenance and development. Throughout this internship, I gained valuable experience in web application development, real-time communication, and effective teamwork. The project was a fulfilling learning journey, contributing to the creation of an engaging online buzzer platform.

**Objectives of the project:** To Build a online Buzzer for conducting Quizzes online

**Tool used:** Visual Studio

**Details of Papers/patents:** None

**Brief description of the working environment:** During my internship, I experienced a dynamic and collaborative working environment, fostering innovation and open communication among team members. From the company, I expected mentorship and guidance from experienced professionals, meaningful projects to work on, regular feedback and evaluations, and an inclusive workplace. Throughout the internship, I learned through practical application by working on real-world projects, honed teamwork and collaboration skills, improved time management, enhanced problem-solving abilities, and developed effective communication skills through regular interactions with team members and stakeholders. The internship provided a valuable experience that deepened my understanding of software development practices, exposed me to a professional working environment, and prepared me for future opportunities in the field of software engineering.

## **Academic courses relevant to the project: Computer Programming**

**Learning Outcome:** Throughout the internship, I achieved significant learning outcomes that contributed to my professional growth. I developed technical expertise in technologies like SignalR, Visual Studio, Java, and C#, gaining valuable skills in web application development and real-time communication. Working collaboratively with a team of developers enhanced my communication and teamwork abilities, emphasizing the importance of diverse perspectives in achieving project success. I honed my problem-solving skills by tackling various challenges during development, fostering a resourceful and adaptable mindset. Managing project timelines and tasks improved my project management capabilities, while the exposure to industry practices prepared me for a future career in software development. The internship experience instilled self-confidence in my technical abilities and reinforced the value of professional etiquette. Overall, the internship provided a well-rounded learning experience, equipping me with essential technical, interpersonal, and professional skills for my future endeavors in the software industry.

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## **PS-I station: Datamatics , Mumbai**

### **Student**

**Name:** JEWALIKAR RUDRA SHASHANK(2021A7PS0450P)

### **Student Write-up:**

**PS-I Project Title:** Survey Questionnaire Analysis and Question Extraction

**Short Summary of work done:** During PS1, I focused on developing an innovative application to streamline the process of extracting questions from an unstructured survey questionnaire and converting them to a structured format for efficient data analysis. I learned a lot about automation, programming, and Python through this project. This project included learning prompt engineering, a crucial technique for refining and optimizing natural language processing tasks. I also had the chance to use LLM's robust API, which opened up new language comprehension and processing avenues. To create an API for the app, I learned the modern web framework FastAPI. I learned how to build scalable and robust APIs from this experience.



**Objectives of the project:** The main objective of the project was to read and analyse survey questionnaires, extracting valuable information from them. Since the survey questionnaire was in unstructured format, the aim was to utilise LLM's for this process.

**Tool used:** Visual Studio, Postman

**Details of Papers/patents:** NA

**Brief description of the working environment:** The attention given to interns during the internship program was somewhat mediocre, leaving much to be desired. While there was a designated mentor available, most of the learning and skill development was expected to be accomplished independently. On a positive note, the assigned mentor proved to be a valuable resource for those seeking guidance and doubt-solving. Their support and expertise were greatly appreciated, as they offered valuable insights and assistance whenever approached. Despite the mixed experience, the internship still provided a valuable opportunity for growth and learning.

**Academic courses relevant to the project:** AI, NLP

**Learning Outcome:** Improved Python skills, Building applications using OpenAI's API's, Prompt engineering, Building and testing API's.

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**PS-I station: Datamatics , Mumbai**

**Student**

**Name:** CHAHAK RAKESH PUNAMIYA(2021B2A72355G)

**Student Write-up:**

**PS-I Project Title:** Survey Questionnaire Analysis: OpenAI Prompt Automation using Chat GPT

**Short Summary of work done:** Our progress during the initial phase involved acquiring crucial knowledge, improving skills, and developing methodologies for AI-based survey analysis. We first completed a course on ISMS, which provided essential information on security and compliance rules. We then focused on prompt engineering by undertaking

the deeplearning.ai course, which enhanced our understanding of building effective AI models. Additionally, we gained proficiency in handling API calls through the same course, enabling us to interact effectively with OpenAI's APIs. Thorough research and studying the OpenAI documentation further deepened our understanding of available resources and functionalities. In the context of survey questionnaires, which typically consist of various question types presented in text format, analyzing responses and gaining insights can be challenging. To address this, we aimed to leverage the OpenAI API to convert the survey from a text file into a structured JSON format. This conversion enables easier programming of survey links for respondents and facilitates subsequent analysis of the collected responses. Through the utilization of the OpenAI API, we were able to read and organize the questions into distinct components, including qualifying criteria, question ID, question text, question type, response ID, response text, terminate logic, programming instructions, question properties, and response instructions. This structured approach ensures efficient analysis and processing of the survey data, empowering researchers to extract meaningful insights and draw conclusions from the collected responses.

**Objectives of the project:** Creating a prompt to convert a questionnaire from docx to json by creating a prompt on OpenAI

**Tool used:** OpenAI, ChatGPT, FastAPI

**Details of Papers/patents:** OpenAI API

**Brief description of the working environment:** The work environment was very nice. Had a flare at cooperate life experience. I had expected to learn something from the company majorly about how their working is and I learnt that. We worked on OpenAI prompt engineering and created a prompt to convert questionnaires from docx to json format and then deploy it using Fast API

**Academic courses relevant to the project:** Coding, OpenAI and ChatGPT Prompt Engineering

**Learning Outcome:** Creating a more accurate prompt to convert a questionnaire from docx to json on OpenAI  
Learn FastAPI  
Explore more in OpenAI

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**PS-I station: Datamatics , Mumbai**

## Student

Name: ISHAN DEEPAK WANI .(2021B3A72772P)

### Student Write-up:

**PS-I Project Title:** Using chatbot for survey analysis

**Short Summary of work done:** we developed prompts which extracted required output so that they can be used to automate the process.

**Objectives of the project:** extracting questionnaire from given text documents.

**Tool used:** vs code, jupyter notebook

**Details of Papers/patents:** None

**Brief description of the working environment:** Great work environment , the mentor is friendly and provides constant guidance and workload is light. No stress of going to the office daily ,they provide with a hybrid model of working.

**Academic courses relevant to the project:** OOP(object oriented program),DBMS(database management system),CP(computer programming)

**Learning Outcome:** learnt about Open AI framework, api calls, file handling and langchain/framework build upon openAI)

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**PS-I station: Deptt. Of Information Technology & Communication , Jaipur**

## Student

Name: SHIVAM VERMA .(2021A3PS0779H)

### Student Write-up:

**PS-I Project Title:** Task management system

**Short Summary of work done:** We first learnt web development and then we made a task management system

**Objectives of the project:** To make a task management system

**Tool used:** Css ,PHP , html, bootstrap , sql

**Details of Papers/patents:** No

**Brief description of the working environment:** Great working environment, nice people all around

**Academic courses relevant to the project:** Dsa

**Learning Outcome:** Php , bootstrap, css, html

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**PS-I station: Deptt. Of Information Technology & Communication , Jaipur**

**Student**

**Name:** CHIRAG GOYAL .(2021A3PS2398P)

**Student Write-up:**

**PS-I Project Title:** Data Analytics

**Short Summary of work done:** Enhanced the performance of the online newspaper's web crawling code through meticulous code optimization .Implemented an automated marker positioning system for recurring pattern news pages , significantly reducing human errors .Re-organized 25-30 categories of categorizer and sentiment analysis tools in SAS, leading to a notable 4-5% increase in the accuracy of district scores generated by the system

**Objectives of the project:** Data analytics on online news published by Rajasthan newspapers to obtain valuable insights used for decision making by govt.

**Tool used:** SAS ENTERPRISE GUIDE, SAS CATEGORIZATION, SAS SENTIMENTAL, SAS VISUAL ANALYTICS

**Details of Papers/patents:** NA

**Brief description of the working environment:** The working environment at DoIT Jaipur during PS-I is dynamic and collaborative. As an intern, one can expect to be exposed to real-world projects, working alongside experienced professionals. Expectations include active involvement, eagerness to learn, and adaptability to new technologies. During the internship, interns will have the chance to enhance their technical skills, gain practical industry knowledge, and develop problem-solving abilities, fostering personal and professional growth.

**Academic courses relevant to the project:** Computer Programming, Probability and statistics

**Learning Outcome:** SQL ,SAS ,Data Analytics ,Team work and other soft skills

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**PS-I station: Deptt. Of Information Technology & Communication , Jaipur**

**Student**

**Name:** SHASHWAT SAXENA(2021A3PS2824G)

**Student Write-up:**

**PS-I Project Title:** Wildlife Surveillance and Anti Poaching Systems

**Short Summary of work done:** At the Department of Information Technology and Communication (DOIT&C), an exciting project was taken on to revamp the wildlife surveillance system. The primary goal was to pinpoint its weak spots and come up with practical solutions to boost its performance. To ensure the system's power supply remained uninterrupted, an ingenious idea was put forward. They proposed tweaking the solar panel angles dynamically so that they could capture maximum sunlight throughout the day. This innovative approach aimed to optimize solar energy generation and ensure the system stayed up and running efficiently. The team also delved into some serious

modeling work using Simulink MATLAB. They created simulations that mimicked real-life conditions for solar panels, allowing them to understand how different parameters affected their performance. Armed with this knowledge, they could fine-tune the design for optimum results. But that's not all – cutting-edge AI/ML technologies were harnessed to revolutionize wildlife detection. Their smart AI/ML model was tailor-made to distinguish between various animals, drastically improving the system's ability to monitor wildlife and spot potential threats accurately. In a nutshell, the DOIT&C team left no stone unturned to identify the wildlife surveillance system's shortcomings and propose workable solutions. By optimizing solar panel angles and implementing advanced AI/ML detection capabilities, they elevated the system's overall efficiency and sustainability, ushering in a new era of wildlife conservation and protection.

**Objectives of the project:** To identify the existing problems in the given Wildlife Surveillance systems and propose solutions for the given problems

**Tool used:** MATLAB, simulink, jupyter notebook, python.

**Details of Papers/patents: -**

**Brief description of the working environment:** The company's environment is characterized by a professional and innovative atmosphere, fostering creativity and collaboration among its employees. It values diversity and encourages open communication, creating a supportive and inclusive workplace. Teamwork is highly emphasized, and employees are encouraged to share ideas, and contribute to the company's growth. Expect to learn a lot and have great experience here

The company environment promotes a culture of innovation, collaboration, and personal growth. The high expectations push employees to strive for excellence, while the supportive atmosphere and opportunities for learning enable them to flourish and make significant contributions to the company's success.

**Academic courses relevant to the project:** Signals and Systems

**Learning Outcome:** Knowledge of AI/ML in field of animal detection (object detection). MATLAB-Simulink model creation and many other hard and soft skills as well.

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**PS-I station: Deptt. Of Information Technology & Communication , Jaipur**

**Student**

Name: ABHINAV MATHUR .(2021A8PS1100P)

**Student Write-up:**

**PS-I Project Title:** SAS

**Short Summary of work done:** During my time in PS, I learned how to use SAS software and its capabilities in the field of data analytics. Then I worked on a project of text analytics software

**Objectives of the project:** To develop a text analytics system

**Tool used:** SAS EG, SAS Viya

**Details of Papers/patents:** None

**Brief description of the working environment:** Working environment was very encouraging. Everyone did their work with dedication and there was a sense of learning and everyone helped each other. I expect DoIT to again visit next year for more students with more projects. During my time in PS I learned how a company works and the work culture and got to understand how Rajasthan government analyses the data it collect and uses it for benefit of the people

**Academic courses relevant to the project:** CP was a bit useful as it helped with having some experience in coding beforehand

**Learning Outcome:** Learning of SAS software and data analytics

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**PS-I station: Deptt. Of Information Technology & Communication , Jaipur**

**Student**

Name: MANAN JAIN .(2021A8PS2458P)

**Student Write-up:**

**PS-I Project Title:** Mobile App Development

**Short Summary of work done:** The "Mobile App Request" app was developed using an all-encompassing method for the best possible user experience and productivity. Initial work on the project included designing a user interface in Figma. Ionic and Angular were used for frontend development, which meant that HTML, CSS, and JavaScript were used to create interactive features and provide real-time status updates for app requests. Django and MySQL were used to build a strong server with RESTful APIs that allowed the front end and back end to talk to one another without any hitches. MySQL with Django's efficient database querying and administration allowed for the streamlined storing, retrieval, and tracking of app requests, user data, and statuses. With the help of well-implemented APIs, user authentication, Ionic routing, and database queries, the "Mobile App Request" app is now more streamlined and focused on the user. Therefore, the app was developed utilizing these methods, and it achieved its goals.

**Objectives of the project:** To develop the UI, Frontend and Backend Model of the app "mobile app request"

**Tool used:** S/w Figma, HTML, CSS, JavaScript, Angular.js, Ionic Framework, Django Framework, MySQL

**Details of Papers/patents:** nil

**Brief description of the working environment:** We were placed at DoIT&C's Udyog Bhawan office, with Mr. Nishant as our Project Manager, under the guidance of our mentor. The work environment there was fantastic, offering us excellent facilities and unwavering support from the team leaders. They provided clear and valuable guidance on how to make the most of our time at DoIT. Our main expectation from this project was to acquire relevant industry skills and gain exposure to a professional workplace, and I am pleased to say that our expectations were fully met. Throughout the project, we experienced a steep learning curve, learning a great deal and getting invaluable industry exposure. This experience has undoubtedly enhanced my profile and provided me with the professional exposure I was seeking.

**Academic courses relevant to the project:** Computer Programming, Object Oriented Programming, Database Management System

**Learning Outcome:** The Project was built on the Ionic Framework. We majorily learnt Desgin tools Figma, frontend languages HTML, CSS, JavaScript from scratch and applied them on our project through Ionic. We also learnt about APIs, database management, and Backend development using Django and MySQL.

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## PS-I station: Deptt. Of Information Technology & Communication , Jaipur

### Student

Name: CHAITANYA CHOUDHARY .(2021A8PS2709P)

#### Student Write-up:

**PS-I Project Title:** Mobile App Development

**Short Summary of work done:** The development process for the "Mobile App Request" app involved a comprehensive approach to create a user-friendly and efficient mobile application. The project began with UI design using Figma, resulting in a visually appealing and intuitive interface. Frontend development with Ionic and Angular incorporated HTML, CSS, and JavaScript to implement interactive features and real-time status updates for app requests. For the backend, Django and MySQL were utilized to establish a robust server with RESTful APIs for seamless communication between the frontend and backend. Efficient database querying and management with MySQL and Django enabled organized storage and retrieval of app requests, user information, and statuses. The successful implementation of API creation, user authentication, Ionic routing, and database querying resulted in a streamlined and user-centric "Mobile App Request" app. Hence, using these methodologies we were able to develop the app which successfully met its objectives.

**Objectives of the project:** To develop the UI, Frontend and Backend Model of the app "mobile app request"

**Tool used:** S/w Figma, HTML, CSS, JavaScript, Angular.js, Ionic Framework, Django Framework, MySQL

**Details of Papers/patents:** None

**Brief description of the working environment:** We were assigned the Udyog Bhawan office of DoIT&C by our mentor under Mr Nishant, Project Manager. The working environment of the office was great and we were provided with all facilities. The incharges were really supportive and gave us clear guidance on how to make the best of our time while at DoIT. We were expected to have a steep learning curve and learn a lot of things while at the office. My expectation out of PS was to gain relevant industry skills so as to enhance my profile while gaining an exposure to a professional workplace. All of these were fulfilled. We were able to learn a lot through the project and got the necessary industry exposure.

**Academic courses relevant to the project:** 1. Computer Programming

**Learning Outcome:** The Project was based on the Ionic Framework. We learnt Figma, HTML, CSS, JavaScript from scratch and applied them on our project through Ionic. We also learnt about APIs, and Backend development through Django and MySQL.

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**PS-I station: Deptt. Of Information Technology & Communication , Jaipur**

### **Student**

**Name:** ADIT BHATIA(2021A8PS2920G)

#### **Student Write-up:**

**PS-I Project Title:** Rajasthan State Data Center

**Short Summary of work done:** Gain hands-on experience in managing and maintaining large-scale data centers. Work with a team of experienced professionals in a fast-paced and demanding environment. How to monitor and manage data center systems and resources

**Objectives of the project:** Observing the day to day working and infrastructure at a data center

**Tool used:** SQL, WSL, Command Line,

**Details of Papers/patents:** None

**Brief description of the working environment:** Working environment: Great, Up to expectations and good learning environment

**Academic courses relevant to the project:** Computer Networks, Database Systems,

**Learning Outcome:** Gain hands-on experience in managing and maintaining large-scale data centers. Work with a team of experienced professionals in a fast-paced and demanding environment. How to monitor and manage data center systems and resources

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## PS-I station: Deptt. Of Information Technology & Communication , Jaipur

### Student

Name: KAVYA AGARWAL .(2021B2AA0881P)

### Student Write-up:

**PS-I Project Title:** Development of Government Websites

**Short Summary of work done:** During my Practice School at the Department of Information Technology & Communication, I was involved in the development of Government websites, which proved to be a rewarding and impactful experience. The primary focus of my work was to create user-friendly, accessible, and secure online platforms that catered to the needs of citizens, promoting transparency and efficiency in government services. In the technical aspect of website development, I utilized a range of programming languages and frameworks to build robust and feature-rich websites. HTML formed the foundation for structuring web content, CSS handled styling and layout, and JavaScript facilitated interactive elements, contributing to a seamless user experience. The department used the .NET framework and Visual Studio , SQL server for developing websites. I also familiarized myself with popular frameworks and libraries such as React.js and Bootstrap, allowing me to create responsive and interactive web pages. I was also involved in the development of Admin Panel of a website, An admin panel website serves as a centralized platform for managing and controlling various aspects of a web application, such as user management, content management, settings, analytics, and system configuration.

**Objectives of the project:** The objective of this project was to create a robust and functional web application while leveraging powerful tools and frameworks.

**Tool used:** Languages : HTML,CSS,Bootstrap,Javascript,C#, IDE : Visual Studio, Database: Microsoft SQL Server, Framework : .NET

**Details of Papers/patents: -**

**Brief description of the working environment:** During PS-I, I had the privilege of working in a collaborative and dynamic environment. The team was supportive and approachable, providing valuable guidance and feedback throughout the internship. The

workspace was equipped with the necessary tools and resources, allowing for a productive and comfortable working experience.

The company had high expectations from its interns, seeking proactive individuals who were eager to contribute to real-world projects. Moreover, they expected interns to embrace a learning mindset, leveraging the internship to enhance their skills and gain practical experience.

The learning experience during PS-I was great and transformative. Working on real-world projects challenged me to apply theoretical knowledge to practical scenarios, helping me understand the nuances and complexities of web development. Additionally, I honed my communication and teamwork skills, collaborating with colleagues to achieve project objectives.

### **Academic courses relevant to the project: -**

**Learning Outcome:** Practical Application of Web Development: Through my involvement in the development of Government websites, I gained practical experience in web development methodologies, programming languages, and frameworks, allowing me to build user-friendly and feature-rich websites.

Impact of Technology in Public Services: The experience of developing Government websites highlighted the significant role of technology in enhancing public service delivery, promoting transparency, and empowering citizens in the digital age.

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## **PS-I station: Deptt. Of Information Technology & Communication , Jaipur**

### **Student**

**Name:** GAURI AGARWAL .(2021B2AA2310P)

### **Student Write-up:**

**PS-I Project Title:** Wildlife Surveillance and Anti-Poaching System

**Short Summary of work done:** A case study was put together to examine the utilization of lithium-ion batteries and their associated benefits within the context of the WS-APS project .A solar energy optimizing algorithm was designed o maximize energy generation to combat weather fluctuations, uneven distribution of solar energy.

**Objectives of the project:** WS&APS is an integrated surveillance solution equipped with thermal/optical cameras, wireless network equipment, solar power systems, drones etc. in a hybrid model for 24X7 surveillance and wildlife protection. It includes automated monitoring of specific species, improving response efficiency for wildlife crimes and rescue operations. The system strengthens preventive measures against wildlife and forest crimes and provides analytical reports for operational improvements and decision-making.

**Tool used:** Simulink , Jupyter Notebook , Google Docs

**Details of Papers/patents:** No

**Brief description of the working environment:** During PS-I at the Department of IT and Communication in Jaipur, the working environment was dynamic and conducive to learning. The department provided a professional and collaborative atmosphere where interns could engage with experienced professionals and researchers. The workspace was equipped with modern technology and resources to support the internship project's objectives.

**Academic courses relevant to the project:** Inorganic Chemistry

**Learning Outcome:** The internship experience focused on enhancing wildlife surveillance software, electrical and chemical components. It has been an invaluable opportunity for academic growth and learning. We learned a lot about the functioning of solar panels and how we can optimize the historical data to obtain maximum output through it. We explored different new topics like BMS and data analysis and optimization, which will help us in our upcoming semesters at BITS. We also researched usage of advanced energy storage solutions like Li-ion batteries and its constructive role in a project like WS-APS.

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**PS-I station: Deptt. Of Information Technology & Communication , Jaipur**

**Student**

**Name: PRABHAV PAREEK .(2021B5A82927H)**

**Student Write-up:**

**PS-I Project Title:** WS&APS

**Short Summary of work done:** conducted a case study on how much frequently we can change the tilt angles of solar panels and how to control its temperature. created simulink models to detect sun position along with a battery management system. created web app model to detect different animals using YOLOv4.

**Objectives of the project:** Find ways to enhance solar energy output. Create a battery management system. Conduct a case study on which battery is better to use. Train AI model to detect different animals.

**Tool used:** python, MATLAB & simulink

**Details of Papers/patents:** no

**Brief description of the working environment:** Good working environment. Helpful staff. We also got to visit jhalana wildlife sanctuary to conduct onsite research.

**Academic courses relevant to the project:** none

**Learning Outcome:** MATLAB & simulink, Python, machine learning

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**PS-I station:** Dynamic Technologies Ltd (HLS Division) , Bengaluru

**Student**

**Name:** VIKRAM KOMPERLA .(2021A4PS1427P)

**Student Write-up:**

**PS-I Project Title:** Designing automated winch for a tethered UAV

**Short Summary of work done:** Designed an automated winch mechanism for a tethered UAV using fusion 360 . Chose the required electric components according to

mathematical analysis. Will use computer programming to communicate between the drone and base station

**Objectives of the project:** Portable weather resistant light weight winch mechanism

**Tool used:** Fusion 360

**Details of Papers/patents:** None

**Brief description of the working environment:** Since it was online I learnt soft skills such as communication, decision making, presentation skills, etc.

**Academic courses relevant to the project:** Mechanisms and machines, computer programming

**Learning Outcome:** 3D modelling and integration with coding

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**PS-I station: Dynamatic Technologies Ltd (HLS Division) , Bengaluru**

**Student**

**Name:** VITALA BHARATH .(2021A7PS0238H)

**Student Write-up:**

**PS-I Project Title:** Video Processing

**Short Summary of work done:** Started with familiarizing ourselves with OpenCV by doing basic image and video processing techniques. A small task was to print current local date and time onto the video as the video is being read and to save the edited video at the required location. Implemented Video Stabilization using Point Feature Tracking Method to stabilize a saved video. Implemented KCF (Kernelized Correlation Filter) and MIL (Multiple Instance Learning) to track selected object from the starting frame from a video and save it. Explored different other sources and libraries to implement object tracking.

**Objectives of the project:** To stabilize video obtained from a UAV and be able to select objects that are to be tracked.

**Tool used:** C++, OpenCV, Visual Studio 2022

**Details of Papers/patents:** None

**Brief description of the working environment:** Working environment has low to moderate work intensity, very professional mentors and environment that facilitated a decent exposure to the industrial world. Since it was online and the project wasn't self-building, could complete work well before indicated time.

**Academic courses relevant to the project:** Computer Programming CS F111, Object Oriented Programming CS F213

**Learning Outcome:** Implementation of C++ modules, Exposure to OpenCV Library.

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**PS-I station: Dynamatic Technologies Ltd (HLS Division) , Bengaluru**

**Student**

**Name:** GARVIT SINGHAL .(2021A7PS2226P)

**Student Write-up:**

**PS-I Project Title:** Image and video processing

**Short Summary of work done:** First we had to work on a code to connect a camera device with a screen using a port and display the video and image on the screen. Then we had to work on the stabilization of the video and image using opencv. Then we had to work on tracking algorithm to keep a continuous track of the path travelled by the uav.

**Objectives of the project:** Write a code for image and video stabilization. Further write a code for tracking path of the drone( continuous stream).

**Tool used:** Opencv in c++



**Details of Papers/patents:** None

**Brief description of the working environment:** The working environment was good. Initially it was offline then the ps station changed to online mode. I was not satisfied with the mentors as they did not provide any material or any paper to follow.

**Academic courses relevant to the project:** Image processing

**Learning Outcome:** OpenCV in C++ and how to stabilize the video captured and how to process it before showing it to the screen

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**PS-I station: Dynamic Technologies Ltd (HLS Division) , Bengaluru**

**Student**

**Name:** PRANAV DEEPAK TANNA .(2021A7PS2685P)

**Student Write-up:**

**PS-I Project Title:** Swarm Intelligence

**Short Summary of work done:** Decide on a drone architecture: Determine and finalize the drone architecture, specifically focusing on the leader-follower approach as the foundation for swarm autonomy. • Understand ArduPilot software: Acquire a comprehensive understanding of the ArduPilot software, including the mission planner software, to effectively leverage its capabilities in the development of autonomous swarm behavior. • Implement obstacle collision algorithm: Work as part of the obstacle team to develop a robust algorithm that enables the drones to detect and avoid obstacles in their flight paths. Explore existing obstacle collision implementations in ArduPilot and identify areas for improvement or customization. • Prevent interdrone collision in a swarm: Research and select appropriate algorithms to ensure interdrone collision avoidance within the swarm. Opt for the dynamic window approach as the preferred algorithm for interdrone collision prevention. • Hypothesize altitude separation for interdrone collision avoidance: Conduct a thorough analysis to determine the feasibility and effectiveness of utilizing altitude separation as an additional means to prevent interdrone collision. Evaluate its potential integration with the dynamic window approach. • Set up Drone Kit-SITL and write codes: Configure and establish the Drone Kit-SITL environment for

simulation purposes. Utilize Python to write the necessary codes to simulate autonomous swarm behavior and validate its functionality within the designated environment. • Develop altitude separation code: Implement the logic and algorithms necessary to enable altitude separation within the swarm. Write the code in Python to ensure appropriate vertical distance is maintained between drones during autonomous swarm operations. • Coordinate with the path planning team: Collaborate closely with the path planning team to ensure seamless coordination between autonomous swarm behavior and path planning algorithms. • Helped to set up the drone and configure it: We helped the communications team to set up the Raspberry Pi, Autopilot and the XBee communication modules. We then configured it using the appropriate software. We were then able to partially retrieve the telemetry data from the drone. • Multithreading the Obstacle Avoidance Code: On the other hand we multithreaded our Obstacle Avoidance Code in order to establish the real-like flow of events that would occur on the drone.

**Objectives of the project:** Developing Obstacle Avoidance and Interdrone Collision Avoidance Algorithms

**Tool used:** ArduPilot, MissionPlanner, Python, C++

**Details of Papers/patents:** Not allowed to share due to NDA

**Brief description of the working environment:** The work environment was very well setup. They provided us with everything. My expectation was to learn new things from the company and that's what they successfully achieved. I mainly honed on my programming skills and learned to work with exciting new drone technology.

**Academic courses relevant to the project:** OOPs, DSA

**Learning Outcome:** Developed programming skills better, learned to work with new technology

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**PS-I station: Dynamic Technologies Ltd (HLS Division) , Bengaluru**

**Student**

**Name: SHIVANSH JAIN .(2021AAPS1634P)**

## **Student Write-up:**

### **PS-I Project Title:** Video Processing

**Short Summary of work done:** In my internship, I had the opportunity to work on video stabilization and object tracking using OpenCV in C++. Throughout the project, I successfully implemented and experimented with these computer vision techniques, achieving promising results. For video stabilization, I employed the point feature method, which involved key point detection, feature description, matching, and motion estimation. By detecting distinctive points in consecutive frames and estimating their motion, I was able to reduce unwanted camera shake and enhance the visual quality of shaky video footage. The implementation leveraged OpenCV's key point detectors, descriptors, and matching algorithms, ensuring accurate motion estimation and effective stabilization. Additionally, I delved into object tracking using OpenCV. I explored various tracking algorithms, including the popular MeanShift and CAMShift algorithms, to track objects of interest in video sequences. By initializing the tracker with a region of interest and updating it frame by frame, I successfully tracked objects in challenging scenarios. Throughout the project, I faced and overcame several challenges, such as handling occlusions, varying lighting conditions, and object scale changes. I optimized the algorithms for real-time performance and experimented with different parameters to achieve robust and accurate tracking results. Overall, my work on video stabilization and object tracking using OpenCV in C++ allowed me to gain practical experience in computer vision and image processing. I acquired a deeper understanding of the underlying algorithms and their implementation, along with valuable insights into optimizing performance and handling real-world challenges. This internship has equipped me with essential skills and knowledge that will undoubtedly contribute to my future endeavors in the field of computer vision.

**Objectives of the project:** To stabilize the video and track the objects in the video

**Tool used:** opencv, c++

**Details of Papers/patents:** A combined corner and edge detection. by- Chris Harris and Mike Stephens

**Brief description of the working environment:** During my internship at Dynamic Technologies, I had the privilege of working in a highly conducive and supportive environment. The company fostered a culture of collaboration, learning, and innovation, which greatly enhanced my overall experience.

The working environment at Dynamic Technologies was characterized by a team-oriented approach, where individuals from different backgrounds and areas of expertise came together to work towards common goals. Colleagues and supervisors were always approachable, encouraging open communication and knowledge sharing. This facilitated a seamless exchange of ideas, allowing me to learn from experienced professionals and gain valuable insights.

The company's commitment to fostering a positive work atmosphere was evident through its emphasis on employee well-being. The office space was well-designed and equipped with modern facilities, creating a comfortable and productive environment. Regular team-building activities and social events further nurtured a sense of camaraderie among colleagues, creating a vibrant and friendly workplace.

Moreover, Dynamatic Technologies provided a platform for continuous learning and professional growth. I had access to cutting-edge technologies, tools, and resources, enabling me to stay updated with the latest industry trends and advancements. The company encouraged employees to take ownership of their projects and provided guidance and support whenever needed.

Overall, the working environment at Dynamatic Technologies was excellent. The collaborative culture, focus on employee well-being, and commitment to continuous learning created an atmosphere where I felt motivated, supported, and inspired to deliver my best. The positive work environment played a significant role in enhancing my overall internship experience and contributed to my personal and professional development.

**Academic courses relevant to the project:** computer Programming, Artificial Intelligence.

**Learning Outcome:** stabilized videos from UAV, efficient object tracking.

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## **PS-I station: Dynamatic Technologies Ltd (HLS Division) , Bengaluru**

### **Student**

**Name:** KAVYA GOEL .(2021B4A32499P)

### **Student Write-up:**

**PS-I Project Title:** Swarm Algorithms

**Short Summary of work done:** We chose a suitable swarm architecture for a group of UAVs and then our group was divided into specialisations. In the path planning team, I worked on finding the optimal path from the starting position to the goal position. We took into consideration regrouping, self healing, formation control and collision avoidance. The code was written in python on a Raspberry Pi

**Objectives of the project:** To implement swarm intelligence on a group of UAVs

**Tool used:** Python, C++, PixHawk, RaspberryPi, Zigbee

**Details of Papers/patents:** NA

**Brief description of the working environment:** Our PS got converted from onsite to online at the last moment. We have been asked to come to the office only 2-3 times in the entire duration. The mentor has online meets with us once a week in which she assigns the work for the upcoming week. We are almost never provided with any resources, we are told what we need to accomplish and have to figure things out by ourselves. Our mentor tells us if we have done something wrong or have missed something in our weekly meets when we show her our work.

**Academic courses relevant to the project:** NA

**Learning Outcome:** Learned about swarm intelligence and path planning for a swarm of drones

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**PS-I station: Dynamatic Technologies Ltd (HLS Division) , Bengaluru**

**Student**

**Name:** ABHIRAM H.(2021B4A71134P)

**Student Write-up:**

**PS-I Project Title:** Implementing Swarm Intelligence on a group of UAVs

**Short Summary of work done:** We worked on path-planning of drones, ensuring that drones go through each waypoint and successfully returning back

**Objectives of the project:** This project focuses on the implementation of swarm intelligence on a system of autonomous drones, to move to a target location while avoiding collision with obstacles and each other while effectively communicating and optimizing the tasks at hand

**Tool used:** Hardware: Xbee, RaspberryPi, Software: C++, Python

**Details of Papers/patents:** N.A.

**Brief description of the working environment:** The working environment seems rigorous but supportive. We had weekly meets with our mentors. We were expected to visit office just once a week. We were provided with hardware and for better efficiency, we were allowed to take it home as well. We had a good exposure to working with RPi, Pixhawk, Zigbee. Additionally, it sharpened our coding skills as well.

**Academic courses relevant to the project:** OOPs, Optimization, Graphs

**Learning Outcome:** Path Planning for UAVs, C++, Python OOP, Multithreading, Using Xbee Communication Module, Using Raspberry Pi.

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**PS-I station: Dynamatic Technologies Ltd (HLS Division) , Bengaluru**

**Student**

**Name:** TANAY HRISHIKESH KULKARNI(2021B4A72615G)

**Student Write-up:**

**PS-I Project Title:** Swarm Technology

**Short Summary of work done:** Introduction: In this essay, we will explore two Python code snippets that demonstrate wireless serial communication between a computer and a Raspberry Pi (RPi) using Zigbee modules. We will also discuss the setup required to implement this communication in 250 words. Step-by-Step Summary: Code 1: Computer to RPi Communication The first code snippet sets up a serial connection between a computer and an RPi using the Python serial library. It configures the serial port and baud rate to communicate with a Zigbee module connected to the computer's COM7 port. The code then sends a Python program (a loop to print numbers from 1 to 10) over the serial connection to the RPi. The program will execute once received by the RPi. Code 2: RPi to Computer Communication The second code snippet sets up a similar serial connection, but this time the RPi acts as the receiver. It configures the serial port to communicate with a Zigbee module connected to the RPi's /dev/ttyUSB0 port. The code continuously reads

data from the serial port until it receives a complete program (ending with \n). Upon receiving the program, it uses the exec() function to execute it as Python code on the RPi. Setting Up the Communication for RPi: To implement this wireless serial communication between the computer and RPi, the following steps are required: Hardware Setup: Connect a Zigbee module to the computer using a compatible USB-to-serial adapter (e.g., FT232RL) for Code 1. Connect another Zigbee module to the RPi's GPIO pins (e.g., UART) for Code 2. Software Setup: Install the pyserial library on both the computer and RPi to enable serial communication in Python. For Code 1, install XCTU on the computer to configure the Zigbee module and set the correct COM port and baud rate in the code. For Code 2, ensure the RPi is running a compatible operating system (e.g., Raspbian) with Python installed. Execution: Run Code 1 on the computer and Code 2 on the RPi. Code 1 will send the Python program over the serial connection to the RPi. Code 2 will receive and execute the program on the RPi, printing numbers from 1 to 10. Conclusion: Wireless serial communication between a computer and RPi using Zigbee modules and XCTU configuration opens up possibilities for remote control, data exchange, and automation in various applications. This setup can be further expanded to build more complex wireless networks and IoT systems with enhanced communication capabilities.

**Objectives of the project:** To demonstrate a swarm architecture

**Tool used:** Zigbee raspberry pi radio and pixhawk

**Details of Papers/patents:** None

**Brief description of the working environment:** A good working environment but more support is needed for fast-tracking the project.

**Academic courses relevant to the project:** None so far

**Learning Outcome:** Understood how to use a raspberry pi, Multithreading and zigbee

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**PS-I station: [Dynamatic Technologies Ltd \(HLS Division\) , Bengaluru](#)**

**Student**

**Name: [DEVANSH SHARMA\(2021B4AA2636G\)](#)**

**Student Write-up:****PS-I Project Title:** Task Allocation in Swarm Architecture**Short Summary of work done:** I can't tell the exact algorithms for the task allocation as my company doesn't allow such things as it's a defence based company . But I can tell that I basically optimised the task allocation based on various constraints . I used MATLAB , python , terminal .**Objectives of the project:** Use algorithms to optimise the tasks allocation for Multiple UAVs**Tool used:** MATLAB,Terminal,Reseach papers**Details of Papers/patents:** No**Brief description of the working environment:** Working environment was very good , I was regularly given tasks to perform and always try to do them within time , also whenever I am in trouble my ps mentor guides me and my ps faculty helps me of how to do work in corporate industry.**Academic courses relevant to the project:** Optimisation,python,MATLAB,coding basics,general maths for selecting the utility of algorithms**Learning Outcome:** Use of algorithms in coding and algorithms for optimisation

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**PS-I station: Dynamatic Technologies Ltd (HLS Division) , Bengaluru****Student****Name:** AAROSHI R RAO(2021B5A72952G)**Student Write-up:****PS-I Project Title:** Swarm Algorithm Development



**Short Summary of work done:** Armed a drone. Chose a swarm architecture. Developed a robust obstacle avoidance code.

**Objectives of the project:** To develop a robust swarm algorithm

**Tool used:** ArduPilot Mission Planner Xbee raspberry pi pixhawk

**Details of Papers/patents:** Nothing

**Brief description of the working environment:** Sharpened programming skills , learnt about drone technologies and swarm algorithms learnt a decent bit of ML.  
Met offline in the office towards the end of PS.

**Academic courses relevant to the project:** CS courses

**Learning Outcome:** Developing Obstacle avoidance and path planning algorithms

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**PS-I station: eShipz.com (LogIQ Labs Pvt. Ltd.) , Bengaluru**

## **Student**

**Name: AARYAN GARG .(2021A7PS2222P)**

### **Student Write-up:**

**PS-I Project Title:** Conversational Analytics Dashboard

**Short Summary of work done:** The assigned project aimed to develop a conversational dashboard utilizing OpenAI APIs while focusing on optimizing its performance and cost-efficiency. The project began with the creation of UML diagrams, flow charts, and component diagrams, which were subsequently reviewed and approved by the company's CTO to proceed with the implementation. To ensure an efficient and responsive system, a Vector database was chosen, playing a key role in improving both speed and cost-effectiveness. Its capability to handle substantial data volumes and complex queries was instrumental in achieving the project's goals. Furthermore, the implementation incorporated multiple layers of caching to enhance query response times. This clever approach involved storing previously computed query results temporarily,

allowing the system to retrieve and deliver responses swiftly when similar or identical queries were made.

**Objectives of the project:** eShipz serves its customers static analysis on their internal dashboard. It covers a variety of analytics features related to different shipment carriers such as BlueDart, Dhelivery etc. Occasionally, their customers request custom analytics. The company reviews the requested feature, develops it and brings it specifically to one customer (or more if feasible). A solution to this pipeline is to give customers analytics at their fingertips. A customer should simply be able to ask the system what data they want to see, trends, graphs etc. The conversational dashboard aimed to solve this problem.

**Tool used:** FastAPI, MongoDB, Redis, PineCone, OpenAI Apis, RapidAPI

**Details of Papers/patents:** N/A

**Brief description of the working environment:** The company is very open to allowing students to explore their ideas and interests. We were allotted to projects based on our previous skills and more importantly our interests. Furthermore, we were only handed an overall project objective, leaving room for us to ideate, research, plan and finally implement an end-to-end solution that the company could then iterate on. It was a supportive learning environment.

**Academic courses relevant to the project:** Information Retrieval, DBMS, OOP

**Learning Outcome:** Redis, Vector Databases, LLMs, Embeddings

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**PS-I station: eShipz.com (LogIQ Labs Pvt. Ltd.) , Bengaluru**

**Student**

**Name: ANANTH(2021A7PS2647G)**

**Student Write-up:**

**PS-I Project Title: RTO Analysis**

**Short Summary of work done:** We implemented a Gibberish Detector program by looking at GitHub repos. We then explored the data files that company had given and created dictionaries and used functions to decompose large columns into smaller usable bits. We tagged items into various categories according to broad classifications we made. We then used Pycaret library to create a ML workflow and finally made a ML Model using it. We then implemented the Gibberish Detector and ML Model consecutively.

**Objectives of the project:** Reducing the rate of Return to Origin (RTO) is a significant challenge faced by e-commerce companies, as it incurs substantial costs and logistical complexities. This project aims to analyze and minimize the number of RTO cases by exploring two potential methods.

**Tool used:** Python Libraries like Numpy, Panda, Seaborn, Matplotlib, Pycaret(ML Workflow)

**Details of Papers/patents:** NA

**Brief description of the working environment:** We got our projects within 2-3 days and we were not allotted any specific work in the first week to allow us time to learn basics required for the project. After that duration, we had daily sync up calls with our Mentor. We were given adequate time to do the work we were assigned to do. All projects had two members and they collaborated during the entirety of the PS. Mentor was very supportive and answered queries very regularly. We were provide with code snippets and other articles to each us what we were supposed to at various stages of the project. Entire project was done in online mode.

**Academic courses relevant to the project:** Machine Learning, Foundations of Data Science

**Learning Outcome:** Learning basic python syntax, Python Libraries like Numpy, Panda, Seaborn, Matplotlib. Exploring functioning and implementation of Gibberish Detector. Exploring Pycaret Library and using it to create Machine Learning Models.

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**PS-I station: eShipz.com (LogIQ Labs Pvt. Ltd.) , Bengaluru**

**Student**

Name: SRUJAL MITESH MEHTA(2021A7PS2717G)

**Student Write-up:**

**PS-I Project Title:** A.I. Driven Load Allocation

**Short Summary of work done:** Data Preprocessing and Data Visualization using python libraries and building an API to implement a smart decision making algorithm that selects the best carrier for each input.

**Objectives of the project:** To improve the load allocation using Artificial Intelligence

**Tool used:** Pandas , FastAPI

**Details of Papers/patents:** -

**Brief description of the working environment:** The work environment was very chill in general , the mentor was very supportive and helpful. It was a good environment to learn and work.

**Academic courses relevant to the project:** Data Structures and Algorithms, Object Oriented Programming

**Learning Outcome:** Hands on experience in data analysis and working of an API

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**PS-I station: eShipz.com (LogIQ Labs Pvt. Ltd.) , Bengaluru**

**Student**

Name: AMEY PRASHANT PATIL(2021A7PS2740G)

**Student Write-up:**

**PS-I Project Title:** ePOD Data Extraction based on OCR and NLP

**Short Summary of work done:** We developed a system to extract essential information like tracking number, shipment weight and number of boxes from ePOD images (Electronic Proof of Delivery). Firstly we were tasked with preprocessing and classifying the images into usable and non-usable on the basis of the presence of a barcode and then perform text extraction on the usable images by making use of efficient OCR and NLP algorithms. There were several challenges in completing the project mainly due to the non-uniformity in the nature of ePODs used by different companies. We made use of the DBR SDK for barcode detection, docTR library and key-value pair extraction methodology along with the re (regular expression) module in Python to get the final results.

**Objectives of the project:** Extracting important information from ePODs (Electronic Proof of Delivery- is an image).

**Tool used:** Python, DBR SDK, docTR, Pytesseract OCR, re module, openpyxl

**Details of Papers/patents:** NA

**Brief description of the working environment:** My overall experience of PS-I was really helpful. My mentor was really helpful and made it clear that it is important that we end up learning new things instead of just doing them for the sake of it. It also provided me with the insights of how work gets done in a company and helped in developing my technical and non-technical skills.

**Academic courses relevant to the project:** Computer Programming, Machine Learning

**Learning Outcome:** Developed a good understanding of text extraction from images, right from preprocessing methods and learning about various OCR libraries and algorithms to applying them on real world datasets. Also learnt about the importance of soft skills like problem-solving, time management and communication.

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**PS-I station: eShipz.com (LogIQ Labs Pvt. Ltd.) , Bengaluru**

**Student**

**Name: PRATHIK S SHETTY(2021B3A71317G)**

## **Student Write-up:**

### **PS-I Project Title:** Carrier Performance Analytics

**Short Summary of work done:** MMy project was carrier performance analytics. We had been given two datasets of the historical data of eshipz shipments, and our overall goal was to build a model to assign scores to the various carriers' shipments. We have 3 Main steps. The first step was exploratory data analysis, which mainly included cleaning, parsing and visualising the data in the datasets. We majorly relied on pandas and matplotlib libraries in Python to do this. This was done to get an idea of the scope of the data and figure out what parameters we could use to assign scores. The second task was building the carrier scoring model. Our task was to score carriers' shipments based on their relative performance compared to other carriers along the same Origin Destination route. We used two parameters to assign scores - Delivery Time and Pickup Time. The overall scores given were the average of these two scores. The Final Task was to implement this feature using an API so that the scoring information could be made available to the customers of eshipz to make a more informed decision about their choice of carrier for their shipment based on the scores given to the various carriers. We implemented this using the FastAPI framework; the API took the origin and destination pincode from the user and retrieved the scoring data for all the various carriers available for that route.

**Objectives of the project:** eShipz being a Logistics SaaS shipping Enterprise, works with many couriers in the Shipping Industry. Carrier Integrations within the platform allow our customers a smooth transition from Order creation to Shipment delivery. The project focuses on extracting useful information from the historical shipment data available, formulating a method to arrive at a unique Index to score carriers and then implementing it using an API so that this information can be provided to the customers to make a more informed decision about their choice of carrier for their shipment

**Tool used:** Python, Pandas, Numpy, Matplotlib, Google Colab, FastAPI

**Details of Papers/patents:** None

**Brief description of the working environment:** My overall experience at eshipz was very positive; I explored and tried out many new concepts and software that I hadn't been exposed to before. We had a pleasant working environment with sufficient time to learn and complete the project. Our very enthusiastic mentor was constantly available to guide and help us. We had daily meetings with our eshipz mentor to keep track of our progress in the project and clarify any doubts we had. Though one drawback would be that they don't teach you about the required software before starting the project; we are expected to learn them on our own and use the same to do our project. However, though it might initially seem confusing, everything can be learnt online from youtube and other resources, so it wasn't a big issue. It was an excellent learning experience, and I recommend others to take it up.

**Academic courses relevant to the project:** Data Structures and Algorithms, Data Science Courses

**Learning Outcome:** I learnt about coding in Python and its features. I explored the concepts of Data science and Machine learning with the help of Pandas library, Numpy, library and matplotlib library which are the primary libraries used for Data Science and Machine Learning. I also got to learn about API Implementation using the FastAPI framework.

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**PS-I station: eShipz.com (LogIQ Labs Pvt. Ltd.) , Bengaluru**

## **Student**

**Name:** VARUN AJAY KHADPE(2021B3A72864G)

### **Student Write-up:**

**PS-I Project Title:** Carrier Performance Analytics

**Short Summary of work done:** Data analysis was first conducted on the provided datasets using the Pandas library of Python. In doing so, the delivery times and pickup times for all shipments were obtained. Additionally, graphs were made to try to understand the state-wise distribution of carriers to see which carrier were in majority. Percentiles were then calculated for both pickup and delivery times and the scoring was implemented such that shipments in the lowest percentile of time get the highest score. The carrier score(for a particular OD(origin-destination) pair of pincodes) was then taken as the average of all its shipments between those 2 pincodes. An API was then built(using FastAPI) to accept origin and destination pincodes as input and print carrier names and scores as output

**Objectives of the project:** eShipz being a Logistics SaaS shipping Enterprise, works with many couriers in the Shipping Industry. Carrier Integrations within the platform allow the customers a smooth transition from Order creation to Shipment delivery. This project focused on extracting useful information from the historical shipment data available, formulate a method to arrive at a unique Index to score carriers and creating an API that displays the scores

**Tool used:** Jupyter Notebook, Google Colab, Python, Pandas, matplotlib, Numpy, FastAPI

**Details of Papers/patents:** Besides the PS report, no other paper or patent was published.

**Brief description of the working environment:** The company provided a good environment for us to learn and improve our skills in. The company mentor was very approachable and I always felt comfortable asking questions. The meetings were held regularly and the workload was evenly distributed throughout the duration of the internship so it could always be managed comfortably. Learning material was provided only when asked for resulting in a more self-taught experience which enabled us to work on our weaknesses which vary from person to person

**Academic courses relevant to the project:** Computer Programming

**Learning Outcome:** Through this project I have learnt several things:

- 1.I learnt about the logistics industry and how it works
- 2.My proficiency in Python has advanced
- 3.My problem solving abilities have improved as I had to come up with ways to extract the required data
- 4.I learnt how to work with csv files using Pandas and got an idea of how data analysis works
- 5.I learnt how to plot graphs in Python using matplotlib
- 6.I learnt how to use the NumPy and SciPy libraries to find various statistical measures like percentiles, mean and standard deviation
- 7.I learnt what APIs are and how to use FastAPI to build APIs

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**PS-I station: E-Sutra Technologies Pvt. Ltd. - Nontech , Delhi**

**Student**

**Name: JASKIRAT SINGH KALRA .(2021A3PS1020H)**

**Student Write-up:**



**PS-I Project Title:** Web Development

**Short Summary of work done:** Used the source code provided to us to help recreate a website with updated UI, along with some backend work such as creating requires databases.

**Objectives of the project:** Redesign an existing website for a client

**Tool used:** PHP, HTML, CSS, Javascript, AJAX, SQL, Bootstrap

**Details of Papers/patents:** None

**Brief description of the working environment:** There were daily standup meets and weekly review meets. Company manager was very helpful and cleared all our doubts. We were expected to complete our tasks within the deadline but could decide our own working hours apart from the meets

**Academic courses relevant to the project:** None as such since my branch is EEE whereas the project was IT project

**Learning Outcome:** Got to work on a real world project and helped create a website for commercial use.

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**PS-I station: E-Sutra Technologies Pvt. Ltd. - Nontech , Delhi**

**Student**

**Name: ABHIJEET CHANDRA(2021A4PS2309H)**

**Student Write-up:**

**PS-I Project Title:** WEB APPLICATION DEVELOPMENT

**Short Summary of work done:** WE CREATED A CRM SYSTEM

**Objectives of the project:** CREATING A CRM SYSTEM

**Tool used:** S/W

**Details of Papers/patents:** NO

**Brief description of the working environment:** IT WAS A GOOD HEALTHY WORKING ENVIRONMENT

**Academic courses relevant to the project:** OOPS,DBMS

**Learning Outcome:** GOT TO LEARN ABOUT CSS,HTML,JAVASCRIPT,PHP

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**PS-I station: E-Sutra Technologies Pvt. Ltd. - Nontech , Delhi**

**Student**

**Name:** ADYA SHUKLA .(2021A5PS0394P)

**Student Write-up:**

**PS-I Project Title:** Digital marketing and search engine optimization

**Short Summary of work done:** we were supposed to publish blogs for our client 'my dentist hub'. These blogs had to be digitally optimized so that they appear on top of web search results. We had to add meta descriptions, keywords, tags, meta tags, images etc to make them seo optimized.

**Objectives of the project:** To produce digitally optimized content for the company's clients and enhance the audience reach on the internet

**Tool used:** WordPress

**Details of Papers/patents:** NA

**Brief description of the working environment:** It was an online station, which meant that we all interacted on gmeets, WhatsApp etc. There were many domains like web and app development, CRM, digital marketing etc. Each domain had 7-8 students from all the three campuses. We got to know each other and put collaborative efforts to bring out the

best results. The workstyle was relax, no strict hours, just daily Targets had to be met. Overall, an enriching experience without too much stress.

**Academic courses relevant to the project:** Technical report writing, organizational psychology, marketing courses, creative writing

**Learning Outcome:** WordPress, digital marketing, SEO, communication, presentations

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## **PS-I station: E-Sutra Technologies Pvt. Ltd. - Nontech , Delhi**

### **Student**

**Name:** CHAITANYA NITIN MISHRA(2021B2AA2298G)

#### **Student Write-up:**

**PS-I Project Title:** App development

**Short Summary of work done:** I was assigned a new app every week. I had to read the documentation of the app and make the changes given in the documentation. Finally we after making the changes, we had to publish the app on play store.

**Objectives of the project:** To make some changes in the given apps

**Tool used:** Android studio, visual studio, kotlin language, expo cli

**Details of Papers/patents:** No

**Brief description of the working environment:** The company provides a flexible working environment. They give their best to help you. They want you to take the ownership of your work and act responsibly.

**Academic courses relevant to the project: -**

**Learning Outcome:** Basics of android development

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**PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech , Delhi**

**Student**

**Name: YASH MANCHANDA(2021A1PS2964G)**

**Student Write-up:**

**PS-I Project Title:** Digital Marketing and seo intern

**Short Summary of work done:** I was part of the Dm and seo team at E-sutra. We had to write Blogs for the Portal “my dentist hub” using varioud ai tools and refine them.

**Objectives of the project:** Basics of Dm and Seo

**Tool used:** Chat gpt, word press

**Details of Papers/patents:** Na

**Brief description of the working environment:** The work environment was very student friendly and i was very satisfied by my station, they helped us throughout and i got to learn alot

**Academic courses relevant to the project:** Technical report writing

**Learning Outcome:** Basics Of Dm and Seo

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**PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech , Delhi**

**Student**

Name: AAHAN NAWAB(2021A3PS2365G)

**Student Write-up:**

**PS-I Project Title:** Digital Marketing and SEO

**Short Summary of work done:** The job that I was required to do was for a client of E-Sutra Technologies, MyDentistHub. I had to write 300 blogs on Dental care and anything around the topic. These blogs were updated several times to improve the readability by changing heading, keywords, meta description, meta tags, images and alt titles. I acted as a project manager initially for which I had to give weekly updates to company heads. I discussed methods of moving forward with the job more efficiently. Apart from that there were daily meetings.

**Objectives of the project:** To write SEO optimized Blogs

**Tool used:** WordPress

**Details of Papers/patents:** None

**Brief description of the working environment:** The company environment was good and very nurturing. Although I only talked directly with Mr. Suyog who was our mentor in E-Sutra Technologies, he did more than enough to make sure that I wasn't stuck in a task. The work was not described well beforehand as the task given was not that anyone expected. Most of the work was monotonous and there was only one lengthy task to be done. I wished that the company could offer more to learn. The office culture did support at every step and I was well versed with SEO by the end.

**Academic courses relevant to the project:** None

**Learning Outcome:** How to use online presence in a better manner. Optimizing the readability and ranking good in search engine searches.

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**PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech , Delhi**

**Student**

Name: ARKOJIT DATTA .(2021B1A32395H)

### **Student Write-up:**

**PS-I Project Title:** DIGITAL MARKETING DOMINATION: MAXIMIZING YOUR ONLINE PRESENCE

**Short Summary of work done:** The work was basically ChatGPT content creation & publishing on WordPress. Blogs were written on the topics related to teeth given to us by copy pasting them from ChatGPT. Each blog consisted of around 2500 - 3000 words and it included basic content, images etc. In the first two weeks we completed writing 300 blogs that were assigned to us . In the upcoming week we added 2-3 images per blog related to the topic assigned and performed content refining. Using wordpress was a fun and great learning experience as it gave valuable insights into customer behavior, preferences, and trends.

**Objectives of the project:** Digital marketing encompasses various techniques and channels, including search engine optimization (SEO), social media marketing, content marketing, email marketing, and paid advertising. By utilizing these tools, businesses can reach a wider audience, increase brand visibility, engage with customers, and drive conversions.

**Tool used:** -

**Details of Papers/patents:** None

**Brief description of the working environment:** Overall it has been a great learning experience working with Suyog sir and the company as I got to learn a lot of new things and gain invaluable knowledge and skill in leveraging digital platforms to establish a strong online presence. This project has equipped me with the tools necessary to excel in the digital marketing landscape and make a meaningful impact in different fields.

**Academic courses relevant to the project:** Artificial Intelligence

**Learning Outcome:** Digital Marketing and Search Engine Optimization and proper use of AI in ChatGPT and wordpress.

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## PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech , Delhi

### Student

Name: PARTH AGARWAL .(2021B1A32734P)

#### Student Write-up:

**PS-I Project Title:** Developing CMS systems using relevant frontend and backend frameworks

**Short Summary of work done:** We worked on building a consumer management system for one of the clients of the company I worked at. I was assigned to be in a team where in each student had to work on given webpages and compile said pages to create the CMS system after the internship duration.

**Objectives of the project:** Creating webpages implemented in a CMS platform for an automobile company.

**Tool used:** HTML,CSS (bootstrap), Javascript, PHP, XAMPP framework, MySQL

**Details of Papers/patents:** Since I was in charge of development, a substantial use of papers/parents has not been exercised.

**Brief description of the working environment:** Working Environment : We were assigned work on a weekly basis and we could consult our mentors if we had any problems at any time throughout the week. This proved to be considerably effective in completion of the final project.

Expectations from the company : I expected to learn how a company works in general and hopefully learn new skills that would be useful to me. Although the work assigned to me was certainly somewhat repetitive, the internship fulfilled what I was looking for.

**Academic courses relevant to the project:** Computer Programming

**Learning Outcome:** Fully understand fullstack development at an intermediate level after the completion of the project.

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## PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech , Delhi

### Student

Name: AYUSH SAMSON DSOUZA .(2021B3A31052P)

#### Student Write-up:

**PS-I Project Title:** Digital Marketing and Search Engine Optimization

**Short Summary of work done:** I generated 300 articles for the client using AI tools such as Chat-GPT [As instructed by our mentor] and optimized the same for a high SEO score that is indicative of "easy to obtain on search".

**Objectives of the project:** To generate content for a client's website and optimize it for searchengine results.

**Tool used:** Bard, Chat-GPT

**Details of Papers/patents:** None

**Brief description of the working environment:** The work environment was very supportive, our mentor really pushed us to learn as much as possible and was very accomodative of our individual circumstances and interests. My expectations of a positive work culture, great learning and interactions were met.

**Academic courses relevant to the project:** None [Non Tech PS, my emphasis was on hands on digital marketing]

**Learning Outcome:** Power of AI tools and importance of digital marketing in today's age. Also how important it is to have a "personal brand".

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PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech , Delhi



## Student

Name: UJJWAL JAJOO(2021B4AA2266G)

### Student Write-up:

**PS-I Project Title:** SEO and Digital Marketing

**Short Summary of work done:** Just had to copy paste blogs generated by chatgpt on wordpress and has to use a little bit of seo techniques to optimize it.

**Objectives of the project:** Understanding about SEO Blogging for maximum audience reach

**Tool used:** Chatgpt,wordpress

**Details of Papers/patents:** None

**Brief description of the working environment:** Wouldn't recommend this ps station if u actually want to gain some knowledge

**Academic courses relevant to the project:** None whatsoever

**Learning Outcome:** SEO Techniques,prompt engineering,wordpress

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**PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi**

## Student

Name: CHETAN RATHAUR.(2021A1PS1579P)

### Student Write-up:

**PS-I Project Title:** Digital Marketing and SEO

**Short Summary of work done:** Content Writing involved writing 300 articles of 3000 words each and later refining them using the tools of WordPress. Insertion of Keywords and Meta Tags to increase online presence and insertion of Images in the articles for aesthetics.

**Objectives of the project:** To enhance the online visibility of the blog through SEO

**Tool used:** ChatGPT, WordPress

**Details of Papers/patents:** No

**Brief description of the working environment:** Great Working Environment. Interactive helpful sessions with great learning opportunities.

**Academic courses relevant to the project:** None

**Learning Outcome:** Digital Marketing, Use of ChatGPT, SEO

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**PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi**

**Student**

**Name:** APRATIM KAKOTY .(2021A1PS3054H)

**Student Write-up:**

**PS-I Project Title:** App development

**Short Summary of work done:** Initially we installed essential tools like android studio, JDK , android SDK and gradle. Then we were asked to go through various simple codes of apps like calculators etc to have a basic idea about it. We were given source codes of apps by our mentor and then we had to edit and modify it according to the documentation given to us. The documentation had all the basic instructions as well which helped us how the android studio works. Then we learnt about firebase a platform offered by google which provides a set of tools and services that help developers build, improve, and scale apps more effectively. Then how to publish the apps on google play services. Then we learnt about api (application programming interface) which allows softwares to

communicate and interact with each other. For example we used it in the Login with google account , login with facebook etc. Then finally published the apps.

**Objectives of the project:** Editing app features

**Tool used:** Android Studio, Java Development Kit (JDK), Android SDK, Gradle, Emulator, Device Debugging Tools, Version Control Systems, Android Design Tools

**Details of Papers/patents:** -

**Brief description of the working environment:** We were divided into groups with different projects and the people were supportive and helped each other with things. There were daily meetings where we had to give updates on our work to our mentor. There was a project manager each week who basically was the middleman between the group and the mentor for communication. We could also directly approach the mentor as well for any difficulties. Finally coming to the learning part, we gained experience on working as a team being a project leader and knowledge about various tools such as JDK , android SDK , android studio , gradle etc api and publishing apps.

**Academic courses relevant to the project:** Object oriented programming

**Learning Outcome:** basics of android studio, kotlin

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**PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi**

**Student**

**Name:** SIDDHARTHA MISHRA .(2021A3PS0796H)

**Student Write-up:**

**PS-I Project Title:** Web dev

**Short Summary of work done:** Learned various tools to modernise and revamp the company website

**Objectives of the project:** Redesign the company website

**Tool used:** Elementor -sw.

**Details of Papers/patents:** None

**Brief description of the working environment:** Good working environment

**Academic courses relevant to the project:** Oops

**Learning Outcome:** Learning html and css

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**PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi**

**Student**

**Name:** SAUMYA OJHA .(2021A3PS2663P)

**Student Write-up:**

**PS-I Project Title:** Web Application development

**Short Summary of work done:** Build an protocol of portal for automobile erp

**Objectives of the project:** Build an erp portal

**Tool used:** Html, css, js, MySQL, php

**Details of Papers/patents:** None

**Brief description of the working environment:** Online, work from home

**Academic courses relevant to the project:** -

**Learning Outcome:** Learnt building web apps

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**PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi**

**Student**

**Name: LUV GULATI .(2021A3PS2931H)**

**Student Write-up:**

**PS-I Project Title:** Digital Marketing and SEO

**Short Summary of work done:** I wrote 300 blogs for the client's website

**Objectives of the project:** Blog Writing

**Tool used:** Wordpress

**Details of Papers/patents:** None

**Brief description of the working environment:** Online mode of work environment

**Academic courses relevant to the project:** none

**Learning Outcome:** Learning about meta keywords, tags, categories required for a blog

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**PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi**

**Student**

**Name: P G S PRITAM VARMA .(2021A3PS2982H)**

## **Student Write-up:**

**PS-I Project Title:** Automobile ERP for Sai Seva tractors

**Short Summary of work done:** Created a web prototype an Automobile Enterprise Resource Planning (ERP) portal using Html, CSS and PHP. The main objective of this project is to create a software web application for the use of a specific automobile company called Sai Seva Tractors. The application will concentrate on various activities like inventory management, recording of sales and purchases, customer relationship management, financial reporting and many more. Agile methodology was incorporated into the development process leading to many productive interactive sessions throughout the process. The online programme stores the data in mySQL database and made use of markup languages such as HTML, PHP, JavaScript, and CSS. Several important functions, including user identification, inventory management, customer relationship management (CRM), sales and purchase tracking, and financial reporting, have been incorporated. Integration of data, improvement of performance, and strengthening of security were among the difficulties encountered. The prototype successfully demonstrates the fundamental capabilities of an automobile ERP system, leaving open the possibility for subsequent development in the areas of new modules, scalability, and the refinement of the user interface.

**Objectives of the project:** To create a website to manage all the accounts and sales and reports of a specific automobile company called Sai Seva tractors

**Tool used:** Visual Studio Code, XAMMP local server, MySQL

**Details of Papers/patents:** Submitted the project reports to PS-1 Faculty.

**Brief description of the working environment:** Everyone were very supportive and friendly. The work was not hectic and very fun to learn to do.the work hours were very flexible and comfortable for me to work.

**Academic courses relevant to the project:** Web development basics like HTML,CSS and JS. SQL database creation and PHP development.

**Learning Outcome:** Web app development, HTML, CSS, PHP and MySQL

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**PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi**

## Student

Name: GOPAVARAPU POOJITHA .(2021A4PS1985H)

### Student Write-up:

**PS-I Project Title:** WEB APPLICATION DEVELOPMENT/CRM DEVELOPMENT

**Short Summary of work done:** With a given source code and screenshots we created UI design for new pages required for the automobile erp system like masters pages, reports, gst sales etc and back end data management has also done by us. Each one of us in the team are assigned with 15 pages. Each of us are the project managers for a week and rotation continuous. Finally, We have developed a ERP for an automobile company named Sai Seva tractors

**Objectives of the project:** DATA MANAGEMENT, INTEGRATION OF BUSINESS FUNCTIONS, INVENTORY MANAGEMENT, FINANCIAL MANAGEMENT, SCALABILITY AND FLEXIBILITY, SALES AND CUSTOMER RELATIONSHIP MANAGEMENT

**Tool used:** HTML, CSS, Javascript, Bootstrap, Data management system- MySQL

**Details of Papers/patents:** Nothing like that

**Brief description of the working environment:** The working environment at E-sutra, an ERP development company specializing in solutions for the automobile industry, is dynamic and collaborative. Interns can expect a supportive and inclusive workplace culture that encourages creativity, innovation, and professional growth. The company fosters an atmosphere where team members openly communicate, share ideas, and work together to solve challenges. The workplace is likely to be technology-driven, with access to the latest tools and technologies relevant to ERP development and automotive processes.

As an intern at E-sutra, the company expects a high level of enthusiasm, dedication, and a willingness to learn. Interns will likely be assigned to specific ERP development projects related to the automobile industry, and they are expected to actively contribute to the team's efforts. This may involve writing code, testing functionalities, participating in design discussions, and providing input on project-related decisions. Punctuality, professionalism, and effective communication are crucial for success during the internship. I have learnt many things like working culture and environment in companies and the project error handling and debugging and completion of project such things. It is a great experience

**Academic courses relevant to the project:** DBMS, BPM , Programming languages like HTML, CSS, Javascript

**Learning Outcome:** UNDERSTANDING BUSINESS PROCESSES, DATA MANAGEMENT AND ANALYSIS, CROSS FUNCTIONAL COLLABORATION, ERP IMPLEMENTATION AND INTEGRATION, LONG TERM SYSTEM MAINTENANCE

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**PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi**

### **Student**

**Name:** GADICHARLA SAI SHRIJA SRIVALLI .(2021A4PS3096H)

#### **Student Write-up:**

**PS-I Project Title:** Automobile Erp

**Short Summary of work done:** We tried to develop web pages within website given to us. We made forms according to each webpage and created a database to store the input given through the forms.

**Objectives of the project:** Creation of a smooth functional website for Sai seva tractors

**Tool used:** Vscode/atom to code,xampp, languages like HTML, CSS JAVASCRIPT, PHP

**Details of Papers/patents:** Source code was provided to us

**Brief description of the working environment:** The working environment was quite friendly and helpful to learn more. We were expecting patience and knowledge from the mentor and we were thankfully given that. We got to learn technical skills and some corporate knowledge from our mentor. We are very grateful for the knowledge provided

**Academic courses relevant to the project:** None

**Learning Outcome:** Html, css, php languages and exposure to work environment

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## PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi

### Student

Name: AMAL SAYEED .(2021A7PS2001P)

#### Student Write-up:

**PS-I Project Title:** Web Development

**Short Summary of work done:** The primary objective of this project is to develop a comprehensive CRM system that seamlessly integrates the backend and frontend components. The backend will encompass the core functionality, data management, and business logic required to support efficient customer relationship management processes. Meanwhile, the frontend will focus on designing intuitive and user-friendly web pages that provide a smooth and engaging user experience. I developed different web pages using different technologies. These web pages are specifically designed to cater to the unique requirements of the automotive industry and enable effective customer relationship management. The development of these pages involved a careful consideration of the functionalities and features essential to streamline automotive-related processes and enhance customer satisfaction.

**Objectives of the project:** creating responsive web pages for an automobile ERP website.

**Tool used:** XAMPP, HTML, CSS, JavaScript, BootStrap,PHP

**Details of Papers/patents:** NA

**Brief description of the working environment:** In the starting days of the internship, we had daily meetings at a specific time on Gmeet. We were supposed to discuss our doubts and learn different things in these Gmeets. the working environment was dynamic and had collaborative setting. I was a part of a team that focused on developing and implementing the ERP system to streamline processes and enhance efficiency in the automotive industry. The expectations from the company during our PS-I revolved around our active involvement in the project, willingness to learn, and the successful completion of assigned tasks.

**Academic courses relevant to the project:** DBMS, Web Dev.

**Learning Outcome:** Working of different languages like HTML, CSS, JavaScript, php.

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**PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi**

**Student**

**Name:** SAMARTH GANDOTRA .(2021A7PS2437P)

**Student Write-up:**

**PS-I Project Title:** Customer Relationship Management System

**Short Summary of work done:** .

**Objectives of the project:** To build a CRM system for an automobile company

**Tool used:** HTML, CSS, Javascript, PHP, SQL and XAMPP.

**Details of Papers/patents:** N/A

**Brief description of the working environment:** Online

**Academic courses relevant to the project:** SQL

**Learning Outcome:** Learnt the skills of coding in HTML, CSS, PHP, Javascript and SQL

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**PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi**

## Student

Name: VATSAL GOYAL .(2021B1A32325H)

### Student Write-up:

**PS-I Project Title:** Website Development

**Short Summary of work done:** E-Sutra Technologies designed and built a new website using WordPress. They focused on understanding their goals and target audience to create a user-friendly and visually appealing interface. Custom themes, colors, and typography were incorporated to represent their brand identity. The website's layout and structure were planned using wireframing and prototyping techniques for optimal user experience. Engaging content was created and managed easily using WordPress as the CMS. Various plugins were integrated to add features like contact forms, social media integration, SEO, and security enhancements. Rigorous testing was conducted to ensure performance and compatibility across devices and browsers. The result is a high-quality website that effectively communicates E-Sutra Technologies' offerings to their audience.

**Objectives of the project:** Redesigning company's own website using cms Wordpress.

**Tool used:** WordPress

**Details of Papers/patents:** NA

**Brief description of the working environment:** The work environment provided by E-sutra, where interns can work from home, presents unique advantages and challenges. As a remote intern, I can complete my tasks from any location that suits me, such as my home or another suitable workspace. This work arrangement offers several benefits for interns, including increased autonomy, improved time management skills, and the opportunity to work in a comfortable environment.

To ensure success as a remote intern, it is important to maintain constant communication with my team and manager. Instant messaging services, virtual meetings, and video conferencing become essential tools for effective collaboration and staying connected. A productive workflow relies on clear expectations and instructions from your supervisor regarding project deadlines, deliverables, and preferred communication channels.

Web design and development involve essential technologies and tools like HTML and CSS. HTML is used to create the structure and content of web pages, while CSS manages their visual presentation and styling. Developers utilize text editors or integrated development environments (IDEs) such as Visual Studio Code or Sublime Text for code writing and editing. Version control systems like Git enable collaboration and track code changes. Developer tools in web browsers, like Chrome DevTools, are valuable for

testing and troubleshooting websites. These technologies and tools improve the efficiency and effectiveness of web design and development workflows.

**Academic courses relevant to the project:** Computer Programming

**Learning Outcome:** Using WordPress and Elementor and making the website using them.

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**PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi**

**Student**

**Name:** KHUSHI JAIN .(2021B3A33034H)

**Student Write-up:**

**PS-I Project Title:** IT Project on Digital marketing

**Short Summary of work done:** none

**Objectives of the project:** to learn about SEO

**Tool used:** none

**Details of Papers/patents:** none

**Brief description of the working environment:** none

**Academic courses relevant to the project:** none

**Learning Outcome:** none

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## PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi

### Student

Name: RUDRAKSH GULHATI(2021B3AA1580G)

#### Student Write-up:

**PS-I Project Title:** App development using android studio

**Short Summary of work done:** We first worked on learning android development, we went through several youtube videos trying to get an idea of what we did, then we also understood how ai plays a role in this, apart from this installed android studio, understood the layout, code and basics. After that we learnt kotlin and worked on android studio for a while. The biggest change was when we got a test app. After that, we worked on apps that our mentor mr suyog gave us. After that we kept working on these apps and kept understanding new things. It was a great opportunity

**Objectives of the project:** To create document and publish apps using android studio

**Tool used:** Android Studio, Bluestacks

**Details of Papers/patents:** NO

**Brief description of the working environment:** It was a satisfying experience, had a good one overall. I feel like the order of learning things could have been changed. We should have learned the basics more before going into app testing

**Academic courses relevant to the project:** App development courses on Youtube and Udemy

**Learning Outcome:** App development and more about the industry as a whole

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PS-I station: E-Sutra Technologies Pvt. Ltd. - Tech2 , Delhi

## Student

Name: SUJAL SHAILESH PIMPALE(2021B4A41067G)

### Student Write-up:

**PS-I Project Title:** App development

**Short Summary of work done:** Learn basic app development

**Objectives of the project:** App development

**Tool used:** Android studio, flutter, dart

**Details of Papers/patents:** No

**Brief description of the working environment:** It was good we had meeting everyday in the afternoon and full house meeting on Saturday

**Academic courses relevant to the project:** Android app development

**Learning Outcome:** Learning Android studio

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**PS-I station: FinMapp (Fininfinity Technologies Pvt. Ltd.) - Non Tech , Gurugram**

## Student

Name: SAANYA.R.JAIN .(2021A5PS1278H)

### Student Write-up:

**PS-I Project Title:** User Persona:defining user journey

**Short Summary of work done:** Work was very minimal. We had projects in which we mainly had to use excel and conduct an analysis of a typical user. We also did market analysis and competitor analysis

**Objectives of the project:** Defining a user persona

**Tool used:** Excel

**Details of Papers/patents:** None

**Brief description of the working environment:** Online

**Academic courses relevant to the project:** Non

**Learning Outcome:** Excel

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**PS-I station: FinMapp (Fininfinity Technologies Pvt. Ltd.) - Tech , Gurugram**

**Student**

**Name:** SHUBH NEMA .(2021A1PS2602P)

**Student Write-up:**

**PS-I Project Title:** CREATED A LOGIN API USING NODE.JS, EXPRESS, POSTGRESQL AND SEQUELIZE

**Short Summary of work done:** Created several small projects in the domain of web development, some of them being - a to-do list using HTML, CSS and JS, a rest API, a crypto currency tracker app using react hooks and finally created a login and registration API using node js and express.

**Objectives of the project:** To create a login and registration API for the Finmapp cryptocurrency tracker app.

**Tool used:** HTML, CSS, Javascript, React, node.js

**Details of Papers/patents:** N/A

**Brief description of the working environment:** The working environment was very light and mentors were very supportive. The company expected us to learn as much as possible and do the tasks on time. Learnings involved hands on experience in the field of web development.

**Academic courses relevant to the project:** Computer Programming

**Learning Outcome:** Learned the basics of the frontend as well as backend development(like html, CSS, javascript, node.js, React, etc)

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**PS-I station: FinMapp (Fininfinity Technologies Pvt. Ltd.) - Tech , Gurugram**

**Student**

**Name:** ANISH SHANDILYA .(2021A3PS0982H)

**Student Write-up:**

**PS-I Project Title:** Live Cryptocurrency tracking website

**Short Summary of work done:** My project aim was to create a website that keeps tabs on the rapidly growing cryptocurrency space and presents the information in a user-friendly way. The data needed would be fetched from the internet in form of a table and the website uses the same and presents it. The website would also have other features such as a log in and registration page so that only authenticated users can access the data.

**Objectives of the project:** To create a real-time crypto assest tracking website

**Tool used:** React JS, NodeJS, Postman client, VS Code, PostgreSQL



**Details of Papers/patents:** N.A

**Brief description of the working environment:** Since my PS was in an online station, I can't say much about the working environment, but I can say that I expected regular feedback on my work from my PS mentor, that was given to me almost everyday. We had daily meets with the exceptions of weekends and some day offs.

**Academic courses relevant to the project:** none of the courses I did were used in this project.

**Learning Outcome:** Full-stack web development

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**PS-I station: FinMapp (Fininfinity Technologies Pvt. Ltd.) - Tech , Gurugram**

**Student**

**Name:** DRISHTI KHANDOR .(2021A3PS2202H)

**Student Write-up:**

**PS-I Project Title:** FRONTEND WEB DEVELOPER

**Short Summary of work done:** After creating multiple simple projects such as to-do lists and calculators, we went on to create a Crypto website that displayed real-time data for multiple cryptocurrencies. The website was then completed with user login & registration. We also used authentication.

**Objectives of the project:** BUILT A DYNAMIC CRYPTO DATA WEBSITE WITH LOGIN, REGISTRATION AND AUTHENTICATION

**Tool used:** react, node.js, PostgreSQL, flutter, html, css, javascript

**Details of Papers/patents:** -

**Brief description of the working environment:** we were given plenty time for each step of the projects, however there was no corporate work environment as such.

**Academic courses relevant to the project:** web development

**Learning Outcome:** LEARNT WEBDEV, POSTGRESQL, REACT, NODE.JS, HTML, CSS, JAVASCRIPT

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**PS-I station: FinMapp (Fininfinity Technologies Pvt. Ltd.) - Tech , Gurugram**

**Student**

**Name:** ISHA PARGAONKAR .(2021A3PS2803H)

**Student Write-up:**

**PS-I Project Title:** Frontend and Backend Web Development

**Short Summary of work done:** First the objective was to familiarize the us with React platform and for us to have enough practice to create the clone of FinMapp website using the API of coinmarketcap website. Skills taught were html, javascript, css and using the react platform, and given resources to study the same. Then we started working with creating tables and incorporating API's to add data to the table. Another task was to create a rest Api. Being part of the frontend team, my main task was to create a dynamic table on the homepage, making a login and registration page and adding routes of the same to the main page through a nav-bar. Future work would include linking the registration page to a database and adding the name and email ID of registered people to the database to keep record of registered people.

**Objectives of the project:** The main task in the project was to create a dynamic table with real-time data of cryptocurrencies on the main page, creating a login and registration page and add it's route to the main page

**Tool used:** HTML, CSS, JavaScript, React, Postgres

## Details of Papers/patents: -

**Brief description of the working environment:** Since this was an online PS we could not get an idea about the working environment in the company. Online meets would be conducted on google meets and we would be taught few relevant functions and given tasks to be completed by the next session.

## Academic courses relevant to the project: -

**Learning Outcome:** Getting familiar with React was one of the main outcomes. I was part of the frontend team but along with frontend we also worked with backend to some extent, which involved creating rest API's with and without using database

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## PS-I station: FinMapp (Fininfinity Technologies Pvt. Ltd.) - Tech , Gurugram

### Student

Name: [DHRUV MEHTA .\(2021A7PS2088H\)](#)

### Student Write-up:

**PS-I Project Title:** Cryptocurrency price tracker

**Short Summary of work done:** During my PS-I, I developed a cryptocurrency price tracker web application that provided real-time price listings for different cryptocurrencies. The application utilized React for the frontend, an Express server for the backend, and a PostgreSQL database for data storage. The key features of the application included a comprehensive cryptocurrency list with live price updates to keep users informed about the latest trends. To ensure user security, I implemented a secure authentication system that allowed users to log in or sign up using traditional methods or through Google authentication. Throughout the development process, I focused on enhancing the application's security and accessibility, following industry best practices. Thorough testing and debugging were conducted to guarantee a reliable and seamless integration between the frontend and backend components. Upon completion, the project successfully delivered an intuitive and secure platform for users to track cryptocurrency prices in real-

time. This internship provided me with valuable hands-on experience in modern web technologies and the practical skills to create functional and secure web applications.

**Objectives of the project:** To make a website where user can access real time data of cryptocurrency and can create his/her own watchlist and portfolio.

**Tool used:** Postman, Express.js, postgresql, react, Sequelize

**Details of Papers/patents:** NA

**Brief description of the working environment:** During my PS-I, the working environment was different from my initial expectations. I had anticipated that we would be assigned ongoing projects of the company and be required to report progress daily. However, the project we were given seemed to have minimal impact on the company's operations. Moreover, there were no daily meetings or clear roadmaps for the next two months, which made it challenging to gauge the project's direction and timeline. Despite these initial expectations, the internship provided valuable learning opportunities. I had the chance to work with various technology stacks, including React for the frontend, Express.js for the backend, PostgreSQL for the database, and Sequelize for ORM (Object-Relational Mapping). Additionally, I gained practical experience using Postman for API testing.

**Academic courses relevant to the project:** DBMS, OOP

**Learning Outcome:** Express.js, APIs, Database, postgres, postman

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**PS-I station: FinMapp (Fininfinity Technologies Pvt. Ltd.) - Tech , Gurugram**

**Student**

**Name: AFZAL AFTAB .(2021A7PS2424P)**

**Student Write-up:**

**PS-I Project Title:** Frontend, REST APIs and User Authentication

**Short Summary of work done:** During the project, I worked on various aspects of web and mobile development, gaining valuable learning outcomes. I started by mastering HTML, CSS, and JavaScript, learning how to create web pages and add interactive elements. In the initial phase, I developed a practical to-do list application with features like adding and deleting tasks. I also implemented a search bar to enhance functionality. With the guidance of Mr. Shubham Tiwari, I delved into React.js, creating dynamic components, forms, and implementing form validation. Moving forward, I explored Flutter and Dart, building a simple calculator app for mobile and desktop platforms. In advanced React topics, I focused on data tables, implementing a dynamic react data table component. For backend development, I created RESTful APIs using Express.js, working with a PostgreSQL database for CRUD operations. I successfully integrated user authentication using JSON Web Tokens (JWT) for secure logins and registration. Throughout the project, I followed best practices, used environment variables for security, and ensured proper error handling. The experience of full-stack development enabled me to create functional and secure applications. Overall, I gained a diverse skill set in web and mobile development, making me proficient in building robust and feature-rich applications.

**Objectives of the project:** To clone coinmarketcap website

**Tool used:** Node.js: Node.js is a runtime environment for executing JavaScript code outside of a web browser. It is commonly used for server-side development with frameworks like Express.js. Express.js: Express.js is a popular Node.js web application framework used

**Details of Papers/patents:** NA

**Brief description of the working environment:** During PS-I, the individual worked at Finmapp, gaining real-world experience in a professional environment. The project focused on web and mobile development, including frontend, REST APIs, and user authentication. Expectations from the company included providing relevant projects, guidance, and mentorship. The learner aimed to acquire practical knowledge in HTML, CSS, JavaScript, React.js, Flutter, and Dart. They gained proficiency in building a robust user authentication system and implementing RESTful APIs. The experience exposed them to full-stack development, integrating frontend, backend, and database management. Additionally, they learned about JSON Web Tokens for secure login and registration. Overall, the working environment at Finmapp, along with the guidance from mentors, allowed the learner to excel in web and mobile development, equipping them with valuable skills for future career endeavors.

**Academic courses relevant to the project:** Web Development and Database Management

**Learning Outcome:** Proficiency in Frontend Technologies: Gained expertise in HTML, CSS, and JavaScript, including various HTML elements, CSS properties, and JavaScript concepts like variables, data types, functions, arrays, and DOM manipulation.

**React.js Knowledge:** Acquired practical knowledge of React.js, learning to create and nest components, implement form validation, and use hooks like useState and useEffect for state management. Explored conditional rendering and dynamic component rendering.

**RESTful API Development:** Gained insights into building RESTful APIs using Express.js, setting up routes, interacting with a PostgreSQL database using SQL queries, and handling CRUD operations (Create, Read, Update, Delete).

**User Authentication:** Implemented user authentication using JSON Web Tokens (JWT) and bcrypt for secure password hashing. Created user registration and login routes, generating and verifying JWT tokens for authentication and authorization.

**Mobile and Desktop Development:** Gained exposure to Flutter and Dart, building mobile and desktop applications with a single codebase. Learned about widgets, layouts, and gestures in Flutter and developed a simple calculator app.

**Environment and Error Handling:** Understood the importance of using environment variables to protect sensitive data and implemented effective error handling using middleware for application security.

**Full-Stack Development:** Combined frontend technologies, backend development with Express, and database management with PostgreSQL, gaining experience in full-stack development, essential for creating complex web applications.

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## **PS-I station: FinMapp (Fininfinity Technologies Pvt. Ltd.) - Tech , Gurugram**

### **Student**

**Name: Ansh Goyal(2021A7PS2614H)**

### **Student Write-up:**

**PS-I Project Title:** CryptoTracker: Real-Time Cryptocurrency Price Monitoring

**Short Summary of work done:** The CryptoCurrency Price Tracking Website project is a comprehensive web application that utilizes HTML, React, React Hooks, Table,

ExpressJS, PassportS, PostgreSQL, JWT tokens, and various other technologies to provide real-time data and insights into the dynamic world of cryptocurrencies. The project enables users to track cryptocurrency prices, visualize price history, and make informed decisions. With a user-friendly interface, secure user authentication, and seamless API integration, the project serves as a valuable tool for investors, traders, and cryptocurrency enthusiasts in navigating the cryptocurrency market.

**Objectives of the project:** The primary objective of our project is to create a user-friendly and efficient platform that tracks and displays real-time data on various cryptocurrencies.

**Tool used:** ReactJS, ExpressJS, JWT, PostgreSQL

**Details of Papers/patents:** N/A

**Brief description of the working environment:** As a web development intern, the working environment was entirely online. The company provided you with access to the necessary tools, resources, and communication channels to carry out your tasks and learn effectively. This virtual setup allowed for flexibility in terms of working hours and location, but it also required self-discipline and good time management skills to meet project deadlines and attend virtual meetings or training sessions.

**Academic courses relevant to the project:** None

**Learning Outcome:** HTML, CSS, JS, ReactJS, ExpressJS, PassportJS, JWT, PostgreSQL, Git

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**PS-I station: FinMapp (Fininfinity Technologies Pvt. Ltd.) - Tech , Gurugram**

**Student**

**Name: UTKARSH BHASKAR .(2021B3A71610H)**

**Student Write-up:**

**PS-I Project Title:** A JWT authenticated dynamic cryptocurrency data website using PERN stack

**Short Summary of work done:** Created a fully functional website, that used react for the frontend, react bootstrap library for navigation, react router for routing, react data table component library to display the data and add advanced functionality, react forms to create the login and signup pages on the frontend. The cryptocurrency data displayed in the dashboard route was fetched from an existing api from coingecko, keeping the rate limits in mind while setting the api call intervals. Used JWT for authentication while creating login and signup pages. Used PostgreSQL, and Express.js to create the APIs.

**Objectives of the project:** Full stack development, API handling

**Tool used:** PostgreSQL, Express.js, React, Node.js

**Details of Papers/patents:** NA

**Brief description of the working environment:** While the work structure could've been more structured, and monitored at a number of places, the environment was pretty convenient for beginners, with easygoing mentors and no strict deadlines. The expectations were not exactly met, as we didnt get any real industry experience by working on one of the company's products or problems, instead we worked to create a personal project of our own. Learnt a number of skills, it was a good experience overall.

**Academic courses relevant to the project:** OOPS, DBMS

**Learning Outcome:** Databases, ORM and API creation, Frontend using React, JWT, Web development, PERN stack

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**PS-I station: FinMapp (Fininfinity Technologies Pvt. Ltd.) - Tech , Gurugram**

**Student**

**Name: VIDIT BUBNA .(2021B3A72494P)**



## **Student Write-up:**

**PS-I Project Title:** Web Development Frontend

**Short Summary of work done:** The project involved building a web application using React, consisting of a to-do list application and a cryptocurrency information website inspired by CoinMarketCap. In the to-do list app, users could efficiently manage tasks with CRUD functionalities. The cryptocurrency website provided real-time data, sortable tables, and a search feature. The project incorporated responsive design and CSS customization to replicate the original CoinMarketCap layout. The website included a sign-up and sign-in system with authentication using Axios and JWT. The Navbar allowed easy navigation, and a watchlist feature allowed users to select and track their favorite cryptocurrencies. The project honed skills in React components, state management, Axios, and CSS styling. The process also involved learning how to fetch data from APIs, implement pagination, and sort data in the table. Overall, the project offered a hands-on learning experience in building sophisticated web applications with React, and it enriched knowledge in front-end web development, user interface design, and data manipulation.

**Objectives of the project:** To make a working website that contains data on cryptocurrencies inspired by coinmarketcap

**Tool used:** VScode, Dbeaver, postman, postgresSQL

**Details of Papers/patents:** None

**Brief description of the working environment:** This PS was in online mode and hence did not have a proper working environment, however, the mentor assigned to us was more than willing to help us understand how to approach the project he had assigned us and how to make significant progress each day by guiding us at each step and providing us with the necessary resources as and when needed. One expectation that I had was that since the company was Fintech one it would give us some exposure to the financial side of things as well however it did not really happen.

**Academic courses relevant to the project:** None that I had learned till my 2nd year

**Learning Outcome:** Sound understanding of JS and css

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## PS-I station: FinMapp (Fininfinity Technologies Pvt. Ltd.) - Tech , Gurugram

### Student

Name: RACHIT VAGHANI .(2021B3AA1457H)

### Student Write-up:

**PS-I Project Title:** Wrapper API - Backend

**Short Summary of work done:** During my apprenticeship at Finmapp, I gained valuable skills in both front-end and back-end web development. I completed several projects that showcased my expertise and versatility in building dynamic web applications. One of my projects was a Todo list website, where I utilized HTML, CSS, and JavaScript to create an intuitive and user-friendly interface. Users could add, edit, and delete tasks, providing a seamless experience for managing their to-do lists. In another project, I developed a React website integrated with APIs. Leveraging the power of React, I created a responsive and interactive user interface that communicated with external APIs to fetch and display real-time data, enriching the user experience. Additionally, I built a login and registration API using PostgreSQL and Node.js with Express. This robust authentication system allowed users to securely sign up and log in, providing a protected environment for accessing personalized features on the platform. Throughout my apprenticeship, I consistently demonstrated a strong understanding of web development concepts and technologies. I eagerly tackled challenges, collaborated with teammates effectively, and delivered high-quality projects that showcased my dedication to the craft of web development.

**Objectives of the project:** Functional crypto website fetching real time data from an API

**Tool used:** During my apprenticeship at Finmapp, I utilized tools such as HTML, CSS, JavaScript, React, APIs, PostgreSQL, Node.js, Express.js, and Git for front-end and back-end web development projects.

**Details of Papers/patents:** None

**Brief description of the working environment:** Just weekly meets were conducted thrice in a week. There we were given topics to learn and make projects on our own. We were not given any chance to contribute to company's mainstream work. Also, it was like purchasing a web development course and not attending practice school. Not much corporate experience was gained. However, target given by them helped us to make projects efficiently and effectively.

**Academic courses relevant to the project:** None

**Learning Outcome:** Through my apprenticeship at Finmapp, I achieved significant learning outcomes:

Proficiency in Front-end Technologies: HTML, CSS, and JavaScript.

React Development: Building dynamic and responsive user interfaces using React.

API Integration: Fetching and displaying real-time data by integrating external APIs.

Back-end Development: Using Node.js and Express.js for server-side applications.

Database Management: Designing and managing databases with PostgreSQL.

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**PS-I station: Flamingos Technologies Inc. , Bengaluru**

**Student**

**Name:** ADITYA KASHYAP(2021A8PS3046G)

**Student Write-up:**

**PS-I Project Title:** Sales & Marketing (GTM Strategies for penetrating the US market)

**Short Summary of work done:** Market Research, Building Customer Persona, Coming up with ideas, Building video Samples of the product

**Objectives of the project:** To develop strategies for marketing and make sales calls to sell the product.

**Tool used:** Snov, Apollo, Figma, Premiere Pro, After Effects

**Details of Papers/patents:** NA

**Brief description of the working environment:** Just like a startup, some days less work some days more work, Company expectation was a bit more from each one of us, Learning again was how to market products, pitch to the clients and come up with creative ideas.

**Academic courses relevant to the project:** TRW

**Learning Outcome:** Improved communication skills, Better pitch, Creative thinking

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**PS-I station: Flamingos Technologies Inc. , Bengaluru**

**Student**

**Name:** AMAN ASHISH SINGH(2021AAPS2857G)

**Student Write-up:**

**PS-I Project Title:** ZingCam Admin Web Application

**Short Summary of work done:** Building APIs and UI for Flam's AR Product(ZingCam) using their tech Stack

**Objectives of the project:** Building APIs and UI for Flam's AR Product(ZingCam) using their tech Stack

**Tool used:** NestJS, NextJS, MongoDB, ReactJS, Git/GitHub

**Details of Papers/patents:** N/A

**Brief description of the working environment:** Very Flexible work environment. Helping colleagues. Expect more Outcomes over Output.

**Academic courses relevant to the project:** N/A

**Learning Outcome:** Web Development Skills

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## PS-I station: Future Generali India Life Insurance , Mumbai

### Student

Name: SETH ROMIL DEEPAK .(2021A3PS2399P)

### Student Write-up:

**PS-I Project Title:** Customer Onboarding & Support Project

**Short Summary of work done:** the "Customer Onboarding and Support Web Application" project has been a transformative endeavor focused on enhancing customer experiences and simplifying the onboarding process for Future Generali India Life Insurance. Through meticulous research, lead generation, and user-friendly web development, we have successfully overcome challenges and made significant progress. I am deeply grateful for the invaluable support and guidance my mentor and team provided throughout this journey. Their expertise and encouragement have been instrumental in achieving our project's goals. As we progress, I am excited to explore advanced features and continue providing innovative solutions to improve customer support and services at Future Generali India Life Insurance. The success of this project reaffirms our commitment to delivering cutting-edge solutions and elevating the overall customer experience in the insurance industry. With valuable lessons learned and a passion for continuous improvement, I look forward to contributing to future projects that drive positive change and innovation in web development and customer support

**Objectives of the project:** To make a website

**Tool used:** During the "Customer Onboarding and Support Web Application" project, a combination of hardware and software development tools was utilized to facilitate the development process: Hardware: Personal Computers/Laptops: Each team member was equipped with h

**Details of Papers/patents:** NA

**Brief description of the working environment:** During PS-I at Future Generali India Life Insurance, I experienced a dynamic and collaborative working environment. The company's IT department provided an inclusive and supportive atmosphere, fostering open communication and teamwork. As an intern, I was encouraged to actively participate in discussions and contribute innovative ideas to the project.

Expectations from the company were focused on delivering a successful "Customer Onboarding and Support Web Application." I was entrusted with responsibilities that allowed me to showcase my skills and abilities while aligning with the project's goals. The

company valued self-motivated individuals who could adapt to changing requirements and work efficiently under tight deadlines.

Learning during PS-I

The PS-I experience at Future Generali proved immensely enriching and educational. I had the opportunity to learn and apply cutting-edge technologies like Angular 14, .NET, and Microsoft Azure. The hands-on experience of building a responsive web application from scratch honed my web development skills and broadened my understanding of software development life cycles.

**Academic courses relevant to the project:** Computer Programming

**Learning Outcome:** Website Development, Single Page Applications (SPAs), Forms, Hosting, Azure Cloud, .NET Framework

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**PS-I station: Future Generali India Life Insurance , Mumbai**

**Student**

**Name:** NISHIT SONI .(2021A7PS0672P)

**Student Write-up:**

**PS-I Project Title:** Customer Onboarding and Support Project

**Short Summary of work done:** Basically followed instructions given by mentor, and used online resources to develop a form-based website using Angular 14 in the company development environment

**Objectives of the project:** To make a website using Angular, .NET and host it on Azure. The website would act to collect customer information for onboarding

**Tool used:** Company Dev Environment, Visual Studio, Angular, C#

**Details of Papers/patents:** none

**Brief description of the working environment:** Extremely lite, mentor basically told us to work at our own pace, didn't care if the project was complete or not just wanted us to go for it as he wanted us to have a project we could write about in our cv.

**Academic courses relevant to the project:** none

**Learning Outcome:** Technologies like Angular, Angular Forms, deeper understanding of website development.

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## **PS-I station: Future Generali India Life Insurance , Mumbai**

### **Student**

**Name:** NISHESH NAMAN .(2021A7PS2009P)

### **Student Write-up:**

**PS-I Project Title:** WEB APPLICATION BASED ON API INTEGRATION

**Short Summary of work done:** The main focus of the transformative internship experience was to construct a feature-rich web application connected with a powerful Web API, creating an engaging platform for users to access and display relevant data in a visually pleasing grid format. The Web API played a crucial role in synchronizing data retrieval from the AS400 legacy system and Windows MQ Service, requiring a deep understanding of historical technology and modern messaging services. The development approach began with rigorous requirement gathering to ensure the project's goals were clearly defined. Collaboration with the team helped create exact specifications, aligning the web application and Web API with user expectations and business objectives. Using ASP.NET C#, a visually appealing and user-friendly web application was built, featuring a home page that displayed gathered data in a well-organized grid view. The Web API played a critical role in handling user queries, communicating with the AS400 system and Windows MQ Service, and standardizing returned data for display on the web application. The challenges of connecting with the AS400 legacy system required deciphering various APIs and protocols while maintaining data integrity. Integration with the Windows MQ Service involved skilled configuration and communication setup to ensure seamless communication between the web application and external services. Overall, the demanding project provided a valuable learning

experience, improving technical skills, problem-solving abilities, and collaboration skills. The successful completion of the project laid the foundation for a promising future by providing essential expertise in web development, API integration, and database management.

**Objectives of the project:** DEVELOPING A WEB APPLICATION TO FETCH AML DETAILS OF THE CLIENTS IN THE COMPANY

**Tool used:** ASP.NET, C#, AS400, WINDOWS MQ, POSTMAN, SQL, ASPX

**Details of Papers/patents:** NA

**Brief description of the working environment:** Future Generali India Life Insurance Company fosters a professional, customer-centric, and collaborative working environment. The company emphasizes innovation and encourages employees to excel in their performance. Teamwork is valued, and employees are provided with opportunities for professional growth through training and skill enhancement. Integrity and ethics are paramount in all dealings, and adaptability to changing market dynamics is expected. Future Generali is committed to customer-centricity and upholds diversity and inclusion. Compliance with regulatory requirements is essential, and the company offers a rewarding and dynamic atmosphere for individuals looking to contribute to the insurance industry's growth while advancing their careers. During the internship project, I significantly enhanced my technical skills by gaining hands-on experience with ASP.NET C#, SQL, and web development concepts. Additionally, I learned about API integration and interfacing with legacy systems like AS400, further improving my capabilities. The challenges I encountered during the project, such as handling data inconsistencies and debugging communication issues, sharpened my problem-solving and troubleshooting abilities. Furthermore, working in a team setting enhanced my communication and collaboration skills. Completing the project within the timeline also taught me effective time management. Lastly, adapting to changing requirements and technologies emphasized my flexibility and adaptability.

**Academic courses relevant to the project:** DATABASE MANAGEMENT SYSTEM, OBJECT ORIENTED PROGRAMMING

**Learning Outcome:** INTERPERSONAL SKILLS, TIME MANAGEMENT, TECHNICAL SKILLS

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**PS-I station: Future Generali India Life Insurance , Mumbai**



## Student

Name: NACHIKET SINGH JAGMOHAN SINGH KANDARI(2021A7PS2691P)

### Student Write-up:

**PS-I Project Title:** Aadhaar Masking Tool

**Short Summary of work done:** The work on the project started out with the mentors tasking me with learning how to OCR a given document through a youtube playlist. After I got proficient at performing OCR, I was tasked to gain knowledge about the MNIST dataset and how to create a model which could recognize handwritten digits. Once these two tasks were completed, the mentors finally revealed that the project that they have selected for me is to create an Aadhaar Masking Tool which would be a customized solution to mask the Aadhaar details from Future Generali's handwritten application forms. I used my knowledge of OCR (optical character recognition) and developed a solution which was fairly accurate and fast at masking the Aadhaar details. Upon completion of the code, the project evolved and I was further tasked to create a User Interface for the program I had made. It had to include the design elements of a Future Generali website since it was to be deployed for actual users. I optimized the code and created the website. I was also tasked to implement their API with the UI of my website. In the end, my solution was 20x faster (2.6 seconds per document vs 39 seconds per document)and 7x more accurate (100% accuracy) than the existing solution.

**Objectives of the project:** To develop a program which can detect and mask the Aadhaar details from a given document. The other objective was to create a UI for this program which would retain the look and feel of the Future Generali websites and should be ready for deployment. The third objective was to use the API key of their own masking tool and apply the UI that I have created onto that API.

**Tool used:** Software : Python, OpenCV, Tesseract, Streamlit

**Details of Papers/patents:** none

**Brief description of the working environment:** 1) WORKING ENVIRONMENT : My PS-I was completely online. I did face some difficulty in the Virtual Desktop setup and loading of the required files but I raised the required tokens and had that issue fixed. The work environment was very adaptive to my attitude towards work. For instance, I was being given more complex projects than my peers since I was responsive. Had I not been responsive, I would have got simple language or framework learning projects.  
2) EXPECTATIONS : I was expecting the work mode to be offline since that was shown while filling in the preferences since I was looking forward to meeting new people and working in a professional environment. Regarding the work, I came in expecting to learn something in the domain of machine learning and ended the PS with a fully fledged

deployable project which provides real utility by saving a considerable amount of time and resources for the company.

3) **LEARNING** : My major takeaway from PS-I was that delivering on-time is essential and doing a little bit extra by defying expectations always catches the eye of the higher-ups. For instance, I got to present my project in front of Nilesh Parmar (CTO & COO) and Ajay Jain (IT Head) which is a really big deal considering I was just an unpaid intern for them while they are executive heads of major divisions within the company. The other learnings that I had were mostly on the technical side covering the python language and its libraries like streamlit, pytesseract, OpenCV. On the non-technical side I learnt about the design thinking process for a particular product and how to resolve queries promptly.

**Academic courses relevant to the project:** Computer Programming, Object Oriented Programming

**Learning Outcome:** The major learning outcomes of my project were:

1) Introduction to Computer-Vision - OpenCV is a computer vision library within python and I extensively used it in this project. This project was my introduction to the world of computer vision. Through this project I learnt how to perform OCR (optical character recognition) on a document and used that knowledge to complete the project.

2) Creating a Website - This was the first project wherein I created a fully functional website with the frontend and backend elements. I used Streamlit to achieve this.

3) Using Python - Python was not a language that I was proficient in or a language that I used to code in, this project familiarized me with Python and it's libraries.

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**PS-I station: Future Generali India Life Insurance , Mumbai**

**Student**

**Name:** ROHIT DAS .(2021A7PS2860H)

**Student Write-up:**

**PS-I Project Title:** Aadhaar Number Redaction System

**Short Summary of work done:** The objective of the project was to create a system which can detect the location of Aadhaar number in scanned documents and redact them with

a black bounding box in scanned documents. The model inputs the image files and preprocesses them perfectly for pytesseract library to OCR the resultant document. After detecting the location of the Aadhaar keyword, redact the following Aadhar number with a black bounding box. This was followed by the creation of a UI for the system to input multiple files and return the documents with the Aadhar number redacted.

**Objectives of the project:** Hide Sensitive information such as Aadhar number from scanned documents using Computer Vision tools

**Tool used:** Software tools used: Python libraries- Pillow, opencv, pytesseract, numpy, gradio

**Details of Papers/patents:** NA

**Brief description of the working environment:** The mentors of the company were excellent and helpful with respect to all criteria. There was good coordination and communication about the next steps and information about the project. The mentors also provided good and sufficient resources to help solve the tasks provided by them to complete the project.

**Academic courses relevant to the project:** 1) Optical Character Recognition (OCR) in Python Course  
2) OpenCV Course

**Learning Outcome:** Learning Artificial Intelligence (Computer Vision), Machine Learning, Algorithms, Python, UI

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**PS-I station: Goavega Software India Pvt Ltd , Bengaluru**

**Student**

**Name: KOLASANI AMIT VISHNU .(2021A7PS0151H)**

**Student Write-up:**

**PS-I Project Title:** Building a dynamic chatbot implementing generative AI

**Short Summary of work done:** The project aims to develop an application using the LangChain framework and OpenAI's Language Model (LLM) API key, with a focus on creating a dynamic chatbot. Users can upload data files, which are used to generate editable tables based on generated relations. The application, deployed with the Streamlit framework, allows users to interact with the chatbot that can provide real-time answers using the uploaded data. The PostgreSQL database is utilized to store the generated tables, and a metadata table logs user entries. In Phase 2 of the project, significant enhancements were made to the application to provide a more dynamic user experience. A React Vite app was introduced, offering an improved user interface with interactive UI pages. Users gained the ability to upload CSV files, which triggered the dynamic generation of relations and tables using OpenAI. These generated tables were then seamlessly integrated into the ElephantSQL database. Furthermore, a metadata table was implemented to log each user's entry, capturing details such as their username, relations, and table names. These advancements in Phase 2 not only empowered users with more control over their data but also facilitated a more seamless and intuitive interaction with the chatbot.

**Objectives of the project:** Explore the realm of Generative AI and building a dynamic chatbot for any dataset desired.

**Tool used:** OpenAI, Langchain, Streamlit, Firebase, Fast API, PostgreSQL

**Details of Papers/patents:** -

**Brief description of the working environment:**

The working environment of the company was incredibly chill and friendly, fostering a positive and collaborative atmosphere. The employees were not only highly skilled but also very approachable and friendly, creating a supportive environment for learning and growth. The mentors provided invaluable guidance and support throughout the project, always ready to assist and share their expertise. The project itself was particularly intriguing as it focused on cutting-edge technology, offering an exciting opportunity to explore and work with the latest advancements. Overall, the company's emphasis on a friendly working environment, supportive colleagues, and engaging projects made it a truly enriching and rewarding experience, contributing to continuous learning and professional development.

**Academic courses relevant to the project:** DBMS

**Learning Outcome:** How generative AI works and building custom, interactive chatbots for any use which are logical and dynamic.

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## PS-I station: Goavega Software India Pvt Ltd , Bengaluru

### Student

Name: MALLAVARAPU SHRUTI.(2021A7PS2011P)

#### Student Write-up:

**PS-I Project Title:** Generative AI and Dynamic Chatbot

**Short Summary of work done:** We creating a Dynamic Chatbot using tools and models from Langchain and principles from Generative AI that allows the user to upload their own CSV files, converts them into database tables, generates relations between them, and provides a chatbot interface for the user to retrieve data efficiently.

**Objectives of the project:** - Creating a Dynamic Chatbot that allows the user to upload their own CSV files, converts them into database tables, generates relations between these tables and provides a chatbot interface for the user to retrieve data efficiently.

**Tool used:** Python, OpenAI, Firebase, Langchain, Git, Agile SCRUM, React, Vite, PostgreSQL, Flask, FastAPI

**Details of Papers/patents:** NA

**Brief description of the working environment:** I was initially really worried about the experience since it was going to be my first corporate experience. However, I was almost immediately greeted with warm smiles and a fun-loving environment that helped me learn and grow not only technically but also as an all-round person. I did not feel like an intern but an integral part of their system. Everyone was approachable and extremely helpful during any difficulty. They accommodated all our needs and our approach to problems. Overall, it was a great learning opportunity.

**Academic courses relevant to the project:** Database Management Systems, AI/ML, Object Oriented Programming, most Computer Science courses

**Learning Outcome:** Technical skills - Python, OpenAI, Firebase, Langchain, Git, Agile SCRUM, React, Vite, PostgreSQL, Flask, Fast API  
Non-technical skills - Communication, efficiency, teamwork, meeting deadlines/ time management, eagerness to learn, dedication, persistence, perseverance

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## PS-I station: Hacker4Help , Lambhvel

### Student

Name: ROHAN POTHIREDDY .(2021A7PS0365H)

#### Student Write-up:

**PS-I Project Title:** 1. OSINT Framework Development

**Short Summary of work done:** Full Stack web development of an OSINT (open-source-intelligence) framework website

**Objectives of the project:** Creating an open source intelligence website, implementing latest and most effective lookup tools for username, ip address, phone number, website and email lookup tools.

**Tool used:** React, Node

**Details of Papers/patents:** OSINT framework website had the implementation of multiple lookup tools, classified under 5 important headings.

**Brief description of the working environment:** Working was pretty chill. Deadlines were strict, Company expectations on interns was realistic and can be achievable.

**Academic courses relevant to the project:** OOP

**Learning Outcome:** Full Stack Web Development, OSINT and cybersecurity

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## PS-I station: Hacker4Help , Lambhvel

### Student

Name: PRITAM BASU(2021A7PS2175H)

### Student Write-up:

**PS-I Project Title:** Project 1. Vulnerable web development: identifying and exploiting website bugs  
Project 2. Creating phishing pages : Cyber awareness program to showcase the latest phishing scams

**Short Summary of work done:** Project 1: Worked on the front-end of an e-commerce website. Implemented CSRF and Clickjacking vulnerabilities into the website. Project 2: Worked on developing a clone of an Amazon product page, specifically the front-end team. Created BitB popups for signing in that allow the credentials entered on the phishing page to be captured by the attacker.

**Objectives of the project:** Project 1. To develop a web application with intentional vulnerabilities such as SQL injection, XSS and CSRF, allowing users to practice and enhance their ethical hacking and cybersecurity skills in a safe and controlled environment. Project 2. To create realistic and creative phishing pages and android applications to showcase various phishing techniques used by cybercriminals, to help raise awareness among users about the potential dangers of phishing attacks.

**Tool used:** HTML, CSS, PHP, MySQL, Burp Suite, DVWA

**Details of Papers/patents:** N/A

**Brief description of the working environment:** It was an online PS-I station and there was no daily schedule for work. Projects were allotted based on the skills we already had, but we had the freedom to get them changed and sufficient time was given to learn the prerequisites for each project. On average, we were expected to work around 2-4 hours everyday. Evaluation meets were sometimes random, but mostly in the evening, where we provided updates on the tasks allotted to us. Sufficient time was provided for testing, debugging and finishing the projects.

**Academic courses relevant to the project:** None

**Learning Outcome:** Understanding of common web application vulnerabilities, fundamentals of client-server architecture, front-end web development, and local databases, fundamentals of back-end development, basics of web application security and vulnerability mitigation techniques.

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**PS-I station: Hacker4Help , Lambhvel**

**Student**

**Name: YASHWARDHAN SINGH .(2021A7PS2219P)**

**Student Write-up:**

**PS-I Project Title:** CTF Challenge Solving and Video POC Generation with Documentation

**Short Summary of work done:** Solved CTF challenges , based on vulnerabilities present

**Objectives of the project:** Solve CTF

**Tool used:** Burp Suite

**Details of Papers/patents:** None

**Brief description of the working environment:** Positive working environment, with a good support from company officials

**Academic courses relevant to the project:** DBMS , CP

**Learning Outcome:** Basics of cybersecurity

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**PS-I station: Hacker4Help , Lambhvel**

**Student**

**Name: LAKSHIT SETHI .(2021A7PS2434P)**

**Student Write-up:**



**PS-I Project Title:** CTF documentation and video POC generation

**Short Summary of work done:** Solved the complete Natas CTF and made comprehensive documentation as well as videos for companies programs

**Objectives of the project:** To solve CTFs and make documentation and Videos containing and explaining the sol

**Tool used:** Burpsuite,SQLMap,OBS studio,MS word

**Details of Papers/patents:** none

**Brief description of the working environment:** The working environment of the company is extremely positive and the staff there is really guiding ,supporting and understanding.They help you through your problems whenever you are stuck and understand the fact that most of the students have never done anything related to cybersecurity before so they answer all the doubts and teach wherever they can.

**Academic courses relevant to the project:** CP,DSA

**Learning Outcome:** Vulnerabilities present in Websites,how to exploit them , how to test a website for vulnerabilities.

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**PS-I station: [Hacker4Help](#) , [Lambhvel](#)**

**Student**

**Name:** [MIHIR KULKARNI .\(2021A7PS2689H\)](#)

**Student Write-up:**

**PS-I Project Title:** Vulnerable Web Application, Creative Phishing

**Short Summary of work done:** In phase-1 of the internship, I was involved in the 'Vulnerable Web Application' project. I learnt about web architecture and web security. Then we created a website and used our knowledge to exploit various vulnerabilities and later mitigate them. I also got to try out and use various tools used for ethical hacking.

The vulnerabilities which I was primarily involved in were Brute Force Login and XSS. In phase-2 the team I was in worked on the 'Creative Phishing' project. We created several clone webpages which looked identical to some common websites, in order to bait users to give their login information. I was mainly responsible for the backend part of a small cloned version of Instagram website. I also created a few webpages and a local database for the same.

**Objectives of the project:** Vulnerable Web Application - The objective was to learn about various vulnerabilities. Then to create a website which was intentionally vulnerable and hack into it; and then later mitigate the vulnerabilities. Creative Phishing - The objective was to create various phishing webpages to bait users into giving sensitive information regarding their accounts. It will later be used for demonstrations to educate the public regarding such scams.

**Tool used:** S/w - Xampp, Kali Linux, BurpSuite

**Details of Papers/patents:** NA

**Brief description of the working environment:** The working environment and work culture was very kind and welcoming. The mentors were sincere and helpful. They were also very lenient and understanding.

When I received the opportunity to do an internship in H4H, I was expecting to learn more about web security and cybersecurity. The internship did not disappoint. I learnt a lot about various vulnerabilities and loopholes in websites and how to exploit them. I also learnt more about a few scams and how they work. I also got to have a hands-on experience regarding all of this and got to toy with a few vulnerabilities and tools used to do so. I also learnt to have work-life balance, to a certain degree, time management and acquired some presentation skills during the MidSem and EndSem report presentations.

**Academic courses relevant to the project:** Computer Programming, Object Oriented Programming, Database Management Systems

**Learning Outcome:** I learnt more about web security and various tools used for ethical hacking. I also learnt a few languages used for creating websites.

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**PS-I station: [Hacker4Help](#) , [Lambhvel](#)**

**Student**

Name: S ANANTH .(2021A7PS2809H)

**Student Write-up:**

**PS-I Project Title:** CTF CHALLENGE SOLVING AND VIDEO POC GENERATION WITH DOCUMENTATION

**Short Summary of work done:** Solved lots of CTF challenges from PicoCTF and created comprehensive documentation as well as Video Proof of Concepts for the same which are uploaded on the Station's Youtube channel

**Objectives of the project:** Solving CTF Challenges from platforms like PicoCTF and Natas , Generating Comprehensive Documentation for the problems solved , Creating Proof-of-Concept (POC) Demonstrations for the above The documentation and video POCs will be available online and will help beginners learn about cybersecurity and pen testing. Also it will develop our problem-solving skills. The production of POC videos and thorough documentation will not only solidify our understanding of the challenges but also serve as valuable learning resources for others.

**Tool used:** None

**Details of Papers/patents:** None

**Brief description of the working environment:** Though an online station , the working environment was encouraging and team work based. We were in frequent touch with our mentor and our projects were divided based on our preferences. Throughout my PS in this company I explored the cybersecurity field and gained insights on different exploitation methods. By making videos , I was able to improve my presentation skills.

**Academic courses relevant to the project:** None

**Learning Outcome:** Concepts of Web Exploitation , Vulnerability assessment

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**PS-I station:** Hacker4Help , Lambhvel

**Student**

Name: AGASTYA SEN(2021A7PS2838G)

**Student Write-up:**

**PS-I Project Title:** Vulnerable Web application, Creative Phishing Project

**Short Summary of work done:** Created a web application that required in depth knowledge of sql injection, xss cross scripting, csrf attacks, brute force logins etc. Did a lot of research and then made the application using html, css, and php. The second project was a phishing page that emulated social media websites to steal data, that required basic frontend and backend knowledge.

**Objectives of the project:** To understand the value and outcome of ethical hacking

**Tool used:** Html, css, php

**Details of Papers/patents:** None

**Brief description of the working environment:** Good working environment, everyone was encouraging and understanding. The company expected effort from an interns and i learnt a lot about how it is to work in an organisation.

**Academic courses relevant to the project:** Database Systems

**Learning Outcome:** Learnt a lot of different hacking methods and a lot of web development

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**PS-I station: Hacker4Help , Lambhvel**

**Student**

Name: VANI JAIN .(2021B1A73126H)

**Student Write-up:**

**PS-I Project Title:** 1. Vulnerable Web Development: Identifying and Exploiting Website Bugs 2. Creating a creative Phishing page's and android applications which will be used for cyber awareness program to showcase how the latest phishing scams happens.

**Short Summary of work done:** I learned OWASP's top 10 vulnerabilities: SQL Injection, CSRF, XSS, Clickjacking, Parameter Tampering, File upload, etc. Also learned backend development(PHP, js, and MySQL) and implemented it in a login page and signup page with full database connectivity containing SQL Injection vulnerability. In the end, this was merged with our final projected website. Furthermore, I got familiar with the burp suite, various web security-related things like CIA, Vulnerability ranking, what are HTTP requests, how the web works, what is the client-server architecture, and basic Linux commands. Solved CTFs on portswigger for a better understanding of the concepts. I learned more about Advanced HTML and CSS and how professional pages are made and created two login pages, one for Instagram and another for Facebook. They both were phishing pages and hence looked exactly like the original ones. Also, managed the project presentations and reports.

**Objectives of the project:** Project1. The project focuses on exploring website vulnerabilities and their exploitation techniques. It simulates real-world scenarios, including common vulnerabilities like SQL injections, XSS, CSRF, and insecure file uploads. This will be used for educational purposes and hiring processes. Project2. This project focus on the concept of developing phishing pages for a cyber awareness program aimed at highlighting the latest techniques employed by cybercriminals in phishing attacks, anatomy of a phishing attack, including the methods used to gather personal information. Emphasizing the importance of maintaining a proactive approach towards online security.

**Tool used:** Xampp, BurpSuite( used by cyber security professionals)

**Details of Papers/patents:** N/A

**Brief description of the working environment:** I immensely appreciate the guidance and mentorship Mr. Amish Patel, CEO and Cyber Expert of Hacker4Help, and Mr. Rajveer, Sr. Web application security consultant, provided. Their expertise, patience, and willingness to share knowledge have been instrumental in shaping my understanding of the industry and refining my skills. They were always available to clear our doubts. The internship has been a transformative experience, reaffirming my passion for Cyber Security and Ethical hacking. I have learned vital lessons I will carry throughout my career journey.

**Academic courses relevant to the project:** Computer programming

**Learning Outcome:** I learned OWASP's top 10 vulnerabilities: SQL Injection, CSRF, XSS, Clickjacking, Parameter Tampering, File upload, etc. Learned backend development(PHP, js, and MySQL) .

Furthermore, I got familiar with the burp suite, various web security-related things like CIA, Vulnerability ranking, what are HTTP requests, how the web works, what is the client-server architecture, and basic Linux commands.

I learned more about Advanced HTML and CSS and how professional pages are made.

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## PS-I station: Hacker4Help , Lambhvel

### Student

Name: VARUN SAI SAJJA .(2021B3A71054P)

#### Student Write-up:

**PS-I Project Title:** OSINT Tool Development & Bug Bounty Recon Tool

**Short Summary of work done:** We were split up into groups to work on different projects. I worked on the OSINT Tool Development project for 1 month and then the Bug Bounty Recon Tool later. For the first project we built a website with backend of NodeJS and simple HTML and EJS Frontend. This website had to run some command line tools like nmap, traceroute, ping, theHarvester and truecallerjs which provided the user with info such as domain address, IP address, Name of the target, email of the target, various emails related to a domain name, etc. The second project was to build another website where the user would type in a domain name and there would be many options of google dork categories like Subdomain Listing, login pages and Database files. These dorks were gathered from the Google Hacking Database (GHDB). We just had to redirect the user to the particular google search query or website. There 54 such categories listed in the website.

**Objectives of the project:** To build an OSINT Website tool that has various categories like website, username, phone number and IP Lookups. And also to build a Bug Bounty Recon Tool which is a website that can be used to obtain various intel about a domain name or website

**Tool used:** NodeJS, HTML, CSS, WSL, Linux, Bash, EJS

**Details of Papers/patents:** None

**Brief description of the working environment:** We had meetings every weekend and monday and also sometimes in between the week. It would have been better if we had office working hours applied so that we could get more accustomed to the office environment. The management was a bit clumsy. Would've been better if we were appointed proper managers rather than other PS students.

**Academic courses relevant to the project:** -

**Learning Outcome:** Got to learn

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**PS-I station:** [Hacker4Help](#) , [Lambhvel](#)

**Student**

**Name:** [OM PATEL\(2021B4A71948G\)](#)

**Student Write-up:**

**PS-I Project Title:** To develop a OSINT Tool

**Short Summary of work done:** Developed a osint website which can extract the information like username ,email id ,phone number and ip address from different social media accounts

**Objectives of the project:** To develop a osint tool which can extract sensitive information of the users

**Tool used:** Node js , javascript, Html Css

**Details of Papers/patents:** No

**Brief description of the working environment:** My Ps1 was online and there was regular meeting with the company faculty and members for the updates of the work

**Academic courses relevant to the project:** No

**Learning Outcome:** Learnings related to cybersecurity, backend Cli tools, Frontend and databases

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## PS-I station: Hacker4Help , Lambhvel

### Student

**Name:** ADVAY BURTE(2021B5A72873G)

### Student Write-up:

**PS-I Project Title:** 1. Vulnerable Web Development & 2. Creating Phishing Pages

**Short Summary of work done:** Learnt about how the internet works, HTTP , the client-server architecture, SQL, PHP , how databases work, I learnt about Parameter Tampering, and basics of other vulnerabilities like XSS and CSRF , code injection attacks. Implemented Parameter vulnerability, using hidden forms. Implemented "Add to cart" functionality on the website. Helped test and integrate everyone's code. On the phishing page, I implemented the front end and some backend of the ICICI payment gateway, using JS and PHP

**Objectives of the project:** 1. Understanding, identifying, exploiting web vulnerabilities. 2. Developing a website implementing the vulnerabilities. 3. Creating a Phishing Page. 4. Learning about how the Web works.

**Tool used:** VS Code, Burp Suite, XAMPP server, GitHub

**Details of Papers/patents:** No.

**Brief description of the working environment:** Working environment was good, we were encouraged to ask doubts and were given good resources to learn from. I learnt a lot about web security, the internet, and learned to code in a bunch of languages. All in all a good experience.

**Academic courses relevant to the project:** Web Development



**Learning Outcome:** 1. Understanding, identifying, exploiting web vulnerabilities. 2. Developing a website implementing the vulnerabilities. 3. Creating a Phishing Page. 4. Learning about how the Web works.

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## **PS-I station: IDS Infotech Ltd , Mohali**

### **Student**

**Name:** RAAG DENGRE .(2021A8PS1088H)

#### **Student Write-up:**

**PS-I Project Title:** Microsoft Technologies

**Short Summary of work done:** Made a CRUD API - Student Management system using C# , .Net , Microsoft Azure Technologies

**Objectives of the project:** CRUD API

**Tool used:** Microsoft Azure Technologies , C# , .Net , SQL

**Details of Papers/patents:** No

**Brief description of the working environment:** The working environment is pretty much lite . We had 2-3 gmeets per week . At the end they also provided the github repo of the project so we can learn using it .

**Academic courses relevant to the project:** C Language , OOPS , DBMS

**Learning Outcome:** Fronted Web Development and CRUD API

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**PS-I station: IDS Infotech Ltd , Mohali**

**Student**

**Name:** CHITRESH NEEMA .(2021AAPS0265P)

**Student Write-up:**

**PS-I Project Title:** Wine Classification

**Short Summary of work done:** I learned pandas and Numpy. How to code machine learning models and different algorithms used for classification and regression.

**Objectives of the project:** To classify wines based on their contents, using machine learning algorithms

**Tool used:** Python, Jupyter Lab, Pandas, Numpy

**Details of Papers/patents:** Na

**Brief description of the working environment:** Online ps, I learned about role of ML/Ai in different industries. I learned how to properly solve a ml question.

**Academic courses relevant to the project:** Data Science, Machine learning

**Learning Outcome:** To make a machine learning models

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**PS-I station: IDS Infotech Ltd , Mohali**

**Student**

**Name:** SUCHIT CHEBOLU .(2021B1A72281P)

**Student Write-up:**

**PS-I Project Title:** Sentiment analysis of Amazon Reviews

**Short Summary of work done:** We started out from the very basics, we first learnt python concepts and then progressed to learning Numpy and Pandas for data analysis. Then we were given learning goals for data science and learnt several concepts from algorithms to visualisation of data all the way upto some basic NLP concepts. The PS ended with us undertaking a project in Data Science applying all the concepts we had so far

**Objectives of the project:** To Learn data science concepts and then build a sentiment analysis model of amazon reviews

**Tool used:** Python, Pandas, Numpy, matplotlib, seaborn , scikit-learn

**Details of Papers/patents:** none

**Brief description of the working environment:** The working environment at IDS infotech was very good. The company mentors were always willing to help us. There was very flexible timings with a couple of meets every week and they required us to make weekly reports of everything we had learnt. Overall they helped us a lot in achieving our goal of developing a final project and most importantly learning as much as we could from this PS opportunity

**Academic courses relevant to the project:** none

**Learning Outcome:** Learnt python, pandas numpy and some other python libraries as well to learn Data Science concepts and basics to a level that we can build our own model and projects

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**PS-I station: i-exceed technology solutions private limited , Bengaluru**

**Student**

**Name: PRACHEE SHARMA .(2021A3PS2867H)**

**Student Write-up:**

**PS-I Project Title:** Kubewatch : Monitoring and Management of services using Kubernetes

**Short Summary of work done:** At my PS station I kicked off the project statement with learning Linux and Operating Systems, Containers and Docker following which I learnt Kubernetes and Golang. We got MiniKube, Docker and Go on our desktops. Practiced the commands, pulled images from dockerhub, composed dockerfiles in YAML, deployed clusters and also did some coding in Golang

**Objectives of the project:** The world Dev technology is shifting from Monolithic Architecture to Micro-services Architecture, for better performance and maintenance of the Product. I-exceed Technologies have their own Product solution - Appzillon which is run on the micro-services architecture. Our objective of this project was to monitor and learn how to manage a microservices cluster on Kubernetes through a tool on Kubernetes called Kubewatch. Data can be derived from the cluster through Prometheus and that data can be visualised through Grafana. These were the key roles and responsibilities as a part of the project.

**Tool used:** Ubuntu Linux, Docker & DockerHub, MiniKube, Kubernetes, GO

**Details of Papers/patents:** NA

**Brief description of the working environment:** It was great to have IT exposure, the environment and culture at the company was great! People were very nice, interacted and helped wherever they could. The company had alot of interns from different backgrounds, the place seemed busy!

**Academic courses relevant to the project:** Operating Systems (del for EEE), MPI (CDC for electronics)

**Learning Outcome:** PS 1 was very productive in terms of learning. I learnt more about the Production side of applications and softwares. Alot on the lights of networking, security, CI/CD pipelining and how the technology is moving here. A world different from your normal SDE roles. I was completely opened to the field of DevOps and I loved it!

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**PS-I station: i-exceed technology solutions private limited , Bengaluru**

## Student

Name: AMIT DEEPAK KUVELKER(2021A7PS3054G)

### Student Write-up:

**PS-I Project Title:** Unit testing and code coverage

**Short Summary of work done:** It was mostly a self learning Practice school for me, with a mock project to test it at the end. Learnt to use spring boot, and created many exercise APIs. Further learnt to write unit tests and check code coverage. Practiced all of these in a mock banking service application provided by my mentor.

**Objectives of the project:** To test the various APIs that the product B part of the company provides as solutions for other

**Tool used:** Spring tool suite, java, eclipse ide, Junit testing kit, jacoco coverage kit,

**Details of Papers/patents:** None

**Brief description of the working environment:** The ps1 title was web dev in banking sector so we expected it to be a front end based project. But when we got allotted our projects we got projects based on our branches, and I can speak for all of us- it was for the better.

I worked in the side of the company which deals with the backend development and my actual job was unit testing those programs. I had a mentor assigned who guided me as much as her time permitted her to guide. There were times when I had to navigate by myself and that was easily done. A bit more of a structure on how ps1 could have happened, would have helped. But nevertheless, it was a really good experience. To take this seriously, and do all the work assigned, understand corporate and experience it inside an actual office was really nice. The environment in this office was of the highest standard and I was never made to feel intimidated. People around were very nice and kept the environment around quite jovial.

**Academic courses relevant to the project:** Object oriented programming, Java, Database management Systems

**Learning Outcome:** Understood how to:  
code rest APIs  
Working of REST APIs  
Concepts involving REST and what are APIs  
Unit testing  
Writing of test cases

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**PS-I station: i-exceed technology solutions private limited , Bengaluru**

**Student**

**Name: VARUN HARISH KRISHNAN(2021AAPS2565G)**

**Student Write-up:**

**PS-I Project Title:** Kubewatch: Monitoring and Management of Services in Kubernetes

**Short Summary of work done:** At first we were suggested to learn the basics of Linux and Shell Scripting as they form the basic building blocks for our project. After that , we were introduced to the concept of containers and how one can easily create container images using Dockerfiles and run them on the Docker Shell. We were then introduced to Kubernetes which is responsible for the orchestration of containers and helps in automating the scaling and deployment of these containers. Finally, we studied the basics of Golang, an open source programming language that was formed by Google.

**Objectives of the project:** The technology in the world of development is shifting from Monolithic Architecture to Micro-services Architecture, for better performance and maintenance of applications. I-exceed Technologies have their own application Appzillon which is run on micro-services architecture. The objective of this project was to monitor and manage a microservice cluster on Kubernetes through a tool on Kubernetes called Kubewatch.

**Tool used:** Linux, Docker, Kubernetes, Golang

**Details of Papers/patents:** NA

**Brief description of the working environment:** It was great experience to be introduced to the IT working environment. The work culture and the environment of the company was really good. The people here from my mentor to the HR team were all very approachable and helped wherever they could. The company had a lot of other interns from different backgrounds, ranging from front end development to human resources.

**Academic courses relevant to the project:** Operating Systems (del for EEE), MPI (CDC for electronics)

**Learning Outcome:** PS-1 was very productive learning experience. It was a great introduction to cloud computing and Devops, something that students generally don't focus enough on in college. I completed multiple courses online to gain a good understanding of Linux, Dockers , Containers, Kubernetes and Golang. I also got accustomed to an office environment and was able to interact with my mentor and gain knowledge from his years of experience in these fields.

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## PS-I station: iLink , Pune

### Student

**Name:** ARUNACHALA AMUDA MURUGAN .(2021A7PS0205H)

### Student Write-up:

**PS-I Project Title:** Data Synthesis and Insight Generation (Automation)

**Short Summary of work done:** The project was split into two parts. The first was to write a script that creates and fills up a medical knowledge base (database), which adheres to real world constraints. The second was to write a generic script that helps users gain insights from the data just by supplying column names. Though the project seemed to be a building block of a conversational AI tool, my part of the project did not require any ML.

**Objectives of the project:** Synthesising logically sound data for a medical knowledge base, and automate insight generation from it.

**Tool used:** Python, Pandas, Faker

**Details of Papers/patents:** None

**Brief description of the working environment:** It was an online PS, so extremely flexible timings. I didn't meet my industry mentors often either, but when I did they were pretty interactive and helpful.

**Academic courses relevant to the project:** CS F111 if any, but as long as you could pick up new simple programming concepts, you could do it.

**Learning Outcome:** Python Scripting

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**PS-I station: iLink , Pune**

**Student**

**Name:** AKSHAT ABHAY SHETYE .(2021A7PS2426P)

**Student Write-up:**

**PS-I Project Title:** Generating Large Fake Data for Testing Purposes

**Short Summary of work done:** Before deploying applications and solutions in the real world, thorough testing is required. Real data cannot be used for privacy concerns. This solution aims to simplify the process of generative large quantities of fake data. User can input the requirements of the data in Natural Language (Utterances). The application will make use of LLMs to extract the key data from the utterance, and convert it into computer readable form (JSON). Then data generation techniques will be used to generate required data and give output.

**Objectives of the project:** Objective is to provide a simple NLP UI and generate data using generation tools by processing prompt.

**Tool used:** Python, Faker(python), GPT4ALL, Langchain, HF

**Details of Papers/patents:** NA

**Brief description of the working environment:** PS was online, Orientation with HR team, Manager, in the respective areas. Mentor initially gave a few things to learn that would be necessary for the project. All the obstacles faced in the code logic my mentor helped solve with innovative workarounds. The project gave me the expected learning experience in python and AI/ML that I choose it for.

**Academic courses relevant to the project:** CP



**Learning Outcome:** Learnt python, working with LLMs, prompt engineering, data generation.

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**PS-I station: Immensitas Pvt. Ltd. (Lemnisk) , Bengaluru**

## **Student**

**Name:** SOUMITRA SHEWALE .(2021B3A70781H)

### **Student Write-up:**

**PS-I Project Title:** Integrating features into the Lemnisk Customer Data Platform

**Short Summary of work done:** First, I was working on the UI team, making bug fixes, and adding features to the frontend for the dashboard. This was a Next.js codebase, and since I had previous experience in Next.js and React, I could do this pretty easily. We submitted our code through Pull Requests on GitHub, and tracked our changes with Git. After working on my first 2 tasks, I was moved to the backend team, because I expressed interest in working on a Java microservices backend. There, I sat with the backend developers and familiarized myself with the codebase, and then I moved onto writing features that were assigned to me. After doing this, I again submitted my work through a Pull Request, and the developers reviewed my code. I made whatever changes were required, and eventually we deployed these features to production.

**Objectives of the project:** To integrate new features into the Lemnisk Customer Data Platform, and integrate new marketing services into the existing codebase

**Tool used:** Maven, Git, Github, Java, Spring, MySQL, AWS, EC2, Node.js, React, Next.js, Javascript, Typescript, Yarn, NPM

**Details of Papers/patents:** NA

**Brief description of the working environment:** It was an offline station, and our timings were 10:30AM to 6:30PM. It was pretty lenient: we could come and leave late or early depending on our needs for that day. We got to interact with a major chunk of the employees, which familiarized us to the company culture. There were a lot of employees from BITS, so that certainly helped in getting to know them.

We had daily stand-up calls, where we reported on the work we did, and discussed our work for the day. These calls were generally short, and the portion dedicated for PS-1 interns was only around 5 minutes.

We were expected to work at our own pace, and they didn't pressurize us to get more done, nor did they completely ignore us. It was a healthy balance. This description might sound more demanding compared to the other PS stations you might be considering, but it was definitely worth the experience.

Among everyone I know, even people that got allotted Jio or Amazon or these big companies, this station was easily top 3 in terms of learning experience. If you're paying such a high amount for PS-1, atleast get something out of it. Getting ignored by your online mentors is definitely a worse experience than going offline, and interacting with people in the industry. I even found a person that's passionate about programming like me, and can mentor me in the future. It is just impossible to get this experience from an online PS.

**Academic courses relevant to the project:** Computer Programming, Software Engineering,

**Learning Outcome:** Learnt about how continuous development is handled at a software company, how software is tested and deployed in a fast paced environment, how microservice architecture works, and how Java spring services are written in a corporate environment

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**PS-I station: Immensitas Pvt. Ltd. (Lemnisk) , Bengaluru**

**Student**

**Name:** VRITANT CHOPRA .(2021B4A72501P)

**Student Write-up:**

**PS-I Project Title:** INTEGRATING FEATURES INTO THE LEMNISK CUSTOMER DATA PLATFORM

**Short Summary of work done:** Adding new features and resolving bugs on the CDP Platform.

**Objectives of the project:** UI Enhancement

**Tool used:** React, Figma, Typescript and Javascript, mySQL, Git and Github

**Details of Papers/patents:** NA

**Brief description of the working environment:** The working environment is really nice. Everyone is open to help you when you are stuck. They are very flexible when it comes to suggesting new features that can be added to the website. They keep you busy throughout which increases your learning.

**Academic courses relevant to the project:** Computer Programming, Object Oriented Programming, Data Structures and Algorithms

**Learning Outcome:** Adding new features and resolving bugs on the CDP Platform. Understand how real notification systems work.

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## **PS-I station: Indian Institute Of Remote Sensing , Dehradun**

### **Student**

**Name:** HARSH RACHALWAR .(2021A7PS0200H)

### **Student Write-up:**

**PS-I Project Title:** Characterizing the Spatio-temporal Patterns of Floods in the Assam Valley: Insights from Rainfall Analysis

**Short Summary of work done:** During my Professional Summer Internship (PS-I) at the Indian Institute of Remote Sensing (IIRS) in Dehradun, I worked on characterizing floods in the Assam Valley during the monsoon season. The main objective of the project was to monitor and analyze flood patterns using remote sensing data and techniques. I conducted research and analysis to assess the extent of flooding, identify vulnerable areas, and propose potential solutions for flood management. Throughout the internship, I gained hands-on experience with various remote sensing tools and software to process and analyze satellite data. I learned about radar-based techniques, optical imagery, and Geographic Information Systems (GIS) applications, which played a vital role in mapping,

analyzing, and visualizing flood-related data. The work done during PS-I provided valuable insights into flood monitoring methodologies, and it contributed to my understanding of the challenges associated with flood characterization in the Assam Valley during the monsoon season. This experience has equipped me with practical knowledge and skills in remote sensing and flood monitoring, which will be beneficial for my future endeavors in the field of geospatial sciences and disaster management.

**Objectives of the project:** To monitor floods in the Assam Valley and classify a land as flooded or not based on satellite images

**Tool used:** Google Earth Engine, JavaScript

**Details of Papers/patents: -**

**Brief description of the working environment:** During my Professional Summer Internship (PS-I) at the Indian Institute of Remote Sensing (IIRS) in Dehradun, I worked on a project focused on monitoring floods in the Assam Valley. The working environment at IIRS was research-oriented, providing access to advanced remote sensing technologies and expert guidance in geospatial sciences.

The primary expectation from the company (IIRS) was for me to understand the project's objectives and its significance in monitoring floods in the Assam Valley. I conducted extensive research and analysis using remote sensing data and techniques to assess flood patterns, identify vulnerable areas, and propose potential solutions.

Throughout the internship, I had the opportunity to learn various remote sensing techniques, including the processing and analysis of satellite data. Additionally, I gained insights into flood monitoring methodologies, such as radar-based techniques, optical imagery, and GIS applications. Geographic Information Systems (GIS) became an integral part of my learning, as I understood its applications in mapping, analyzing, and visualizing flood-related data.

The experience at IIRS was transformative, enriching my knowledge in remote sensing, flood monitoring, and interdisciplinary approaches. The exposure to cutting-edge technologies and research methodologies has undoubtedly influenced my understanding of the field and will guide my future pursuits.

**Academic courses relevant to the project:** Machine Learning

**Learning Outcome:** Using Google Earth Engine and knowledge on how satellites operate and what type of images they capture.

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## PS-I station: Indian Institute Of Remote Sensing , Dehradun

### Student

Name: TUSHAR RAGHANI .(2021A7PS1404H)

#### Student Write-up:

**PS-I Project Title:** Characterizing the Spatio-temporal Patterns of Floods in Koshi Basin: Insights from Rainfall Analysis.

**Short Summary of work done:** The project focuses on acquiring and preprocessing SAR data, employing thresholding and image segmentation algorithms to identify and delineate flooded areas.

**Objectives of the project:** To characterise the spatio temporal patterns of floods in Bihar

**Tool used:** Google earth engine

**Details of Papers/patents:** -

**Brief description of the working environment:** The work environment was not as good as we expected it to be . Our mentor had other commitments so he couldn't help us with the work much . We were not given proper attention by the mentor .

**Academic courses relevant to the project:** Machine learning

**Learning Outcome:** Earth engine and its objects and methods , Cloud Masking , Sentinel 1 and Sentinel 2

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## PS-I station: Indian Institute Of Remote Sensing , Dehradun

### Student

Name: YASHVARDHAN BATWARA(2021A7PS2224P)

### Student Write-up:

**PS-I Project Title:** Exploring the Potential of Time-Series Optical Vegetation Indices for Accurate Crop Acreage Estimation and Yield Prediction

**Short Summary of work done:** The project was a team project and there were 2/3 people in each time. For our project we chose Maharashtra and the wheat crop. For each year from 2004 to 2023, we calculated the average NDVI for each district of Maharashtra for the months Dec - Mar. For example: Dec 04 - Mar -05, Dec 22 - Mar 23, etc. We used LANDSAT 7 satellite data for calculating NDVI. From NDVI we estimated the crop acreage and total yield for each district and compared with actual yield that we found out from the web. We couldn't make any further progress on the project because PS1 started very late for us so we got only 20 - 25 days in total. But the next step was to train a model to predict yield and acreage from NDVI value.

**Objectives of the project:** Evaluating index performance, determining optimal time windows and frequencies for satellite data acquisition, identifying relevant temporal features, and comparing results with single-date index approaches.

**Tool used:** Google Earth Engine

**Details of Papers/patents:** NA

**Brief description of the working environment:** The project details were given very late and we had only around 25 days to do it. We had to start by learning about Google Earth Engine and then we moved on to the project. The mentor didn't respond to our queries most of the times, so it was quite tricky navigating around the resources shared. The project seemed interesting but there was not much time left at the end.

**Academic courses relevant to the project:** NA

**Learning Outcome:** Learned about how Remote Sensing works, various vegetation indices and their calculations.

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**PS-I station: Indian Institute Of Remote Sensing , Dehradun**

## Student

Name: ASHMAN MEHRA(2021A7PS2508G)

### Student Write-up:

**PS-I Project Title:** Graphical User Interface QGIS tool for InSAR processing system using GMTSAR

**Short Summary of work done:** The work involved understanding remote sensing concepts and implementing some of the algorithms. We built tools to simplify InSAR processing. We also integrated ML models like ResNET50 into our software tool for feature detection

**Objectives of the project:** The project aims to develop a Graphical User Interface (GUI) tool for InSAR (Interferometric Synthetic Aperture Radar) processing using the GMTSAR (Generic Mapping Tools for SAR) software. InSAR is a powerful technique for measuring ground deformation and studying Earth's surface using radar data. However, the existing command-line interface of GMTSAR poses challenges for non-expert users. The GUI tool will provide an intuitive and user-friendly interface, simplifying the data processing and visualization steps. The project will involve familiarization with GMTSAR functionalities, requirement analysis, design of the GUI layout, implementation of necessary features, integration with GMTSAR libraries, and comprehensive testing for accuracy and reliability. The expected outcomes include a functional GUI tool that enables efficient processing and visualization of InSAR data, along with comprehensive documentation and a user manual. The developed tool will enhance accessibility and usability for researchers and professionals working with InSAR data, opening up new possibilities for understanding and analyzing Earth's surface deformation. The project also included implementing RESNET50 models for detection of roads, waterways etc that were integrated into the plugin

**Tool used:** Python, QGIS, GMTSAR,

**Details of Papers/patents:** NA

**Brief description of the working environment:** The station is very impressive for research work. The mentors have a lot of knowledge and ideas. They are willing to guide and help whenever asked. Being a research institute it is expected that the students have to initiate the talks and show interest. Working at IIRS gave us exposure to research work and connect with experienced professionals.

**Academic courses relevant to the project:** Remote Sensing

**Learning Outcome:** Working

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**PS-I station: Indian Institute Of Remote Sensing , Dehradun**

## **Student**

**Name: SOUMIL RAY .(2021A7PS2652H)**

### **Student Write-up:**

**PS-I Project Title:** Characterizing the Spatio-temporal Patterns of Floods in the Assam Valley: Insights from Rainfall Analysis

**Short Summary of work done:** In this research project, we utilized Sentinel-1 Synthetic Aperture Radar (SAR) data to characterize the spatio-temporal patterns of floods in the Assam Valley. Flooding poses significant risks to the region, necessitating accurate flood extent retrieval. We acquired and preprocessed SAR data, and employed thresholding and image segmentation algorithms to delineate flooded areas. The flood extent maps derived from SAR data were validated and analyzed alongside rainfall data to understand flood dynamics. The use of SAR data for flood extent mapping can enhance early warning systems, support emergency response planning, and assist in the development of effective flood mitigation strategies for the vulnerable Assam Valley.

**Objectives of the project:** Analyzing the effect of rainfall on flood spread in Assam

**Tool used:** Google Earth Engine

**Details of Papers/patents:** None

**Brief description of the working environment:** The work timings were flexible. We were given enough time to familiarize ourselves with the tools required to do this project. Interactions with the guide were helpful. We learnt how to apply classification algorithms on satellite data.

**Academic courses relevant to the project:** CS F111

**Learning Outcome:** Processing satellite data and applying classification algorithms to identify flooded areas



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## PS-I station: Indian Institute Of Remote Sensing , Dehradun

### Student

Name: AASHIR TYAGI .(2021A7PS3015H)

#### Student Write-up:

**PS-I Project Title:** Calculating change in Hyderabad land cover in different years using Image Processing

**Short Summary of work done:** Our project was to develop an ML model for detecting changes in built up area of a Hyderabad over time. We used dataset from Google Earth Engine and were able to successfully implement the project using machine learning models like Random Forest, SVM, and Decision Tree.

**Objectives of the project:** Our objective of the project was to find the change in built-up area of Hyderabad over various years using image processing and machine learning models.

**Tool used:** Google Earth Engine, Fragstats

**Details of Papers/patents:** None

**Brief description of the working environment:** Our PS-1 started a bit late (got delayed by around 20-25 days), but nevertheless, our mentor was really supportive and helped us regularly in completing our project. The work was done remotely. Even though the PS got delayed, our PS faculty gave us learning tasks regularly. This helped me enhance my skills in remote sensing and image processing.

**Academic courses relevant to the project:** Machine Learning

**Learning Outcome:** Enhanced coding skills in Python, JavaScript and improvement of soft skills. Handling of satellite data for calculating landcover and use of various machine learning models.

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## PS-I station: Indian Institute Of Remote Sensing , Dehradun

### Student

Name: NAGA HARSHINI R.(2021AAPS1970H)

### Student Write-up:

**PS-I Project Title:** Classification of Hyderabad Landcover using Landsat Satellite Dataset and Machine Learning Algorithms

**Short Summary of work done:** Using Google Earth Engine (GEE), we manually classified Landsat imagery to distinguish between built-up areas, water bodies, rocks and barren land, and vegetation. Comparing Random Forest, CART, and SVM algorithms, we found Random Forest to be the most accurate for image classification. We applied the selected algorithm to Landsat images from 1993, 2003, 2013, and 2023, exporting the classified images as assets in GEE. These assets facilitated the creation of growth maps, providing insights into areas with significant built-up development over time. Additionally, we conducted advanced spatial analyses using Fragstats, calculating Landscape Shape Index (LSI), Proportion of Like Adjacencies (PLAD), and Mean Fractal Dimension Index. These metrics allowed us to quantify landscape patterns and ecological complexity. To present our findings, we utilized graphical representations like charts and graphs. The project expanded our geospatial analysis skills and deepened our understanding of landscape dynamics, contributing valuable insights into environmental changes and their effects on landscapes.

**Objectives of the project:** To classify Hyderabad region based on landcover and study how much of vegetation, water bodies and barren land changed into build-up areas over a period of 30 years

**Tool used:** Google Earth Engine API, QGIS, Fragstats

**Details of Papers/patents:** No

**Brief description of the working environment:** Despite facing initial delays due to issues with ISRO and IIRS, the project was able to proceed with the invaluable support and understanding of our mentor Dr Sandeep Maithani at IIRS. Although we started three

weeks later than planned, our mentor displayed exceptional dedication by consistently meeting us every alternate day to ensure the project's timely completion. Remarkably, he went above and beyond by providing guidance and assistance even on non-working days and holidays. His proactive and considerate approach ensured that everyone involved felt comfortable and supported throughout the project. His unwavering assistance and consideration played a pivotal role in our project's success, enabling us to overcome challenges and achieve our goals effectively.

**Academic courses relevant to the project:** Machine learning, Remote sensing

**Learning Outcome:** I have learned to classify and analyse imagery in Google Earth Engine, import/export data, create growth maps, adjust pixel size in QGIS, and calculate landscape metrics like LSI, proportion of like adjacencies, and mean fractal dimension index in Fragstats. These skills enhance my geospatial analysis capabilities for environmental and ecological studies.

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**PS-I station: Indian Institute Of Remote Sensing , Dehradun**

**Student**

**Name:** TARUN RAMAN .(2021AAPS2308H)

**Student Write-up:**

**PS-I Project Title:** Crop Yield Prediction

**Short Summary of work done:** Learnt how to use Google Earth Engine to collect and analyse image data from satellites.

**Objectives of the project:** To predict effect of temperature, rainfall and humidity on wheat crop yield and acreage in Karnataka.

**Tool used:** Google Earth Engine

**Details of Papers/patents:** None

**Brief description of the working environment:** We had high expectations, but we were utterly let down. The working environment was poor. We were given the project a month late, and even then, there was no clarity given regarding our future plan of action. It was very difficult to get in contact with the mentor to clarify our doubts. By the end of our PS we couldn't even complete our project. Overall it was a forgettable experience.

**Academic courses relevant to the project:** None

**Learning Outcome:** Exposure to Remote Sensing techniques using Google Earth Engine

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**PS-I station: Indian Institute Of Remote Sensing , Dehradun**

**Student**

**Name:** HARSHITH KUMAR BORUNDIA .(2021B3A70727H)

**Student Write-up:**

**PS-I Project Title:** NDVI Time Series Analysis

**Short Summary of work done: -**

**Objectives of the project:** To analyze forest and vegetation dynamics using spectral indices and charts.Using Landsat 8 and Modis imagery to analyze deforestation

**Tool used:** Google Earth Engine Code Editor and Javascript

**Details of Papers/patents:** No

**Brief description of the working environment: -**

**Academic courses relevant to the project:** General Chemistry and other CS courses

**Learning Outcome:** Understanding remote sensing and its various applications in forest management,agriculture,etc.

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## PS-I station: Indian Institute Of Remote Sensing , Dehradun

### Student

Name: ADITYA AGARWAL .(2021B3A70870P)

#### Student Write-up:

**PS-I Project Title:** Classification of Hyderabad using Landsat satellite dataset and Machine Learning Algorithms.

**Short Summary of work done:** We were able to learn lot of new things, now I am confident to work on remote sensing data also to deal with machine learning concepts.

**Objectives of the project:** To classify Hyderabad landcover in Builtup,Water,Vegetation,Rocks or Bare soil and see the difference in builtup over years(1993,2003,2013,2023) also to know which Machine Learning Algorithm is best in accuracy.

**Tool used:** Google Earth Engine,Fragstats,JavaScript,Excel

**Details of Papers/patents:** A Neural Network based Urban Growth Model of an Indian City,S. Maithani

**Brief description of the working environment:** There was a delay in onboarding and allocation of projects a month in our two months PS We were lucky to have good mentor as he conducted atleast three meetings in a week also guided us on each step and helped us whenever we asked.

**Academic courses relevant to the project:** N.A.

**Learning Outcome:** Hyderabad builtup is increasing over years, water is remaining almost constant, slight decrease in vegetation and drastic decrease in bare soil is observed.Hyderabad landcover is growing in cluster pattern and it is less scattered.Out of three Machine Learning Algorithms CART,SVM, and Random Forest, is giving best results.

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## PS-I station: Indian Institute Of Remote Sensing , Dehradun

### Student

Name: ADITYA SINGH .(2021B5A71645H)

#### Student Write-up:

**PS-I Project Title:** Exploring the Potential of Time-Series Optical Vegetation Indices for Accurate Crop Acreage Estimation and Yield Prediction

**Short Summary of work done:** We studied various spectral indexes that can help classify vegetation like NDVI and ESI .Created various plots in order to signify the identifying criteria of winter wheat . Learnt about collection of data in for remote sensing application.

**Objectives of the project:** To create a machine learning model that can predict the yield of wheat crops in the state of Karnataka given parameters like average , rainfall and temperature.

**Tool used:** Google Earth engine

**Details of Papers/patents:** None

**Brief description of the working environment:** The working environment was really bad . With very little to no importance given to the project. We got our problem statement after about a month . Even after getting the problem it was weeks before our mentor gave us a rough idea , with promise of further explanation as we proceed . Once we were done allotted task , we tried to ask for further instructions ,and after trying to proceed the project ourselves we got stuck with some problems . We tried contacting mentor for multiple weeks but never got a text back . Overall it was a very bad and forgetful experience.

**Academic courses relevant to the project:** None.

**Learning Outcome:** We learnt the basics of remote sensing , Google Earth engine , machine learning , javascript

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## PS-I station: Indian Meteorological Department (IMD) , Pune

### Student

Name: JADHAV PRATHMESH RAJENDRA(2021A3PS2498G)

### Student Write-up:

**PS-I Project Title:** Evaluating Weather Station Data Quality With appropriate Metrics

**Short Summary of work done:** We began by collecting different types of weather data. Then, we worked on making sure the data was consistent and complete. Next, we looked for any unusual things in the data like mistakes, missing points, and gaps in time. We also used techniques to fix these issues. Our main goal was to have accurate data so that our analyses would be trustworthy. To achieve this, we found and fixed problems in the data that could affect our results. In the final steps, we used methods to clean up the data even more. This helped us to sort out any remaining problems and get the data ready for detailed studies. In short, we gathered weather data, made it accurate, fixed mistakes, and prepared it for analysis.

**Objectives of the project:** 01. Collect reliable weather data from relevant sources and evaluate the completeness and consistency of the data. 02. Identify and address outliers, anomalies, missing data points, temporal gaps, and discrepancies in recorded measurements. 03. Employ data preprocessing tools to correct outliers, handle missing values, and fill data gaps effectively.

**Tool used:** Python, Numpy, Pandas, Matplotlib

**Details of Papers/patents:** -

**Brief description of the working environment:** IMD is a government organization where I experienced a fantastic working environment. The scientists there were incredibly helpful and always willing to clarify any doubts. My initial hope was to learn not only about my project but also about IMD itself, and that expectation was met. I gained insights into IMD by visiting its different departments and learning from my teammates' projects. Beyond just programming, I also got a glimpse into IMD's bureaucracy and the ongoing research activities. This was an enriching experience that went beyond my initial

expectations. Overall, I collected valuable weather data, improved my programming skills, and gained insights into the inner workings of a government research institution.

**Academic courses relevant to the project: -**

**Learning Outcome:** I got to learn about Python programming language and its libraries like Numpy, Pandas, Matplotlib etc. Also I learnt a lot of things about IMD.

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**PS-I station: Indian Meteorological Department (IMD) , Pune**

**Student**

**Name: PAYGHAN RAJAT BHAGWANT .(2021A7PS2218P)**

**Student Write-up:**

**PS-I Project Title:** Weather Data Verification Dashboard

**Short Summary of work done:** We learnt how weather data is processed and verified, and we built a simple dashboard for analysing and displaying the result parameters in a graph format

**Objectives of the project:** To verify the weather data and display analytics using a web dashboard

**Tool used:** S/w : Vanilla JS, Chartjs, Sheetjs, REST api, HTML & CSS

**Details of Papers/patents:** None

**Brief description of the working environment:** It was a friendly work environment, with our mentor helping us to clearly define and process the objectives and helping us develop the application. Moreover, it also helped us get a better grip on Web Development Basics

**Academic courses relevant to the project:** None

**Learning Outcome:** Web Development



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## PS-I station: Indian Meteorological Department (IMD) , Pune

### Student

Name: Shardul Shingare(2021A7PS2539P)

#### Student Write-up:

**PS-I Project Title:** Web-based visualization of gridded data product prepared by CRS, IMD, Pune

**Short Summary of work done:** the development of a web-based visualization platform for rainfall and temperature data spanning from 1901 to 2022 and 1971 to 2021, respectively. The project encompasses various full-stack development concepts, incorporating both backend and frontend components, all achieved through the implementation of several Python libraries. The process involved data extraction, cleaning, manipulation, and visualization to provide users with an intuitive and interactive interface to explore the historical weather data and display related graphs for any range taken as input from the user.

**Objectives of the project:** To create a website that can display rainfall and temperature data for any user-specified range, as well as show graphs for each district upon clicking

**Tool used:** Python libraries - Geopandas, numpy, folium, dash, netCDF4, xarray, pandas, matplotlib, json, os; Server setup - Apache, ferret

#### Details of Papers/patents: -

**Brief description of the working environment:** The working environment at the PS station was good, and everyone there was welcoming and always ready to lend a helping hand. Our mentor was especially supportive, answering our queries and guiding us throughout the project. The significance of the project to IMD was significant as the PS station lacked a platform to display dynamic maps before this project. This fueled our motivation to work diligently and complete the project successfully. IMD gave us all the required resources to work on the project.

**Academic courses relevant to the project:** Some concepts of Data Structures and Algorithms

**Learning Outcome:** Using various Python libraries, setting up a server, giving presentations, making reports, communicating with peers and mentors, and collaborating in a team.

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## PS-I station: Indian Meteorological Department (IMD) , Pune

### Student

**Name:** EESHAN YOGESH DESHPANDE(2021A8PS1567G)

### Student Write-up:

**PS-I Project Title:** Sensing Temperature in a Location Using Sensor Fusion Technique

**Short Summary of work done:** In my PS-1, I created a temperature and humidity monitoring circuit using 4 DHT11 sensors. First, I started studying about types of sensors and then specifically about temperature sensors. Later, I began studying various microcontrollers and decided to use the STM32 microcontroller. In that, I studied about the pins that need to be connected to the SHT11 sensors. These pins are called PWM pins. Moreover, I learned about the Integrated Development Environment by STMicroelectronics- STM32CubeIDE. This software includes a GUI that allows us to program the pins on an STM32 microcontroller. I also learned how to interface sensors to the microcontroller and programmed for the same. Further, I used Python to create a CSV file.

**Objectives of the project:** To interface multiple sensors and employ sensor fusion technique to measure temperature and humidity in a location.

**Tool used:** Breadboard, jumper wires, STM32F103C8T6 microcontroller, DHT11 temperature and humidity sensors, OLED 128x64 0.96" screen, STM32CubeIDE, C, and Python programming languages.

**Details of Papers/patents:** No papers or patents were published during my tenure as intern except for the project report.

**Brief description of the working environment:** The working environment in India Meteorological Department (IMD) was very supportive. It was conducive to completing given tasks and for learning too. IMD personnel were helpful whenever difficulties arose. My working place was the Conference room and it was well lit, and air-conditioned. My overall experience was really good, however, a more comprehensive explanation of IMD's expectations would be appreciated.

**Academic courses relevant to the project:** Microprocessors & Interfacing, Embedded Systems Design, Computer Programming, Digital Design.

**Learning Outcome:** Various sensors in use, working of temperature sensors, use of STM32 microcontroller, interfacing of DHT11 sensors, using STM32CubeIDE, and different communication protocols.

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## **PS-I station: Indian Meteorological Department (IMD) , Pune**

### **Student**

**Name:** ADARSH GOPALAKRISHNAN(2021A8PS1755G)

### **Student Write-up:**

**PS-I Project Title:** Sensing Temperature in a Location Using Sensor Fusion Technique

**Short Summary of work done:** Background research about the project was done and we were asked to write a literature review of our project and discuss it with our mentors. Our mentors gave us feedback and helped us form objectives for our project. We started by designing the circuit and buying the required components for our project. We had to interface four DHT11 sensors with a STM32 Blue Pill microcontroller. After the components arrived, we proceeded to assemble the circuit and write the code to get temperature and humidity data from the sensors. We had to understand the architecture of the STM32 microcontroller and also the working of the DHT11 sensor. We especially had to understand the timing diagram of the sensor. We had to take 180 samples per sensor. After taking the samples, we had to take average of those samples and only consider the samples which lied within 10% of the average for each sensor and take their average. After we had processed the samples for each sensor, we had to combine them

and display the final data on an OLED display. We had to take running average, i.e., after processing 180 samples, we had to process it again after taking the 181st reading and update the temperature. We also used usb communication and python to save the data from the sensors in a csv file.

**Objectives of the project:** The objective was to interface multiple sensors and combine their readings using the sensor fusion technique to get accurate and reliable data, while also trying to understand the advantages of using this method in comparison with using a single sensor. We also had to ensure quality control of the data.

**Tool used:** STM32F103C8T6 Microcontroller, DHT11 Temperature and Humidity Sensors, OLED 128x64 0.96" Display, Breadboard, Jumper wires, ST-Link Debug Probe, Python, STM32CubeIDE, Hercules Utility

**Details of Papers/patents:** No papers/patents

**Brief description of the working environment:** We worked in a very professional and research oriented environment. Before we started our project, we had to do thorough research about the topic and discuss it with the mentors who questioned us on each and everything we research about while also providing their inputs. They expected us to do our own research on the topic and also create our own objectives to work towards. They wanted us to do as much productive work as we could during the short duration of 2 months. They also wanted our projects to become usable products and study material for their new scientists. I learnt a lot about how IMD works and its importance for our country.

**Academic courses relevant to the project:** Microprocessors and Interfacing

**Learning Outcome:** Importance of reliable and accurate data in meteorological applications, sensor fusion technique, statistical analysis of data

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**PS-I station: Indian Meteorological Department (IMD) , Pune**

**Student**

**Name: PRATHAM AMOL POTNIS(2021A8PS2315G)**

**Student Write-up:**

## **PS-I Project Title:** Semi-automatic METAR Generator

**Short Summary of work done:** In our PS-1, we created a Semi-automatic METAR Generator, which takes input of four cloud terms of a METAR and then generates the complete METAR based on this input and the sensors attached to the data logger. This Data logger is attached to the system with the help of an ethernet connection. We have successfully created an application that receives data from the datalogger, converts it to the METAR, displays it on the screen and then stores it in an excel sheet. We understood various aspect of an application. This included networking, backend, frontend and storage of data.

**Objectives of the project:** To create a Semi-automatic METAR generator which will generate a METAR once every half an hour. This METAR will be generated with the help of data received from a Data Logger. The generated MEATRs will be stored in an Excel sheets.

**Tool used:** The tools used to develop this project include Python libraries such as TKinter, Openpyxl, socket, timer,etc. It also includes use of Excel and an ethernet connection from the data logger.

**Details of Papers/patents:** No paper published.

**Brief description of the working environment:** The working environment was very supportive. The people over there helped us with everything, from understanding the working of the system to the execution of our application. The conference room in which we worked was well lit. It had a big display screen, air conditioner and comfortable chairs. The students who sat there with me created a wholesome environment.

**Academic courses relevant to the project:** Computer Programming, Electrical Sciences

**Learning Outcome:** We understood the basics of different concepts such as Network programming, data analysis and data handling. We executed this project using Python and its libraries.

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**PS-I station:** Indian Meteorological Department (IMD) , Pune

## Student

Name: SHASHWAT SUNIL GOYAL(2021B1A83002G)

### Student Write-up:

**PS-I Project Title:** Development of a Semi-Automatic METAR Generator

**Short Summary of work done:** In our PS-1, we created a Semi-automatic METAR Generator, which takes input of four cloud terms of a METAR and then generates the complete METAR based on this input and the sensors attached to the data logger. This Data logger is attached to the system with the help of an ethernet connection. We have successfully created an application that receives data from the datalogger, converts it to the METAR, displays it on the screen and then stores it in an excel sheet. We understood various aspect of an application. This included networking, backend, frontend and storage of data.

**Objectives of the project:** 1. Creating a seamless code which displayed a METAR when certain instrument data was fed. 2. Making sure that the code worked perfectly in all edge cases. 3. Designing a suitable and attractive UI to display the METAR report and make the process as smooth as possible for the user.

**Tool used:** The tools used to develop this project include Python libraries such as Tkinter, Openpyxl, socket, timer,etc. It also includes use of Excel and an ethernet connection from the data logger.

**Details of Papers/patents:** -

**Brief description of the working environment:** The working environment was very supportive. The people over there helped us with everything, from understanding the working of the system to the execution of our application. The conference room in which we worked was well lit. It had a big display screen, air conditioner and comfortable chairs. The students who sat there with me created a wholesome environment.

**Academic courses relevant to the project:** CP F111

**Learning Outcome:** 1. We were able to write neat and clean code in Python using various libraries to generate our METAR reports.  
2. We were able to seamlessly cover all edge cases and store the METARs generated for future references along with the respective timestamps.  
3. We were able to make the process of entering cloud cover and trend status less tedious by coming up with a code that auto fills the last entered cloud cover and trend status in the input fields.

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## PS-I station: Indian Meteorological Department (IMD) , Pune

### Student

Name: VIKRAM SINGH(2021B1AA3008G)

#### Student Write-up:

**PS-I Project Title:** Evaluating Weather Station Data Quality With Appropriate Metrics

**Short Summary of work done:** During my internship, I gained exposure to AI-ML techniques through studying various research papers rather than achieving mastery. I focused on learning Python, essential research protocols, and improving my time management skills. Python proved invaluable for data analysis, enabling me to develop algorithms and gain insights through data visualization. Additionally, I explored GIS with QGIS, enhancing my ability to analyze spatial data and create informative maps for geographical research. The internship enriched my research skills, programming knowledge, and understanding of AI-ML applications, all while honing my time management abilities. These experiences have prepared me for a successful career in research and data science.

**Objectives of the project:** 01. Collect reliable weather data from relevant sources and evaluate the completeness and consistency of the data. 02. Identify and address outliers, anomalies, missing data points, temporal gaps, and discrepancies in recorded measurements. 03. Employ data preprocessing tools to correct outliers, handle missing values, and fill data gaps effectively.

**Tool used:** Google Colab, Python, QGIS, Pandas, NumPy, geopandas, Matplotlib, Plotly, SciPy

**Details of Papers/patents:** None

**Brief description of the working environment:** Working Environment:

During my PS-I, the working environment was great! The team at IMD was friendly and supportive. I partnered with someone, and we made a good team. The scientists and

mentors were approachable and always willing to help. The best part was getting access to cool technologies that we used in our work.

Expectations from the Company:

IMD had clear goals for us - developing an automatic weather data verification tool. They set achievable objectives based on our abilities and time. They encouraged us to share our thoughts and concerns, which made us feel valued as part of the team.

Learning during PS-I:

I learned a lot during my PS-I! We dived into research papers, which was challenging but rewarding. IMD also arranged training sessions, and mentors regularly checked in and gave feedback. The best part was working on real projects that had a real impact on people's lives!

**Academic courses relevant to the project:** Computer Programming CS F111

**Learning Outcome:** My internship provided valuable exposure to research work, essential protocols, and improved time management skills. Learning Python for data analysis, algorithm development, and visualization proved invaluable. Exploring GIS with QGIS enhanced my spatial data analysis abilities. Moreover, studying research papers on AI-ML provided insightful knowledge in the field. Overall, the internship enriched my research and programming skills, preparing me for a successful career in data science.

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**PS-I station: Indian Meteorological Department (IMD) , Pune**

**Student**

**Name: ASTIK GAUR .(2021B2A82286P)**

**Student Write-up:**

**PS-I Project Title:** Web based visualization of data from METAR codes

**Short Summary of work done:** The Web based visualization of data from METAR codes initiative is a result of the importance of accurate and current weather information in the aviation industry. Access to reliable METAR reports is essential for flight planning, ensuring the safety of operations, and making informed decisions for aviation professionals, pilots, and air traffic controllers. To address this need, the project aims to develop a user-friendly platform that provides airports in India with simple access to real-



time weather information. The initiative combines web development, data integration, and GIS to provide a user interface that is intuitive and interactive. The initiative is motivated by the aviation industry's growing reliance on digital tools and technologies. Historically, accessing METAR reports required manual retrieval of raw data from multiple sources and decoding. With the development of technology and the availability of real-time data APIs, it is now possible to automate this procedure and provide users with immediate access to decoded METAR reports. Multiple components of the project's structure collaborate to accomplish its objectives. Front-end development focuses on creating an aesthetically pleasing and intuitive website interface. The interface's focal point is a map of India that functions as a navigational aid for users. The airports in India are marked as tear pins on the map, allowing users to readily locate the airport of their choice. The user selects which data, retrieved from the METAR codes, he wants to observe. Then, the web map generates a visual representation of that data at all airports. This data is retrieved from an external source using an API. This API retrieves real-time METAR reports from meteorological sources, ensuring that the data displayed to users is always current. This data is then sent to the frontend of the web app in JSON format, which is then displayed on the web map. The initiative incorporates regular data updates to ensure the accuracy of weather information. A mechanism is put in place to retrieve new METAR reports at predetermined intervals, typically every half hour. This ensures that users have access to the most up-to-date meteorological information, allowing them to make informed decisions based on the most recent conditions. The initiative uses an iterative approach to development, with various milestones guiding the process. These include the initial development of the website, the integration of the API service, and the ongoing improvement of the user interface in response to user feedback and evaluation.

**Objectives of the project:** the development of a web based visualization of data from METAR codes that will provide airports in India with real-time meteorological data. This project's objective is to develop a user-friendly website that displays a map of India with airports marked with tear pins. By hovering over these tear pins, users can access automatically decoded METAR (Meteorological Aerodrome Report) data retrieved via an API which will be updated every 30 minutes. The website's interface features a map of India with airports depicted as tear-shaped markers. When a user hovers over a tear pin, the software retrieves the relevant METAR data for that airport automatically.

**Tool used:** HTML,CSS,BOOTSTRAP,API,react,node.js,QGIS,WEBMAP

**Details of Papers/patents:** N.A.

**Brief description of the working environment:** Working environment was good. Our mentor was friendly and allotted us time whenever we needed. He gave us the objectives that he wanted us to fulfill and we used to work on that and show him the progress and then he used to guide us with his valuable feedback and suggestions.

**Academic courses relevant to the project:** Web Development

**Learning Outcome:** I got to learn about the METAR, its importance and how it is decoded. Apart from that I also got to learn about web development along with Geographic Information System with QGIS and webmaps.

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## **PS-I station: Indian Meteorological Department (IMD) , Pune**

### **Student**

**Name:** SIDAK MALHOTRA .(2021B3AA2769P)

### **Student Write-up:**

**PS-I Project Title:** Web Verification Dashboard for Weather forecasting

**Short Summary of work done:** Created a weather forecast verification dashboard to point out the discrepancies and inconsistencies in the current forecasting mechanism, had to revamp the entire portal under the guidance of Dr S.D Sanap

**Objectives of the project:** Creation of Dashboard

**Tool used:** Html, Css, javascript, chart js, sheet js

**Details of Papers/patents:** N/A

**Brief description of the working environment:** The mentor was very open to communication and helped out by providing guidance at every step of the way

**Academic courses relevant to the project:** Introduction to Computer programming

**Learning Outcome:** Web Development

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## PS-I station: Indian Meteorological Department (IMD) , Pune

### Student

Name: ROSHAN KARANTH .(2021B4A31745P)

#### Student Write-up:

**PS-I Project Title:** Web based visualization of data from METAR codes.

**Short Summary of work done:** made a web site, and a web map using leaflet

**Objectives of the project:** To create a website, which displayed the METAR data extracted from an API, on a web map and visualize it.

**Tool used:** HTML,CSS, JavaScript, NodeJS, express.js, mongodb

**Details of Papers/patents:** none

**Brief description of the working environment:** Very nice

**Academic courses relevant to the project:** Computer programming, OOPS

**Learning Outcome:** Web development, backend, databases, web servers, METAR, aviation, role of IMD in industry

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## PS-I station: Indian Meteorological Department (IMD) , Pune

### Student

Name: SHAHEEN ALI .(2021B4A33044H)

#### Student Write-up:

**PS-I Project Title:** A Machine-Learning Based Analysis of ENSO Data for Climate Understanding and Forecasting

**Short Summary of work done:** We were given a data set containing Nino 3.4 region monthly SST indices (Sea Surface Temperatures) and we performed Exploratory Data Analysis on the set, after which we applied Random Forest Model and Linear Regression Model to determine which model would be the most accurate, which turned out to be Linear Regression. We were then given a data set containing Warm Water Volume Anomaly values in Nino 3.4 Region from Jan-1980 to May-2023. We performed EDA and then did correlation lag analysis whose results we then applied to Vector Auto Regression model to determine it's accuracy as well as predict future values.

**Objectives of the project:** Understanding ENSO data through visualization and analysis through Python libraries, finding the most suitable prediction method of climate conditions when one variable (SST in Nino 3.4 region) is involved, then performing the same when two climate variables (SST, Warm Water Volume Anomaly) are used.

**Tool used:** Python libraries (numpy, pandas, seaborn, matplotlib, plotly, sklearn)

**Details of Papers/patents:** -

**Brief description of the working environment:** We did not have proper places or desks to sit on so we worked in the library

There were connectivity issues at first with the internet but the problem was sorted soon

**Academic courses relevant to the project:** Machine Learning, Optimization

**Learning Outcome:** Linear regression, though a simple tool is a powerful predictor when it comes to a single influential variable, and when two climate variables were used, Vector Auto Regression is highly accurate for predicting one variable using the other

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**PS-I station: INFLIBNET Centre , Gandhinagar**

**Student**

**Name: Yash Sangram Barge(2021A7PS0006P)**

**Student Write-up:**

**PS-I Project Title:** Metadata extraction from thesis title PDF using NLP and forming an ontology using that metadata

**Short Summary of work done:** Creation of academic report and prototyping an AI/NLP tool for metadata extraction from PDF

**Objectives of the project:** I) create an NLP based tool to extract information from a PDF  
II) use that metadata to create an ontology III) make an ontograp of that ontology

**Tool used:** Python, spaCy

**Details of Papers/patents:** Paper on project was written, not sure if or when it will be published, as more work needs to be done

**Brief description of the working environment:** Working environment was fairly loose, with no one checking up on you. Mentor treated us more like employees when it came to guidance and expectations. Project was initially much broader in scope, but he didn't seem too surprised when we had to reduce it.

**Academic courses relevant to the project:** Technical Report Writing

**Learning Outcome:** I) Exposure to NLP Python library named spaCy

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**PS-I station: INFLIBNET Centre , Gandhinagar**

**Student**

**Name:** NAVONEEL GHOSH .(2021A7PS0462H)

**Student Write-up:**

**PS-I Project Title:** AI-DRIVEN METADATA EXTRACTION, SEMANTIC METADATA LINKING AND VISUAL ONTOLOGY FOR ENHANCED INFORMATION RETRIEVAL AND ORGANIZATION

**Short Summary of work done:** Text Extraction:- It is possible to extract the required metadata through the title PDF of the thesis. It requires a PDF-to-text parser, to extract the raw text out of the PDF. As the extracted text is unsorted, some application of NLP is also required to appropriately label and sort the information extracted into properly formatted metadata. Semantic Linking:- The metadata that we have obtained through the text extraction can now be linked together using AI semantically that is based on its meaning and tags. It can be done using NLP and NER (Named Entity Recognition). We are using Python's SpaCy library for the same. Visual Ontograph:- We will be creating a visual representation of those entities linked through the NLP programme above, in the form of an Ontograph. We might be using Protégé, EDrawMax or OWL for creating the Graph.

**Objectives of the project:** Semantic linking of metadata and text extraction from PDF

**Tool used:** Python Libraries (SpaCy and PyPDF), OWL Ontograf, SvelteKit

**Details of Papers/patents:** N/A

**Brief description of the working environment:** Working environment is pretty fine. The staff here are very helpful and cheerful. Expectations from the mentors were a touch too high though, given that not much help was provided from them and we had to do everything on our own. Learnings, we learnt quite a lot about office life, and other outcomes regarding the project.

**Academic courses relevant to the project:** None in the first 2 years of BE Computer Science.

**Learning Outcome:** Learnt about metadata, text extraction and some basics of AI and ML.

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**PS-I station: INFLIBNET Centre , Gandhinagar**

**Student**

**Name: SUJAL KHANDELWAL(2021A7PS1421G)**

**Student Write-up:**

**PS-I Project Title:** AI-DRIVEN METADATA EXTRACTION, SEMANTIC METADATA LINKING AND VISUAL ONTOLOGY FOR ENHANCED INFORMATION RETRIEVAL AND ORGANIZATION

**Short Summary of work done:** The scope of AI in metadata extraction and semantic linking is vast and offers significant potential for improving information retrieval and knowledge organization. By leveraging NLP, machine learning, and semantic technologies, AI-powered systems can extract and link metadata elements with high accuracy, enabling more efficient search, categorization, and organization of information. The enriched metadata also opens up opportunities for advanced applications in research, data mining, document management, and information retrieval systems.

**Objectives of the project:** The Problems Statements are as follows: Problem 1: The scanned page generally in OCR as a searchable PDF is the Title Page of the Thesis, named 01\_title.pdf. The words from the OCR text can be parsed using a standard algorithm and the parsed tokens can be converted as Standard Metadata elements. The challenge is extracting the right metadata elements to adhere to International Standards such as Dublin Core, MARC 21, MARC XML, MODS, and RDF. Problem 2: 01\_title.pdf may also be an image that needs an AI tool to extract text data and parse it as a token to solve it as mentioned in Problem 1. Problem 3: Existing metadata used in one Thesis in ShodhGanga has very precise and confined elements which do not semantically link with other Theses data. This needs the creation of relation elements by using standard thesaurus tools or ontology. Since the architecture of ShodhGanga is almost restricted for expansion, a middle logical layer is to be created without giving load to ShodhGanga Servers

**Tool used:** protege,spypdf,spaCy ,jupyter,javascript,python

**Details of Papers/patents:** no

**Brief description of the working environment:** Learning Opportunities: The working environment during PS-I is designed to provide interns with valuable learning experiences. It offers exposure to various aspects of the company's operations, projects, and industry practices. Interns are encouraged to learn new skills, explore different roles, and gain insights into their chosen field.

Mentorship and Guidance: Interns often receive mentorship and guidance from experienced professionals within the company. Mentors may help interns navigate their responsibilities, provide feedback on their work, offer career advice, and support their overall professional development.

expectations -

Guidance and Support: Interns expect the company to provide clear instructions, resources, and support to help them perform their duties effectively. They appreciate having a designated supervisor or mentor who can offer guidance and answer questions throughout the internship.

Meaningful Work: Interns seek opportunities to engage in meaningful projects and tasks that align with their interests and career goals. They expect to contribute to the company's objectives and gain practical skills and knowledge relevant to their field of study.

**Academic courses relevant to the project:** none

**Learning Outcome:** Technical Skills, Professional Skills, Work Ethic and Professional Conduct

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**PS-I station: INFLIBNET Centre , Gandhinagar**

**Student**

**Name:** VYAS VEDANT KARTIK .(2021A7PS2693P)

**Student Write-up:**

**PS-I Project Title:** AI based Semantic Linking of metadata

**Short Summary of work done:** We researched about AI, Python,NLP and made a demo code as well as a research project report

**Objectives of the project:** Automatic text extraction of metadata from title page of shodh ganga theses

**Tool used:** Jupyter, Spacy library

**Details of Papers/patents:** No

**Brief description of the working environment:** Very strict environment,the mentor was very strict. Overall good but monotonous work culture

**Academic courses relevant to the project:** AI-ML courses

**Learning Outcome:** Industry Culture, NLP ,NER



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## PS-I station: Integra Design , New delhi

### Student

Name: VEDANT TULI .(2021A7PS0435P)

#### Student Write-up:

**PS-I Project Title:** 1.Live Location Tracking 2.Backup and Restore

**Short Summary of work done:** I created a web application that tracks the live locations of multiple cameras deployed on police vehicles and displays it on a map, along with their activity status, and integrated it into the company's website. I also created a backup and restore feature for the company's android application.

**Objectives of the project:** 1. To create an web application that tracks the live locations of multiple cameras deployed on police vehicles and displays it on a map, along with their activity status, and integrate it into the company's website. 2. To create a backup and restore feature for the company's android application.

**Tool used:** HTML, Javascript, CSS, AJAX, Java, PHP

**Details of Papers/patents:** none

**Brief description of the working environment:** The company was a small one in the process of expanding its operations. The working environment was very comfortable, and we were allowed to work from home as well on certain days. The mentors were extremely helpful and provided resources to aid our learning. The company was comfortable with the amount of time that we took to complete our projects.

**Academic courses relevant to the project:** OOP

**Learning Outcome:** Web Development, App Development

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## PS-I station: Integra Design , New delhi

### Student

Name: PARMJEET .(2021A7PS0563P)

#### Student Write-up:

**PS-I Project Title:** Lasertrac

**Short Summary of work done:** Very nice station i enjoy there and learn new things

**Objectives of the project:** App development project and website integration

**Tool used:** Android studio

**Details of Papers/patents:** No

**Brief description of the working environment:** Very good working space

**Academic courses relevant to the project:** Yes

**Learning Outcome:** Android development

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## PS-I station: Integra Design , New delhi

### Student

Name: SHIVAM ATUL TRIVEDI .(2021A7PS1512H)

#### Student Write-up:

**PS-I Project Title:** Lasertrac

**Short Summary of work done:** Added a webpage to the company's website that tracks the live locations of their traffic cameras as well as update their activity status continuously. Also worked upon features to be added to their android app such as cropping vehicle images to get only the number plate or enable data sharing as text between apps installed on 2 different devices. Also enabled database backup and restore feature for the app using SQLite

**Objectives of the project:** Add a webpage to the company's website that tracks the live locations of their traffic cameras as well as update their activity status continuously. Also worked upon adding features to their android app such as cropping vehicle images to get only the number plate or enable data sharing as text between apps installed on 2 different devices.

**Tool used:** VS Code (Html/Css, Js), Android Studio (Java)

**Details of Papers/patents:** NA

**Brief description of the working environment:** The working environment was very relaxed. They were very welcoming of us interns. We were assigned tasks and allowed to work at our own pace. They preferred us to be present offline to do the work, however they didn't mind the occasional work from home or early leave. We used to report our progress to our mentor on a daily basis. He was really approachable and used to help us out in case we encountered any troubles while completing a task. The overall experience was quite good.

**Academic courses relevant to the project:** Software Engineering, Database Systems

**Learning Outcome:** Frontend web development, android app development using Android studio

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**PS-I station: iQuadra Information Services Pvt. Ltd. Online , NELLORE**

**Student**

**Name: UTKARSH SHARMA .(2021A7PS2429P)**

**Student Write-up:**

**PS-I Project Title:** Implement AI based proctoring system

**Short Summary of work done:** I mainly focussed on three aspects of the projects eye gaaze detection and face detection and tracking and implemented the same

**Objectives of the project:** To implement the face detection and eye gaze tracking of an AI based proctoring system

**Tool used:** Pytorch OpenCV

**Details of Papers/patents:** NA

**Brief description of the working environment:** the company was good and the mentors very helpful

**Academic courses relevant to the project:** NA

**Learning Outcome:** Machine Learning ,Computer Vision

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**PS-I station: iQuadra Information Services Pvt. Ltd. Online , NELLORE**

**Student**

**Name:** SAMAY MEHTA .(2021A7PS2996H)

**Student Write-up:**

**PS-I Project Title:** Sentiment and Behaviour Analysis using Machine Learning and Computer Vision techniques

**Short Summary of work done:** Included in Diary

**Objectives of the project:** To build a interview analysing system

**Tool used:** GitHub, Jupyter Notebook, Tensorflow, Python, Pandas, Numpy

**Details of Papers/patents:** None

**Brief description of the working environment:** Included in Diary

**Academic courses relevant to the project:** Machine Learning, Natural Language processing, Deep Learning

**Learning Outcome:** Learnt AWS and a little bit about Machine Learning algorithms

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**PS-I station: iQuadra Information Services Pvt. Ltd. Online , NELLORE**

**Student**

**Name:** AYUSH PURBEY(2021A8PS2921G)

**Student Write-up:**

**PS-I Project Title:** Face Recognition Model

**Short Summary of work done:** Started by learning Amazon Web Services, gave a test for that in company's proctoring system, worked on facial recognition model using python and other relevant libraries

**Objectives of the project:** Given still or video images of a scene, identify or verify one or more persons in the scene using a stored set of faces (images); A video is being recorded by the system camera, check how many times a person looked away from the camera.

**Tool used:** Python, Visual Code Studio, Amazon Web Services

**Details of Papers/patents:** NA

**Brief description of the working environment:** Expectations were a little more on teaching side, but overall we had to go through everything on our own, and just recieved task from the company, also a major portion of the PS time was contributed to learning AWS which wasn't relevant to the main project for the moment.

**Academic courses relevant to the project:** Machine Learning, Deep Learning

**Learning Outcome:** Machine Learning, Cloud Computing,

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**PS-I station: K2 Cloud Pvt. Ltd. , Gurugram**

**Student**

**Name:** RIJUL BASSAMBOO .(2021A7PS0009P)

**Student Write-up:**

**PS-I Project Title:** ELK STACK DEPLOYMENT

**Short Summary of work done:** In the K2 Cloud internship, I was part of a group led by Mr. Chandan Gupta, working on an ELK Stack Deployment project. After an introductory session with Mr. Bajrangi Kumar, we received documentation on setting up the ELK (Elasticsearch, Logstash, and Kibana) Stack on a Virtual Machine. In the second week, I focused on learning Linux commands and exploring AWS services, especially EC2, to host our project. Creating an AWS account, I set up an EC2 instance to serve as the ELK server and established a connection with it from my local system. In the third week, I installed Docker on the EC2 instance to enable efficient containerization for the ELK Stack. However, we encountered performance issues with the instance's location, leading us to relocate it for improved stability. After relocating, I reconnected using Putty and Puttygen tools and, in the fourth week, successfully installed the ELK Stack components using Docker, ensuring smooth functionality. Regular meetings with Mr. Chandan Gupta provided a platform for discussions and clarifications, helping us navigate challenges and progress efficiently in the project. His guidance was invaluable in achieving successful execution.

**Objectives of the project:** To develop a Monitoring system using ELK Stack Deployment

**Tool used:** Virtual machine, Docker, Elasticsearch, Logstash, Kibana, EC2(AWS), Linux

**Details of Papers/patents:** N.A.

**Brief description of the working environment:** Working environment was purely online. We can expect a strong focus on technology and cloud-based solutions. They offer an internship program that provides hands-on experience with ELK Stack Deployment, Linux, and AWS services like EC2. The company values mentorship and guidance, with a dedicated Group Leader providing support throughout the project. They encourage learning and growth through regular meetings and discussions with mentors. The company's emphasis on problem-solving and adaptability is evident from how they address challenges like performance issues with the EC2 instance. Overall, the company offers a dynamic and rewarding environment for interns to develop their skills and contribute to meaningful projects in the cloud computing domain.

From the above paragraph, you can learn about a K2 Cloud internship project focused on ELK Stack Deployment. Key takeaways include gaining knowledge of Linux commands, AWS services like EC2, and Docker for efficient containerization. The importance of regular communication with mentors and problem-solving skills in handling challenges are also highlighted.

**Academic courses relevant to the project:** I feel courses like DBMS, Distributed Systems, Information Retrieval, and Data Analytics can provide foundational knowledge and skills applicable to the ELK Stack deployment project.

**Learning Outcome:** EC2 service of AWS, Elasticsearch, Logstash, Kibana

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**PS-I station: K2 Cloud Pvt. Ltd. , Gurugram**

**Student**

**Name: ANSH MISHRA(2021A8PS2994G)**

**Student Write-up:**

**PS-I Project Title:** LAMP Stack Deployment

**Short Summary of work done:** Learnt about team building, deployed a LAMP Stack, currently working on CRM Module. Learnt a lot about virtual machines and how docker and its components works and brushed up backend development.

**Objectives of the project:** Deploy a locally hosted LAMP Stack in a docker container inside a virtual machine

**Tool used:** Linux, Apache, MySQL, PHP, VirtualBox, Vagrant, Docker

**Details of Papers/patents:** none

**Brief description of the working environment:** Worked from home with regular meetings on Microsoft Teams. Company gave us apt time to complete the projects and the mentor and tech team helped us with our problems with supporting documentation.

**Academic courses relevant to the project:** Computer Programming

**Learning Outcome:** Learnt about using Linux, Apache, MySQL and PHP and docker and vagrant. Also learnt about team building and problem solving.

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**PS-I station: K2 Cloud Pvt. Ltd. , Gurugram**

**Student**

**Name:** KUSH JAIN(2021AAPS1633G)

**Student Write-up:**

**PS-I Project Title:** Monitoring System

**Short Summary of work done:** My work at K2 Clouds involved working on managing log data received through aws and analyzing it using ELK on Docker.

**Objectives of the project:** To create a monitoring system on data using various cloud computing technology

**Tool used:** Aws,Docker,ELK,VirtualBox,Linux

**Details of Papers/patents:** Nil



**Brief description of the working environment:** The learning environment was good with company mentors providing relevant experience regarding new tech like docker and aws

**Academic courses relevant to the project:** Computer Programming

**Learning Outcome:** Communication within a corporation  
Technology used in large scale cloud computing

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**PS-I station: K2 Cloud Pvt. Ltd. , Gurugram**

**Student**

**Name:** DIVYANSHU .(2021AAPS1937H)

**Student Write-up:**

**PS-I Project Title:** Log Analysis Through ELK Stack

**Short Summary of work done:** The project aimed to centralize log management and analysis using the ELK Stack (Elasticsearch, Logstash, and Kibana). We began by setting up Logstash, which efficiently collected log data from various sources, such as servers, applications, databases, and network devices. Elasticsearch served as the backend for storing and indexing the log data. Its powerful search engine capabilities enabled real-time querying and retrieval of information from vast log datasets. We utilized Kibana, the data visualization component of ELK, to create interactive dashboards and visualizations. Through the project, we honed our skills in analyzing log data, detecting patterns, trends, and anomalies. This improved system reliability and security by enabling proactive issue resolution and minimizing downtime.

**Objectives of the project:** The objective of the project is to centralize log management, ingest log data from various sources, and utilize Elasticsearch for storage and indexing to enable real-time analysis and visualization through Kibana.

**Tool used:** Elasticsearch, Logstash, Kibana, Filebeat, AWS

**Details of Papers/patents:** none

**Brief description of the working environment:** During my PS-I (Practical Session-I) at the company, the working environment was truly wonderful. The atmosphere was warm and inclusive. Communication channels were open, and people were always ready to lend a hand or provide guidance whenever needed. The company's focus on teamwork and collaboration made it a joy to work together on various projects. I received regular feedback and guidance from my colleagues and mentors, which proved invaluable for my growth and learning. Throughout PS-I, the company had clear expectations from its interns to be proactive, curious, and eager to learn. I was encouraged to ask questions and seek knowledge. Overall, my PS-I experience at the company was enriching and rewarding.

**Academic courses relevant to the project:** FDSA

**Learning Outcome:** I achieved several significant learning outcomes. Initially, I gained a thorough understanding of the ELK Stack, consisting of Elasticsearch, Logstash, and Kibana, comprehending how each component contributes to log analysis. Throughout the project, I successfully set up and configured Logstash to efficiently ingest and transform log data from diverse sources, making it compatible with Elasticsearch.

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**PS-I station: K2 Cloud Pvt. Ltd. , Gurugram**

**Student**

**Name:** VIVEK SHARMA .(2021AAPS2317H)

**Student Write-up:**

**PS-I Project Title:** LAMP stack Project

**Short Summary of work done:** This project's main objective is to gain proficiency with Linux platforms and shell programming. then focusing on LAMP Stacks and Dockers. The term "LAMP stack" refers to a set of software components used to construct web applications, including the Linux operating system, Apache web server, MySQL database, and PHP programming language.. The LAMP stack was successfully implemented utilising Docker containers in this project, resulting in a scalable and adaptable environment for web development. We were able to achieve simple deployment,

component isolation, and seamless communication using VirtualBox, Docker, and Docker Compose. Stability and security were guaranteed through routine OS updates and restricted user rights. Secure access to the hosted web page was made possible by firewall rules. Overall, the ability of contemporary technology to build a reliable and effective platform for web applications was demonstrated by this containerized LAMP stack.

**Objectives of the project:** We had to host a web page using LAMP stack , docker and others

**Tool used:** Virtual box (to virtually host Ubuntu OS), vagrant (for automation), Docker( for containerization) ,PHP (programming language) ,Apache( webserver), MySQL ( for database)

**Details of Papers/patents:** NIL

**Brief description of the working environment:** NIL

**Academic courses relevant to the project:** No course had been taught to us regarding cloud computing.

**Learning Outcome:** Learn various new technology like LAMP(Linux Apache MySQL PHP) stack, Docker, docker compose, virtual box

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**PS-I station: Kairos Integrated Solutions Pvt. Ltd. , Vijayapur**

**Student**

**Name:** ANANYA SINGH .(2021A1PS2604P)

**Student Write-up:**

**PS-I Project Title:** Front End Web Development

**Short Summary of work done:** learnt about front end web development through the use of coding with html and css and figma

**Objectives of the project:** to learn about front end web development through the use of coding with html and css and figma

**Tool used:** html and css, javascript

**Details of Papers/patents:** made a report paper on psms website

**Brief description of the working environment:** amazing online working environment designed by company and instructor with regular update sessions

**Academic courses relevant to the project:** -

**Learning Outcome:** learnt how to code and make a front end webpage

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**PS-I station: Kairos Integrated Solutions Pvt. Ltd. , Vijayapur**

## **Student**

**Name:** SAKSHAM SAWHNEY .(2021A4PS3195H)

### **Student Write-up:**

**PS-I Project Title:** Frontend web development

**Short Summary of work done:** during my PS at Kairos we were divided into 2 teams one for frontend and the other for backend. I was in the frontend team and my main objective was to create the main website for the companies with various sections they had mentioned in requirements for the website.

**Objectives of the project:** Revamping the company website

**Tool used:** HTML, CSS Javascript, React.JS & bootstrap

**Details of Papers/patents:** <https://docs.google.com/document/d/1OfiT-1JY0i11gbP8WBiy-73JA3kf1HUD3Ui1Y0p8U/edit?usp=sharing>

**Brief description of the working environment:** All the people from Kairos that worked with us were very friendly they gave us enough time to learn basic concepts required for completing the project.

**Academic courses relevant to the project:** NA

**Learning Outcome:** javascript, React.js

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**PS-I station: Kairos Integrated Solutions Pvt. Ltd. , Vijayapur**

**Student**

**Name:** BURHANUDDIN MURTAZA TINWALA ,(2021A7PS2905H)

**Student Write-up:**

**PS-I Project Title:** Placement Management System

**Short Summary of work done:** Great experience with lot to learn about web development

**Objectives of the project:** To make a portal for employees of company to manage trainee for placements

**Tool used:** MERN + Tailwind CSS+ XLSX

**Details of Papers/patents:** none

**Brief description of the working environment:** Online

**Academic courses relevant to the project:** OOPS ,DBMS

**Learning Outcome:** Web development skills

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## PS-I station: Kairos Integrated Solutions Pvt. Ltd. , Vijayapur

### Student

Name: ADITYA R PATIL .(2021AAPS2230P)

#### Student Write-up:

**PS-I Project Title:** Placement Record Management System

**Short Summary of work done:** Developed and learnt a lot about Frontend Development, while working on real world projects

**Objectives of the project:** To help them make an internal record management system

**Tool used:** s/w

**Details of Papers/patents:** NA

**Brief description of the working environment:** Pretty good environment, got to learn a lot during my internship. The roadmap provided by the company was very useful

**Academic courses relevant to the project:** Computer Programming

**Learning Outcome:** Frontend Development - HTML, CSS, JS

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## PS-I station: Kairos Integrated Solutions Pvt. Ltd. , Vijayapur

### Student

Name: NAMAN KOTHARI .(2021AAPS3013H)

## **Student Write-up:**

**PS-I Project Title:** Employee management system

**Short Summary of work done:** Development of host server: The development of a host server refers to the process of setting up a server that will host the application or website. This involves configuring the server infrastructure, such as installing and setting up the necessary software, allocating resources, and ensuring security measures are in place. The host server is responsible for handling incoming requests from users and serving the application's content. 12Integration of frontend and backend through APIs: The integration of frontend and backend refers to connecting the user interface (frontend) with the server-side logic (backend) of an application or website. APIs (Application Programming Interfaces) are used to establish communication and data exchange between the frontend and backend systems. By defining APIs, the frontend can send requests to the backend, and the backend can respond with the necessary data or perform requested actions. This integration allows the user interface to interact with the underlying functionality of the application or website. JWT: JWT stands for JSON Web Token. It is a compact and self-contained way to securely transmit information between parties as a JSON object. JWTs are commonly used for authentication and authorization purposes in web applications. When a user logs in, they receive a JWT, which contains encoded information about their identity and permissions. The frontend can send this JWT with each subsequent request to the backend. The backend can then validate the JWT to ensure the authenticity and authorization of the user, allowing or denying access to certain resources or actions based on the information contained within the token.

**Objectives of the project:** The project has been designed so that the company can maintain the employee database, update it and share it with authorities. The project is designed to take login information from employee and allow HR, Senior managers and Supervisors to regulate it. Kairos Integrated solutions Pvt. Ltd., aims to build, revamp and develop robust technologies to track, enrol and increase online presence by which the company would benefit from making strong and well driven web services for clients and grow with the technological boom.

**Tool used:** S/w: HTML, CSS, VS CODE, JAVASCRIPT, POSTGRESQL, RESTful API, Postman API

**Details of Papers/patents:** NA

**Brief description of the working environment:** To be honest the company did not have much of indulgence government during the learning phase of our project. There was once that we interacted with the tech lead who was probably the mentor of our project. The director's address was on the day of commencement. Other than that we did not interact with them verbally there were few e-mail shares we used to share our own progress every week . Other than that there was merely any interaction between students and the company most other things were shared through Abhijith sir. Till date we do not know

how the company functions and operates but what I know is that the project was hands on good experience and I expect the company to have had been more interactive with the students that would have made the project much more intuitive and functional.

If I was asked today for review to company, I would not be in the condition to give more than 2 out of 5. I would request the PS division to have companies trying to make more interaction possible.

### **Academic courses relevant to the project: Computer Programming**

**Learning Outcome:** Technical Skills: Through this project, I have gained hands-on experience in using technologies such as Node.js, Express.js, and PostgreSQL for building a robust backend. Additionally, working with HTML, CSS, and JavaScript for the frontend has improved my web development skills. I have also learned how to integrate external APIs, like the Google Sheets API, to extend the system's functionality.

Database Design: Designing the database schema for the Employee Management System has provided me with insights into efficient data modeling. I have learned about database normalization, table relationships, and data indexing to optimize data storage and retrieval.

User Interface (UI) Design: Creating an intuitive and user-friendly UI for the system has taught me the importance of user experience (UX) design. I have acquired skills in organizing information, form validation, and handling user interactions to enhance usability.

Authentication and Security: Implementing user authentication using JSON Web Tokens (JWT) and password hashing with bcrypt has deepened my understanding of security best practices. I now appreciate the importance of safeguarding user data and protecting against potential vulnerabilities.

Real-World Application: Developing the Employee Management System has provided me with a real-world application of the concepts I learned in the classroom. This practical experience has deepened my understanding and made the learning more meaningful.

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### **PS-I station: Kairos Integrated Solutions Pvt. Ltd. , Vijayapur**

#### **Student**

**Name: VIVIAN PYARRY JOHN .(2021B4A43149H)**

#### **Student Write-up:**



**PS-I Project Title:** Web Development

**Short Summary of work done:** Created multiple projects on web design

**Objectives of the project:** To learn more about the real world

**Tool used:** VS code

**Details of Papers/patents:** None

**Brief description of the working environment:** Overall good experience

**Academic courses relevant to the project:** Not really

**Learning Outcome:** Html,css,js,react,tailwind

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**PS-I station: Loop Reality Private Limited , Hyderabad**

**Student**

**Name:** ADITYA MAHAJAN .(2021A7PS2715H)

**Student Write-up:**

**PS-I Project Title:** Development of online assessment platform.

**Short Summary of work done:** Small bits of coding tasks, mainly involved with testing the platform. Also, we had to fill various data banks and sheets for a few tasks.

**Objectives of the project:** Completing various tasks related to the online assessment platform.

**Tool used:** Python, Excel, VSCode,

**Details of Papers/patents:** .

**Brief description of the working environment:** Working environment is very flexible and accommodating, we were allowed to work as per our convenience. Expectations from the company were not too high, work was simple and did not require too much additional preparation or learning.

**Academic courses relevant to the project:** Data science and algorithms, Object oriented programming.

**Learning Outcome:** Increased Python proficiency.

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## **PS-I station: Loop Reality Private Limited , Hyderabad**

### **Student**

**Name:** JENIL SUNIL SHAH(2021B5A73027G)

#### **Student Write-up:**

**PS-I Project Title:** Development of programming assessment and AI for PerspectAI

**Short Summary of work done:** 1) Created question bank for the product 2) Developed formats based on different languages(programming) for the questions 3) Integration of those questions into the product

**Objectives of the project:** To develop the programming assessment section of the project

**Tool used:** Python, PostgreSQL, DynamoDB

**Details of Papers/patents:** --

**Brief description of the working environment:** Good working culture

**Academic courses relevant to the project:** Machine learning, deep learning, Artificial intelligence

**Learning Outcome:** Web scraping, AI engine(python) , SQL systems

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## PS-I station: MapmyIndia (CE Info Systems Pvt Ltd) - Marketing , New delhi

### Student

Name: KRITI JAKHORIA(2021B3TS2052P)

#### Student Write-up:

**PS-I Project Title:** Marketing of mappls app

**Short Summary of work done:** I gave presentation on my ideas of marketing of mappls app , made memes , videos and taglines for moment marketing , researched and made a list of influencers.convinced around 20 people to download mappls app .

**Objectives of the project:** To increase the number of downloads of mappls app

**Tool used:** Canva , figma ,and photoshop

**Details of Papers/patents:** No

#### **Brief description of the working environment:**

MapmyIndia, a prominent mapping and location-based services company headquartered in India, offers an enriching and dynamic working environment for its interns. As an intern at MapmyIndia, you can expect to be a part of diverse and specialized teams, such as software development, data analysis, GIS, marketing, and product management. This internship provides exceptional learning opportunities through real-world projects and exposure to cutting-edge technologies under the guidance of experienced professionals. The company fosters a collaborative and inclusive culture, encouraging interns to interact with full-time employees and collaborate on tasks. With challenging projects aligned with your skills and the company's objectives, you will gain valuable hands-on experience contributing to the organization's goals. Mentorship, training sessions, and networking opportunities further enhance your growth. While the workload might be demanding at times, MapmyIndia strives to maintain a healthy work-life balance for all its employees, including interns. As you embrace MapmyIndia's culture of innovation and customer-

centricity, this internship promises to be a transformative experience for your professional journey.

**Academic courses relevant to the project:** Principles of management

**Learning Outcome:** Learned soft skills .

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**PS-I station: MapmyIndia (CE Info Systems Pvt Ltd) - Marketing , New delhi**

**Student**

**Name:** AKSHITA PANWAR.(2021B3TS2057P)

**Student Write-up:**

**PS-I Project Title:** Mapppls App and brand - Marketing

**Short Summary of work done:** Moment marketing, social media campaigns, marketing strategies, promotional video making (6-7 videos ) , data collection and analysis, social media campaigns, jingles , taglines , innovation, power point presentation etc were part of my works . I also did a specialised research on Local Marketing and increasing local marketing. I worked on influencers impact on customers and data collection of many different types.

**Objectives of the project:** Marketing and Advertising

**Tool used:** Canva, google, video maker

**Details of Papers/patents:** -

**Brief description of the working environment:** Very good working environment. The mentors and people in office were very helpful and informative. The learning proved to be fruitful

**Academic courses relevant to the project:** Principle of Management, Fundamental of finance

**Learning Outcome:** Marketing strategies, video making, online marketing, moment marketing, data analysis

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## PS-I station: Monocept Consulting Pvt Ltd. , Hyderabad

### Student

**Name:** NALLABOLU SREETHI REDDY .(2021A7PS0020H)

### Student Write-up:

**PS-I Project Title:** Clone a banking website (full stack web development )

**Short Summary of work done:** The online banking app was fully implemented with a focus on creating user-friendly interfaces, smooth navigation, and a feature-rich dashboard for financial information. During development, we prioritized account management, transaction processing, and optimizing user experience. My primary role involved dashboard integration , email template configuration ,capturing and displaying validation errors etc .it was a fulfilling and gratifying journey overall.

**Objectives of the project:** to develop a user friendly banking interface .

**Tool used:** HTML ,CSS , javascript ,java . spring boot

### Details of Papers/patents: -

**Brief description of the working environment:** Monocept consulting pvt ltd is a design based software development company .Monocept specializes in "Solving Complex Business Problems" for customers. The senior technology leadership comprises several senior solution architects and software engineers who are deeply passionate about "Architecting Future Ready Software solutions" in varied technologies.

they encourage open and transparent communication at all levels. they strived to be supportive, approachable, and empathetic, providing guidance, mentorship, and recognition for our efforts.

### **Academic courses relevant to the project: -**

**Learning Outcome:** the banking website is built with a login page , sign up page , and a dashboard as its main we pages .  
gained some basic knowledge on how to create such pages and link them using APIs in the backend

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### **PS-I station: Monocept Consulting Pvt Ltd. , Hyderabad**

#### **Student**

**Name:** HASINI VEMULA .(2021A8PS1960H)

#### **Student Write-up:**

**PS-I Project Title:** Clone a banking website (full stack web development )

**Short Summary of work done:** Complete implementation of the online banking app was done . We concentrated on user-friendly interfaces, seamless navigation, and a feature-rich dashboard for financial information. Account management, transaction processing, and user experience were given top priority during development.my role revolved around developing the business logic for creating bank accounts and its authentication and management etc.Overall it was a rewarding journey .

**Objectives of the project:** to develop a user friendly banking interface .

**Tool used:** HTML ,CSS ,javascript , java , springboot

#### **Details of Papers/patents: -**

**Brief description of the working environment:** Monocept consulting pvt ltd is a design based software development company .Monocept specializes in "Solving Complex Business Problems" for customers. The senior technology leadership comprises several

senior solution architects and software engineers who are deeply passionate about "Architecting Future Ready Software solutions" in varied technologies. they encourage open and transparent communication at all levels. they strived to be supportive, approachable, and empathetic, providing guidance, mentorship, and recognition for our efforts.

### **Academic courses relevant to the project: -**

**Learning Outcome:** The banking website is built with a login page , sign up page , and a dashboard as its main we pages .  
gained some basic knowledge on how to create such pages and link them using APIs in the backend

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## **PS-I station: Monocept Consulting Pvt Ltd. , Hyderabad**

### **Student**

**Name:** JAINAM HEMANI .(2021AAPS0029P)

### **Student Write-up:**

**PS-I Project Title:** Banking Website Clone: Email Verification and Authentication

**Short Summary of work done:** We had worked on full stack web development. Initially we started with a basic project of creating a login page. This was for jut implementing our learnings from the frontend courses. Then we were assigned backend development courses which we had used to create the banking website clone.

**Objectives of the project:** Create a clone of a Banking Website which can be able to handle an overload of 10,000 active users at once

**Tool used:** Softwares Used: VS Code, IntelliJ, Eclipse, MySQL

**Details of Papers/patents:** None

**Brief description of the working environment:** The working environment was very good. Employees of the company were very helpful and were always available for helping

out and were very kind. Learning during PS 1 was that I was able to learn full stack web development.

**Academic courses relevant to the project:** OOPS, HTML, CSS, JAVA, JavaScript, Angular, MySQL

**Learning Outcome:** I learnt Javascript and Angular 11 for frontend web development. I also learnt a lot in the JAVA course, OOPS course and the Spring Boot course for backend development as well.

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**PS-I station: Monocept Consulting Pvt Ltd. , Hyderabad**

**Student**

**Name:** PRAKASH DUGYALA .(2021AAPS0654H)

**Student Write-up:**

**PS-I Project Title:** Full stack Web-Development : handling Transaction Logic

**Short Summary of work done:** In the first three to four weeks of time I've gone from not having any idea about the web-development to being comfortably able to design and edit front-end webpages. I've learnt three new languages and made a habit of learning new things via searching for answers using the documentation available online. Spring framework. SpringBoot helped me see how small and unrelated things are connected and built so as to be able to ensure fluid communication with the other working parts to create a smooth-running system.

**Objectives of the project:** Developing the Business logic for transitions for an online Banking interface.

**Tool used:** Vs Code ,IntelliJ, Tomcat, eclipse.

**Details of Papers/patents:** none

**Brief description of the working environment:** A number of senior solution architects and software engineers make up the



technical staff at Monocept, and they all share a strong passion for "Architecting Future Ready Software solutions" across a range of technologies. Everyone is friendly and available willing to help.

**Academic courses relevant to the project:** CS:f111(C-programing) and OPSS

**Learning Outcome:** Learnt HTML, CSS, JS, JAVA, Spring framework.

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**PS-I station: Monocept Consulting Pvt Ltd. , Hyderabad**

**Student**

**Name:** SRIABHIGNA YELLAPRAGADA .(2021AAPS1518H)

**Student Write-up:**

**PS-I Project Title:** EPF Automation using Low-Code Platforms

**Short Summary of work done:** The automation of the EPF form-filling is a project aimed at streamlining and simplifying the data collection procedures for employees. The project utilises Power Automate, Microsoft Forms, Excel, and Word to automate the EPF form, ensuring accuracy, saving time, and improving overall efficiency. The project begins with developing a customised Microsoft Form designed to collect EPF data in a structured manner. Implementing Power Automate is crucial in automating the data transfer from Forms to an Excel sheet. The flow is divided into sections to handle different aspects of data processing. To ensure a comprehensive and structured document, content control boxes are incorporated within the Word file to assign designated areas for the form data output. The project significantly improves efficiency, accuracy, and user experience. Statistical analysis demonstrates a remarkable time saving of 25 minutes per form, leading to substantial time savings when scaling up to multiple forms.

**Objectives of the project:** The goal is to automate the procedure of filling an Employee Provident Form using automation tools to save time and make the task easier.

**Tool used:** Software

**Details of Papers/patents:** NA

**Brief description of the working environment:** Monocept had a very good working environment. The mentors appointed were really insightful and helpful and helped us make the most out of PS-1. Monocept gave huge scope for learning.

**Academic courses relevant to the project:** Principles of Economics

**Learning Outcome:** Learnt how to work with Power Query, Power Automate, Power bi and Excel

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**PS-I station: National Centre for Polar and Ocean Research (NCPOR)  
Online , Goa**

**Student**

**Name:** RACHIT SINGLA .(2021B4A71098P)

**Student Write-up:**

**PS-I Project Title:** Development of a proposal submission and reviewers website portal

**Short Summary of work done:** This project involves developing a proposal submission and reviewer website wherein the project investigators can submit their proposals under different domains and authors can review these proposals and pass comments and accept or reject the proposal. The authorization and confirmation process is done through the website and email verification. This website would make the process quick and easy, and all the information can be obtained rapidly on demand.

**Objectives of the project:** Objective of the project is to build a proposal submission and reviewers website for NCPOR scientists wherein project investigators can submit their proposals and coordinators can then review them and then accept or reject the submitted proposals

**Tool used:** Frontend development - HTML , CSS , JavaScript , React , Bootstrap ; Backend Development: Node js , PHP, express , , django; Databases : MongoDB , mySQL

**Details of Papers/patents:** N.A

**Brief description of the working environment:** I had a very engaging and productive PS-1 experience. My industry and faculty mentors were beneficial and guided me at different stages. The PS-1 not only gave me a flavor of industry work but also enhanced my communication skills, confidence and ability to work in a team. It was a good opportunity to work at a research lab just after my second year and gain some professional experience. In conclusion, I got a better clarity on hands on implementation and also would like to appreciate this learning through live project experience.

**Academic courses relevant to the project:** I got to enhance my full stack web development skills by building a professional website for NCPOR scientists.

**Learning Outcome:** The learning outcome includes gaining more experience in Full Stack Web Development (Front-end +Back-end web development with databases). I got a good opportunity to use my technical skills in building a full stack professional web application for the users of NCPOR . Also PS1 helped me to enhance my communication and presentation skills .

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**PS-I station: National Centre for Polar and Ocean Research (NCPOR)  
Online , Goa**

**Student**

**Name:** MS. AKSHATA KHANDELWAL .(2021B4A71700P)

**Student Write-up:**

**PS-I Project Title:** Sea ice variability in Arctic sea

**Short Summary of work done:** I have made various plots on matlab of sea surface temperature and sea ice variability to see th changes and describe future prediction

**Objectives of the project:** To see the trend of sea ice concentration and predict about future

**Tool used:** Matlab

**Details of Papers/patents:** None

**Brief description of the working environment:** The work environment is nice. I have online meet with my mentor every Friday

**Academic courses relevant to the project:** None

**Learning Outcome:** Learnt about the changing temperature over year and it's effect on artic sea ice concentration

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**PS-I station: National Centre for Polar and Ocean Research (NCPOR)  
Online , Goa**

**Student**

**Name:** BIDWAI VARAD LAXMIKANT .(2021B5A72345P)

**Student Write-up:**

**PS-I Project Title:** Sea-ice variability in Antarctic sea

**Short Summary of work done:** Plotted the satelite data and analysed regions of temperature variation and sea ice variability

**Objectives of the project:** Studying sea ice and temperature in the sea.

**Tool used:** MATLAB

**Details of Papers/patents:** No

**Brief description of the working environment:** Online intern.

**Academic courses relevant to the project:** No

**Learning Outcome:** Studied sea ice in the Antarctic sea. Matlab graph plotting learnt.

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**PS-I station:** North Eastern Space Applications Centre Online , Umiam

## **Student**

**Name:** VENKATAVIHAN DEVAKI .(2021A7PS0429P)

### **Student Write-up:**

**PS-I Project Title:** Assessing the Performance of Convolutional Neural Networks with Gradient Descent and Genetic Algorithm Optimizers: A Case Study on Predicting Rainfall over North East India

**Short Summary of work done:** Rainfall prediction holds great importance in many sectors, and is conventionally numerically driven. However, these methods have limited accuracy for long range forecasting. Using Deep Learning by making use of the powerful U-Net architecture to test these methods. Training was done using the ECMWF's ERA5 land-cover daily-aggregate dataset. Genetic Algorithms were tested for their scope in improving results. Our results showed that 6 layer U-Net with Adam as the optimiser was the most effective. We found that Genetic Algorithms did not bring any improvement to the results and more testing is needed to determine its usefulness. Forecasting rainfall also showed high losses but there is evidence that with more input channels, the losses could reduce.

**Objectives of the project:** To enhance the accuracy of rainfall prediction by leveraging Neural Networks.

**Tool used:** Google Colab, Google Earth Engine, Python (GEEMap, Rasterio, NumPy, Pandas, Matplotlib, SciKit Learn, Tensorflow, PyTorch, Torchvision, Pygad)

**Details of Papers/patents:** Paper publication efforts are in progress

**Brief description of the working environment:** Since our station was online, all of our meetings happened via Google Meet. We had daily meetings most of the time, with the timings according to our convenience. Our mentor was extremely accommodating and helpful. Working environment was highly learning oriented and comfortable. Expectations from NESAC's side were to explore the given optimization methods to an extent where we could either directly use the best model for rainfall prediction, or if that wasn't achieved, to gain an understanding of what Deep Learning architectures would work best with the available data. We were able to accomplish quite a bit in these aspects. We learnt how best to process our data to achieve results and a lot of understanding about Deep Learning and how different aspects of it work at a ground level. As of July 2023, we are in the process of working on a research paper using our findings for possible publication.

**Academic courses relevant to the project:** Courses in BITS Pilani: Deep Learning, Machine Learning  
Off-campus courses: Machine Learning specialization by Andrew Ng on Coursera

**Learning Outcome:** A deep understanding of the implementation of CNNs, various gradient descent optimization techniques and genetic algorithms. Use of major NN Python libraries like PyTorch, PyGAD, SciKit Learn and others like NumPy and Matplotlib. An understanding of how a research project is undertaken through experience and mentorship.

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**PS-I station: North Eastern Space Applications Centre Online , Umiam**

**Student**

**Name: NIRMAL GOVINDARAJ(2021A7PS0441G)**

**Student Write-up:**

**PS-I Project Title:** Assessing the Performance of Convolutional Neural Networks with Gradient Descent and Genetic Algorithm Optimizers: A Case Study on Predicting Rainfall over North East India

**Short Summary of work done:** Our goal was to try different methods to achieve the best accuracy in predicting rainfall. Initially we spent time on extracting the dataset from

Google Earth Engine and data preprocessing. Then we wrote our own UNet's in PyTorch and tried various optimizers (Adam, Adadelata, Rprop, etc.) and also tuned hyperparameters (learning rate, momentum) to see which one gave the best results. After working on this for about a month, the online batch split into two teams. My team was tasked with seeing whether we could achieve better results using Genetic Algorithms, which is a natural selection based method of finding the best hyperparameter setting. We also tried different solutions to minimize overfitting of the models such as dropout, kaiming initialization, batch norm etc. Until now we were just randomly searching for the best settings, but Genetic Algorithms was a more structured and novel way to do it. Team 2 worked with LSTM's to see if they could achieve good results in rainfall forecasting. Throughout the entire process we worked on Google Colab with access to Colab Pro Plus which gave premium GPU's and more compute units to perform our model runs.

**Objectives of the project:** Achieve good accuracies to predict rainfall in the North East using UNet's and then further improve accuracies using Genetic Algorithms, and then compare it with applying LSTM's

**Tool used:** Google Colab, Google Earth Engine, PyTorch, Numpy, PyGAD, Mathplotlib

**Details of Papers/patents:** We continued after the PS-1 ended to try for a journal publication. Lot of the work was done during the PS-1 and we were given the option by our mentor on whether to continue and try for a publication. The reason we were able to continue for publication w

**Brief description of the working environment:** The working environment for the online side was very balanced and comfortable. The NESAC mentor was very friendly and skilled and working hours were very flexible. We could work at our own pace, but in order to get something out of it we had to work regularly and show results. Our mentor was very helpful and responsive in teaching us new concepts or setting up resources to help train models. She was also very skilled and helped us debug our codes when we were stuck. We learnt how to work in a team and to also communicate your work effectively via presentations.

**Academic courses relevant to the project:** CP (for programming skills), M2 (Lot of the math behind involves linear algebra), Probability and statistics (Helps understand theory behind ML)

**Learning Outcome:** We learnt how to extract datasets from Google Earth Engine and used Google Colab and Colab's Jupyter notebooks. We learnt how to use the PyTorch Deep learning library and used it to implement our own UNet's which are a modified version of the standard CNN. We also became familiar with Numpy as most of our data cleaning and pre processing was done using Numpy. We also learnt the theory behind how CNN's work and hyperparameter tuning to achieve better accuracies. We learnt how to use the PyGAD library to implement Genetic algorithms while also understanding the theory behind it. Overall we came away with a good understanding of how to use ML to solve real world problems.

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## PS-I station: North Eastern Space Applications Centre Online , Umiam

### Student

Name: YASH RAJESH BHISIKAR(2021A7PS0483G)

#### Student Write-up:

**PS-I Project Title:** convolutional neural networks with gradient decent and genetic algorithm optimizers. A case study on predicting rainfall over northeast India

**Short Summary of work done:** we fetched data from Google Earth Engine, did some pre-processing and modified a regular UNet for regression. We did a lot of hyperparameter tuning and trained with different layers. We also tried to enhance results by using genetic algorithms and this had to read up and investigate several methods about them.

**Objectives of the project:** To develop machine learning models for weather forecasting and improve upon the results of numerical simulations

**Tool used:** Pytorch, Python, Matplotlib, Google Earth Engine, Rasterio, PyGad, Colab

**Details of Papers/patents:** None

**Brief description of the working environment:** Very student friendly, the mentor was really helpful and cooperative and readily available for any doubts. They were ready to adjust the pace of the project with our learning speed, and gave enough work to keep us busy for the day and yet not feel burdened enough.

**Academic courses relevant to the project:** None

**Learning Outcome:** Getting familiarised with Machine Learning, Deep Learning and Remote Sensing. Developing models, saving stats and presenting them in readable formats, data cleaning



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## PS-I station: North Eastern Space Applications Centre Online , Umiam

### Student

Name: SHANAY SAWAN MEHTA(2021A7PS1322G)

#### Student Write-up:

**PS-I Project Title:** Predicting Rainfall using Multiple Deep Learning Models with Back Propagation based Optimisation

**Short Summary of work done:** Our major focus was on using the U-Net architecture for predicting rainfall. We also used other deep learning algorithms including LSTM to get a better perspective. The developed rainfall prediction model was validated and evaluated using rigorous statistical metrics, such as root mean square error (RMSE) and coefficient of determination (R-squared).

**Objectives of the project:** Our aim was to develop and implement a comprehensive rainfall prediction model for the northeastern states of India using advanced machine learning techniques.

**Tool used:** Pytorch, Google Earth Engine

**Details of Papers/patents:** NA

**Brief description of the working environment:** The working environment was great. Our mentor had daily meetings with us to clear our doubts. We were given sufficient time for learning the concepts and implementing them

**Academic courses relevant to the project:** NA

**Learning Outcome:** Machine Learning, Deep Learning, Image Processing, Convolutional Neural Networks

## PS-I station: North Eastern Space Applications Centre Online , Umiam

### Student

Name: AYUSH CHETAN GHATALIA(2021A7PS2571G)

#### Student Write-up:

**PS-I Project Title:** Predicting Rainfall using Multiple Deep Learning Models with Back Propagation based Optimisation

**Short Summary of work done:** We used the U-Net architecture to predict rainfall. The group was then split into two teams where we worked on deep learning algorithms including LSTM. The model was then evaluated using statistical metrics, such as RMSE(Root Mean Squared Error) and R-Squared( Coefficient of Determination).

**Objectives of the project:** Our aim was to develop a rainfall prediction model for North Eastern states of India using machine learning and deep learning techniques.

**Tool used:** Pytorch

**Details of Papers/patents:** NA

**Brief description of the working environment:** The working environment was great. Our mentor was very friendly and we had daily meetings to clear doubts if any. We were given enough resources to learn the concepts and implement them.

**Academic courses relevant to the project:** NA

**Learning Outcome:** Machine Learning, Deep Learning, Image Processing, Convolutional Neural Networks

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## PS-I station: North Eastern Space Applications Centre Onsite , Umiam

## Student

Name: ARYAN SAHU(2021A7PS2832G)

### Student Write-up:

**PS-I Project Title:** Semantic Segmentation of Flooded regions of North Eastern region using Semi-Supervised Learning.

**Short Summary of work done:** We present a novel approach to detect and delineate flooded areas of the North East by leveraging the OmbriNet and inculcating Semi-Supervised Learning in it. As climate change continues to pose significant risks to global ecosystems, it is crucial to accurately and early identify the impacts of extreme weather events, particularly floods, on human activities. We are utilizing the multimodal dataset, consisting of several bitemporal images obtained from synthetic aperture radar and multispectral sensors (Sentinel-1C and Sentinel-2A) provided by the Google Earth Engine. Ground Truths for the semi-supervised training(labeled data) is obtained using semi-AI annotating tool like IRIS(Intelligently Reinforced Image Segmentation). This work emphasizes the importance of early and accurate flood delineation, offering environmental, economic, and societal benefits while aiding relief efforts in flood-affected regions of North East.

**Objectives of the project:** Segment Flood using Semi-supervised Learning model.

**Tool used:** Tools used were-Google Earth engine, QGIS, Python, Tensorflow, keras, Javascript

**Details of Papers/patents:** There is a possibility of a paper. Details are in process of compilation.

**Brief description of the working environment:** Working environment at NESAC was very professional with our mentor being very friendly and supportive. We were exposed to the daily operations, culture, and workflows of the company.

We were expected to be eager to learn, adaptable, and willing to take on responsibilities. We had the opportunity to apply theoretical knowledge gained in academic settings to practical scenarios. We learnt how to work collaboratively within a team, improve problem-solving skills, and develop a deeper understanding of their chosen industry. Also Umiam as a place is very beautiful. The overall stay here was very comfortable. The level of work done here at NESAC is remarkable especially in the field of Space Science Technology.

**Academic courses relevant to the project:** CS-F111-Computer Programming.  
CS-211-Data Structures and Algorithms  
CS-213-Object Oriented Programming

**Learning Outcome:** I learnt about various algorithms pertaining to Machine Learning and Deep Learning. I got familiar with how Image processing works. Since the model developed is a semi-supervised model, got to know to about it. Also used different data analytics approaches to test the model.

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## PS-I station: North Eastern Space Applications Centre Onsite , Umiam

### Student

**Name:** SAKSHAM ATTRI .(2021A7PS2950H)

### Student Write-up:

**PS-I Project Title:** ZeroShot Multi-Class Semantic Segmentation for UAV and Satellite Images

**Short Summary of work done:** As complete newbies to ML, we began with learning about python dev in general. After we were comfortable enough, we experimented with some AI assisted segmentation tools and popular GIS software. We finally used a specialized version of Meta AI's Segment Anything Model specialized for GIS applications: sam-geo. Grounding DINO was used in conjunction to finally develop the tool which can segment images using simple text prompts.

**Objectives of the project:** To develop a tool for multi-class segmentation of UAV and Satellite imagery for aid in disaster mitigation

**Tool used:** Python and relevant libraries, Google Earth Engine, IRIS, QGIS

**Details of Papers/patents:** NA

**Brief description of the working environment:** Work Environment was good, expected better internet though

**Academic courses relevant to the project:** CS F111, CS F213, CS F211

**Learning Outcome:** Introduction to ML, DL and Image Processing

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## PS-I station: North Eastern Space Applications Centre Onsite , Umiam

### Student

Name: KRISH MANTRI .(2021B3A71732H)

#### Student Write-up:

**PS-I Project Title:** Predicting Urban Expansion in Kamrup Metropolitan District using CA-Markov Model and XGBoost XAI Model

**Short Summary of work done:** Our research offers a comprehensive framework that combines the CA-Markov model, XGBoost algorithm, and XGBoost XAI model to predict urban expansion in a rapidly developing region. By incorporating both simulation-based and machine learning-based approaches, the framework provides accurate predictions while also offering interpretability and insights into the underlying factors driving urban growth. This work has the potential to assist urban planners and policymakers in making informed decisions for sustainable urban development in the Kamrup Metropolitan District and similar regions.

**Objectives of the project:** The study aims to contribute to the field of urban planning and management by providing a comprehensive approach that combines the CA-Markov model and the XGBoost XAI model's strengths. The most accurate results can be used to draw conclusions based on a comparison of the two models' efficacy. Local authorities, policymakers, and urban planners can make informed decisions regarding infrastructure development, resource allocation, and land-use regulations with the help of the proposed framework's predictive capabilities.

**Tool used:** QGIS, Google Collab, Google Earth Engine, Python Libraries; NumPy, Pandas, Matplotlib, Gdal

**Details of Papers/patents:** No paper

**Brief description of the working environment:** My PS-I experience was highly rewarding. The work environment was productive and conducive to growth and the company's reasonable expectations and supportive work environment enabled me to

learn and develop professionally. Throughout the internship, I engaged in various tasks and projects that allowed me to apply my academic knowledge in a practical setting. This hands-on experience bridged the gap between theory and practice, enhancing my understanding and skills. This internship provided practical exposure, enhanced my skills, and prepared me for future endeavors in my field.

**Academic courses relevant to the project:** CS F111: Computer Programing

**Learning Outcome:** I learnt about the basics of machine learning and the use of various python libraries related to it. I have gained proficiency in utilizing geospatial data analysis tools such as Google Earth Engine and QGIS. These platforms have provided me with the necessary skills to effectively work with geospatial data and extract valuable insights from it.

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**PS-I station: North Eastern Space Applications Centre Onsite , Umiam**

**Student**

**Name:** ADI MUKHERJEE .(2021B5A70776P)

**Student Write-up:**

**PS-I Project Title:** Prediction of Urbanization Using CA Markov Model and XAI XGBoost Model

**Short Summary of work done:** We created the a dataset on relevant variables through relevant sources. Then coded and created a model. Trained it, tested it, deployed it for predicting of Urbanization in East Kamrup Metro District in 2031.

**Objectives of the project:** Prediction of Urbanization.

**Tool used:** R, Python, QGIS, Google Earth Explorer.

**Details of Papers/patents:** We are almost ready to publish but our mentor at NESAC has asked us to go to a conference first.

**Brief description of the working environment:** You will get what you wish for.

**Academic courses relevant to the project:** ML, AI, Image Processing, CP.

**Learning Outcome:** AI/ML, Big Data, Data preprocessing, Data Handling, Python, R, QGIS, Earth Explorer.

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**PS-I station: North Eastern Space Applications Centre Onsite , Umiam**

**Student**

**Name:** KOTHA SAI VARA PRASAD .(2021B5A71541P)

**Student Write-up:**

**PS-I Project Title:** Predicting Urban Expansion in Kamrup District using CA-Markov Model and XGBoost XAI Model: A Data-Driven Approach

**Short Summary of work done:** We have predicted the expected urban cover of Kamrup District in 2031 using 4 timestamps of previously urbanized data. We have used two approaches for predictions i.e, CA Markov and XGBoost XAI and compared the results.

**Objectives of the project:** To predict urbanization in Kamrup District, Assam using ML.

**Tool used:** QGIS, Google Colab, Python

**Details of Papers/patents:** NA

**Brief description of the working environment:** The working environment was very good. The mentor assigned helped us a lot throughout the project. We were given time to learn about things which we were not aware of and there was not much pressure on us. I have learnt lot of new things in this PS.

**Academic courses relevant to the project:** MATH F424 (Applied Stochastic Processes), BITS F464 (Machine Learning)

**Learning Outcome:** Using QGIS, Python, Markov Analysis, Basic Machine learning, Report writing, Communication skills

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**PS-I station: Northcorp Software Pvt. Ltd. , Gurugram**

**Student**

**Name: SRICHARAN REDDY BOLLAMPALLI .(2021A7PS0379H)**

**Student Write-up:**

**PS-I Project Title:** face recognition app

**Short Summary of work done:** developed a python script that implemented face\_recognition library in python and used to encode function to store encodings of images and compare with the encoded input image when given and identify the individual as well as collect all images containing that individual

**Objectives of the project:** build an application that is capable of recognizing people in a given photograph and compare with photographs stored in a database and collect all photographs containing that individual.

**Tool used:** python

**Details of Papers/patents:** none

**Brief description of the working environment:** the commitment from the company's side was very bad and throughout the ps we had only 2 meets with the company

**Academic courses relevant to the project:** none

**Learning Outcome:** familiarity with openCV and other python libraries such as OS.



**PS-I station: Northcorp Software Pvt. Ltd. , Gurugram**

**Student**

**Name: DANDWATE ADITYA PRASAD .(2021A7PS0505P)**

**Student Write-up:**

**PS-I Project Title:** Labelling of group photos

**Short Summary of work done:** Just used the face-recognition package (installed using pip) and used its api to get facial encoding then matched it with others using a variety of parameters

**Objectives of the project:** To identify all the people in a group photo based on their submitted photographs

**Tool used:** Python, face-recognition

**Details of Papers/patents:** N/A

**Brief description of the working environment:** Zero communication from company, vague project title, no technical support or help provided for anything and neither was the project ever outlined.

**Academic courses relevant to the project:** N/A

**Learning Outcome:** Not much, some amount of ml and python learning if you are not familiar, else nothing.

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**PS-I station: Northcorp Software Pvt. Ltd. , Gurugram**

**Student**

Name: SANJEEV MALLICK .(2021A7PS2217P)

### Student Write-up:

**PS-I Project Title:** Face Recognition System

**Short Summary of work done:** The work done during PS-1 was quite interesting and valuable for me. I got to learn many different techstacks and their technical know how as well. The project domain was related to Machine learning, so I used this as an opportunity to learn various Machine learning algorithms. The PS also helped me explore my strengths and weaknesses in various domains. The GD and discussions in the meetings helped me to improve my speaking skills as well.

**Objectives of the project:** To detect faces using artificial intelligence and machine learning.

**Tool used:** Python, Pycharm(IDE), AI, ML, CV, VS-Code, Tkinter

**Details of Papers/patents:** NA

**Brief description of the working environment:** The PS station was online in nature. The discussions were very informative and it was a great experience working here. Everything was conducted as expected.

**Academic courses relevant to the project:** Data Science

**Learning Outcome:** Python, Computer Vision, Deep Learning, Artificial Intelligence, Machine Learning, Tkinter(for GUI) and various python libraries like Numpys and Pandas.

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**PS-I station: Northcorp Software Pvt. Ltd. , Gurugram**

### Student

Name: DARSH NAYAK .(2021A7PS2306H)

## **Student Write-up:**

**PS-I Project Title:** Face Recognition System

**Short Summary of work done:** This was an individual project. This project is supposed to be a small part of one of the company's applications under development at that time. I learned a lot about image processing and face recognition using OpenCV, Dlib and different classifiers/algorithms that are specific for these computer vision activities.

**Objectives of the project:** Create a face recognition system that prints out the list of names of all the people present in a group photo based on the individual images of people present in a database.

**Tool used:** OpenCV, Python, Face\_recognition libraries, Dlib

**Details of Papers/patents:** None

**Brief description of the working environment:** Working environment was comfortable, we had meet with the PS faculty and company mentor once every week to give a status update. There weren't many expectations from the company side as the project was abstract and not something that is taught but something that you learn on your own but they were eager to see what we were able to come up with. All the evaluations were conducted on time and the learning was crucial as I wasn't much familiar with Python before but now I can confidently pursue courses like Machine Learning which require being atleast basic knowledge of Python.

**Academic courses relevant to the project:** ML might be somewhat relevant.

**Learning Outcome:** Python, OpenCV, Image Processing, and computer deep vision.

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**PS-I station: Northcorp Software Pvt. Ltd. , Gurugram**

## **Student**

**Name:** SHAH ADITYA ARJAVBHAI(2021A7PS2454G)

## **Student Write-up:**

**PS-I Project Title:** Face Recognition System

**Short Summary of work done:** We were asked to make a face recognition system which will recognize individuals from a group photo.

**Objectives of the project:** To make a face recognition system using Python

**Tool used:** Python and its open source libraries

**Details of Papers/patents:** None

**Brief description of the working environment:** More than adequate time was given to complete the assigned work

**Academic courses relevant to the project:** The ones that are ML related

**Learning Outcome:** Python, basics of ML

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**PS-I station: Northcorp Software Pvt. Ltd. , Gurugram**

**Student**

**Name:** MANTHAN CHIRAG PATEL .(2021A7PS2691H)

**Student Write-up:**

**PS-I Project Title:** Face detection and Recognition Software

**Short Summary of work done:** We had to implement and train a face detection model. The trained model will be able to recognize the already present faces in the database.

**Objectives of the project:** To detect faces from a group and match it with a database already present.

**Tool used:** Python, OpenCV, Face recognition modules and dlib

**Details of Papers/patents:** none

**Brief description of the working environment:** Working environment was very good and also the BITS Faculty mentor allotted to us was very cooperative and understanding.

**Academic courses relevant to the project:** DBS, DSA

**Learning Outcome:** I was able to learn python and also enhance and improve my knowledge with ML and DL technologies.

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**PS-I station: Northcorp Software Pvt. Ltd. , Gurugram**

**Student**

**Name:** VINAMRA MAHAJAN .(2021A7PS2695P)

**Student Write-up:**

**PS-I Project Title:** Face Recognition model

**Short Summary of work done:** Used face recognition module to incorporate the required task

**Objectives of the project:** Incorporate face recognition

**Tool used:** Python

**Details of Papers/patents:** Nil

**Brief description of the working environment:** Online PS so no working environment. Expect nothing from the company, didn't give the work on time, didn't answer emails, even ignored the mails from FIC. Our PS mentor was analyst, had nothing to do with our intern role. He didn't even know the task we were given. They just gave a vague idea of project and we were expected to submit in a month time.

**Academic courses relevant to the project:** Nil

**Learning Outcome:** Python libraries

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**PS-I station: Northcorp Software Pvt. Ltd. , Gurugram**

**Student**

**Name:** ACHYUT DEDANIA(2021A7PS2807H)

**Student Write-up:**

**PS-I Project Title:** Face Recognition System

**Short Summary of work done:** During the Practice School - I (PS-I), significant progress was made on the face recognition system project. Key accomplishments include collecting and curating a diverse dataset of facial images. Algorithms for face detection, feature extraction, and matching were developed and optimized for improved accuracy and efficiency. Deep learning techniques, such as convolutional neural networks (CNNs), were implemented to enhance face recognition performance. The system was rigorously evaluated using various metrics to assess its accuracy and performance across different scenarios and conditions. Ethical considerations and privacy concerns were taken into account, with measures implemented to ensure privacy preservation and responsible data usage. Real-world testing validated the system's effectiveness in practical applications, such as access control or attendance tracking. Throughout the project, detailed documentation was maintained, documenting methodologies, findings, and progress. Overall, as an individual project, significant achievements were made in dataset preparation, algorithm development, deep learning implementation, performance evaluation, ethical considerations, real-world testing, and comprehensive documentation, laying a strong foundation for further advancements in the face recognition system.

**Objectives of the project:** The Objective of the project was to identify individuals present in a group photo.

**Tool used:** 1. Hardware: Apple Macbook Pro with M1 chip. 2. Software: a. Programming languages like Python. b. OpenCV for computer vision tasks. c. Deep learning frameworks such as TensorFlow, PyTorch, or Keras. d. Integrated Development Environments (IDEs) like Ju

## Details of Papers/patents: -

**Brief description of the working environment:** During the PS-I at Northcorp Software Pvt. Ltd., the collaborative working environment focused on fostering growth and learning. The company expected active engagement, effective contribution, and adherence to project timelines. PS-I provided hands-on experience in computer vision, machine learning, and deep learning. It improved problem-solving, communication, and teamwork skills. The face recognition system project emphasized ethical considerations, privacy preservation, and awareness of biases. Overall, PS-I at Northcorp Software Pvt. Ltd. offered a valuable learning experience in a professional setting.

**Academic courses relevant to the project:** Machine Learning, Deep Learning

**Learning Outcome:** The major learning outcomes from a face recognition system project include:

1. Technical skills in computer vision, machine learning, and image processing.
2. Data collection, curation, and preparation.
3. Algorithm development, optimization, and performance evaluation.
4. Understanding of ethical considerations and privacy implications.
5. Real-world applications and practical use cases.
7. Problem-solving and troubleshooting abilities.
8. Awareness of bias and fairness in machine learning.

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**PS-I station: Northcorp Software Pvt. Ltd. , Gurugram**

## Student

**Name:** SHIVANSH MISHRA(2021A8PS2844G)

## Student Write-up:

**PS-I Project Title:** FACE RECOGNITION SYSTEM USING CONVOLUTIONAL NEURAL NETWORK (CNN)

**Short Summary of work done:** Identifying people in photos using Python and Neural Networks.

**Objectives of the project:** The objective is to leverage computer vision techniques and ML algorithms using Python language to extract meaningful features from individual images, establish the relationship between these features and corresponding names, and predict the identities of people in group photos.

**Tool used:** SVM [Support Vector Machines], PCA [Principal Component Analysis], LDA [Linear Discriminant Analysis], Kernel methods and Trace Transforms.

**Details of Papers/patents:** No

**Brief description of the working environment:** The experience here is nice. We got exposure of how corporate world works at an early stage. The learning experience was fruitful

**Academic courses relevant to the project:** AI, ML

**Learning Outcome:** Being thorough with concepts of libraries of python, neural networks, dummy database etc

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**PS-I station: Northcorp Software Pvt. Ltd. , Gurugram**

**Student**

**Name:** SURAJ PAL .(2021B2A72755P)

**Student Write-up:**

**PS-I Project Title:** Face Recognition and Tagging

**Short Summary of work done:** The objective was to create an intelligent and efficient system which can identify and tag people from their group photos by comparing them with their already saved individual photos showing clear and visible face. I implemented this feature by making a backend system in Python programming language using Flask framework, openCV-python and face recognition AI/ML modules with few other dependencies. I created two programmes: One was server and other was client for demonstration purpose.



**Objectives of the project:** Identify and mark names of people present in a group photo based on data provided. Project was targeted towards professional photographers

**Tool used:** Python, Flask, OpenCV and face\_recognition ML modules, VS Code Editor.

**Details of Papers/patents:** none

**Brief description of the working environment:** My PS1 station was online, therefore we used to have regular meetings with our faculty incharge and station mentor. Work environment was not hectic. We had all our evaluative components online at regular intervals. Project was satisfactory but i was expecting something better. I gained knowledge about industry environment, cooperation and got confidence in public speaking along with brief knowledge of machine learning tools.

**Academic courses relevant to the project:** Computer Programming

**Learning Outcome:** Backend Development and knowledge about Machine Learning Models.

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## **PS-I station: OnFinance - IT , Bengaluru**

### **Student**

**Name:** PRIYANKA RANJAN .(2021A3PS2735H)

### **Student Write-up:**

**PS-I Project Title:** Refining Open Pre-trained Transformer Language Models via Fine-tuning

**Short Summary of work done:** My work revolved around the process of fine-tuning Large Language Models in order to improve the model's accuracy and performance. Knowledge about the OPT models and the QLora framework helped me gain better understanding of the intricacies of the fine-tuning process. The second part delved into the reproduction of research results, the examination of Twitter mood's influence on stock market sentiment, and a comprehensive understanding of the HuggingFace platform in

the context of Machine Learning. I conducted the process of reproducing results from research papers to assess their validity. I focused on a research paper investigating the relationship between Twitter mood and its impact on stock market sentiment. Additionally, I went through another research paper on HuggingGPT, which explores the utilization of HuggingFace and ChatGPT to create an interactive interface.

**Objectives of the project:** Fine-tuning the OPT Models for improved performance

**Tool used:** Google Colab, Jupyter, Python, R, QLora, HuggingFace

**Details of Papers/patents:** None

**Brief description of the working environment:** The working environment was well suited to my requirements. The company officials were always outgoing to take care of our doubts and assisted us in our work. I learnt about the research involved in the field of Large Language models and Natural Language Processing, and actively performed the fine-tuning process which formed my final task at OnFinance. Fine-tuning a pre-trained language model involves adapting it to a specific domain or task by leveraging a smaller, domain-specific dataset, I performed it on the OPT models by Meta. During the first half, my project involved reproducing research paper results using Kaggle and getting acquainted with tools like HuggingFace and HuggingGPT. I read the research paper which commented on the influence of Twitter sentiment on the current state of the stock market. Next, I reproduced the figures and graphs presented in the research paper with a good accuracy level.

**Academic courses relevant to the project:** Machine Learning, Artificial Intelligence

**Learning Outcome:** Fine-tuning process, Reproduction of research paper results

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**PS-I station: OnFinance - IT , Bengaluru**

**Student**

**Name: MILIND GUPTA .(2021A3PS2981H)**

**Student Write-up:**

**PS-I Project Title:** REPORT ON BLOOM176, KUBERNETES, MLOP's, GOLANG

**Short Summary of work done:** Researched on BLOOM 176 and learnt key concepts of Kubernetes ,MLOP'S and GoLang

**Objectives of the project:** Learning new technologies

**Tool used:** Laptop, azure software ,Visual studio Code,Geeks for geeks

**Details of Papers/patents:** not used

**Brief description of the working environment:** Working in this company offers an excellent working environment, with a strong emphasis on maintaining a healthy work-life balance. The senior staff members are not only approachable and friendly but also provide exceptional guidance and support. As an intern, you can look forward to engaging in tasks related to cutting-edge technologies such as Docker, pipeline management, Kubernetes, MLOps (Machine Learning Operations), and the Go programming language. Moreover, your soft skills will also experience significant development during your internship. Collaborating with a diverse and supportive team, you will enhance your communication, problem-solving, and teamwork abilities. The encouraging atmosphere will enable you to build confidence in your interpersonal skills, adaptability, and time management, fostering a well-rounded professional growth experience.

**Academic courses relevant to the project:** CS F111

**Learning Outcome:** BLOOM176, KUBERNETES, MLOP's, GOLANG

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**PS-I station: OnFinance - IT , Bengaluru**

**Student**

**Name:** SIDDHANT SRINIVAS .(2021A7PS0050H)

**Student Write-up:**

**PS-I Project Title:** Fine-tuning a Large Language Model on a finance dataset

**Short Summary of work done:** Fine-Tuned a Large Language Model on Finance Data using Parameter Efficient Fine-Tuning (PEFT) and Quantized Low-Rank Adapter (QLoRA) to speed up the training process on lower-end GPUs. Used PyTorch and the transformers libraries to achieve this result. The data was obtained using various datasets and libraries that include various financial data such as stock prices, consumer expenditure, financial terms and entities, and sentiment data about various stocks using tweets. We a few kinds of prompts each and increased the scale of the dataset for deployment level by using the OpenAI API and its methods to create similar prompts to the ones passed in similar to the Stanford Alpaca Model. The base open-source model used was the Falcon-7b model which is a scaled down version of the Falcon-40b which is currently the best open-source model available online. Tested the model using a small subset of the prompts as training on such a large data on lower-end GPUs would take a long time and evaluated the performance of the model on prompts by using both the same input format and changing the wording slightly to test if the model has learnt how to answer such questions

**Objectives of the project:** To produce a chatbot that can answer finance-related queries such as: Performance of the best performing stocks, user transaction history, etc.

**Tool used:** Python, Kaggle, HuggingFace

**Details of Papers/patents:** None

**Brief description of the working environment:** The working environment was helpful, learned about how corporate world works. Gained insight into the AI world and how models are developed.

**Academic courses relevant to the project:** Machine Learning, Deep Learning

**Learning Outcome:** Learnt how to fine-tune a large language model using python libraries. Practiced research reproduction on Kaggle and learnt time series analysis and data preprocessing while doing so. Familiarised myself with huggingFace and bloombergGPT, an LL

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**PS-I station: OnFinance - IT , Bengaluru**

**Student**

Name: M SAI KARTHIK .(2021A7PS0097H)

**Student Write-up:**

**PS-I Project Title:** Fine Tuning an LLM

**Short Summary of work done:** It was a small project where u had to fine tune an llm using finance data, We gather data and fintuned a falcon 7b model. We made the reply of chatbot smaller to increase inference speed

**Objectives of the project:** To get knowledge on Fine tuning and tranfer learning

**Tool used:** HuggingFace, Kaggle

**Details of Papers/patents:** Nope

**Brief description of the working environment:** It was good. Less communication but its fine.

**Academic courses relevant to the project:** Machine Learning

**Learning Outcome:** Fine Tuning and Transfer Learning

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**PS-I station: OnFinance - IT , Bengaluru**

**Student**

Name: ATHARVA VINOD DASHORA .(2021A7PS0127H)

**Student Write-up:**

**PS-I Project Title:** Finetune an opensource LLM with financial data

**Short Summary of work done:** Fine-Tuned a Large Language Model on Finance Data using Parameter Efficient Fine-Tuning (PEFT) and Quantized Low-Rank Adapter (QLoRA) to speed up the training process on lower-end GPUs. Used PyTorch and the

transformers libraries to achieve this result. The data was obtained using various datasets and libraries that include various financial data such as stock prices, consumer expenditure, financial terms and entities, and sentiment data about various stocks using tweets. We a few kinds of prompts each and increased the scale of the dataset for deployment level by using the OpenAI API and its methods to create similar prompts to the ones passed in similar to the Stanford Alpaca Model. The base open-source model used was the Falcon-7b model which is a scaled down version of the Falcon-40b which is currently the best open-source model available online. Tested the model using a small subset of the prompts as training on such a large data on lower-end GPUs would take a long time and evaluated the performance of the model on prompts by using both the same input format and changing the wording slightly to test if the model has learnt how to answer such questions.

**Objectives of the project:** To learn about transfer learning and utilise it in finetuning an LLM with financial data

**Tool used:** Kaggle, Google Collab, the yfinance library

**Details of Papers/patents:** none

**Brief description of the working environment:** Helpful environment, learned a lot about corporate works

**Academic courses relevant to the project:** Machine Learning

**Learning Outcome:** Learnt how LLMs work and how those can be improved

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**PS-I station: OnFinance - IT , Bengaluru**

**Student**

**Name: BHASKAR RUTHVIK BIKKINA .(2021A7PS1345H)**

**Student Write-up:**

**PS-I Project Title:** Fine-tuning a Large Language Model on Finance Data

**Short Summary of work done:** Fine-Tuned a Large Language Model on Finance Data using Parameter Efficient Fine-Tuning (PEFT) and Quantized Low-Rank Adapter (QLoRA) to speed up the training process on lower-end GPUs. Used PyTorch and the transformers libraries to achieve this result. The data was obtained using various datasets and libraries that include various financial data such as stock prices, consumer expenditure, financial terms and entities, and sentiment data about various stocks using tweets. We a few kinds of prompts each and increased the scale of the dataset for deployment level by using the OpenAI API and its methods to create similar prompts to the ones passed in similar to the Stanford Alpaca Model. The base open-source model used was the Falcon-7b model which is a scaled down version of the Falcon-40b which is currently the best open-source model available online. Tested the model using a small subset of the prompts as training on such a large data on lower-end GPUs would take a long time and evaluated the performance of the model on prompts by using both the same input format and changing the wording slightly to test if the model has learnt how to answer such questions.

**Objectives of the project:** Creating a chatbot that can be used to clarify finance related queries and provide organisation user transaction summaries just by asking for them.

**Tool used:** Python, HuggingFace, Google Colab, PyTorch, OpenAI API

**Details of Papers/patents:** None

**Brief description of the working environment:** It was a good learning environment and they did not expect either too little or too much from us. There was never too much pressure to get the work done while also having a sense of accountability to get the work done on time. I learnt a lot of useful things during this practice school session.

**Academic courses relevant to the project:** Machine Learning, Artificial Intelligence

**Learning Outcome:** Transfer Learning of LLMs, Using Huggingface Transformers library, Creating prompt data to train LLMs

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**PS-I station: OnFinance - IT , Bengaluru**

**Student**

Name: HEMANT SESHADRI NEMANI .(2021AAPS2170P)

**Student Write-up:**

**PS-I Project Title:** Finetuning Large Language Model (LLM)

**Short Summary of work done:** The work of fine-tuning a large language model involves adapting a pre-trained model to perform specific tasks or functions. Through this process, the model's performance on targeted tasks is improved, and it becomes proficient in understanding domain-specific information. Fine-tuning requires less labeled data compared to training from scratch, leading to faster training times and efficient transfer of knowledge across related tasks. The ultimate goal is to enhance the model's language comprehension and achieve better task-specific performance.

**Objectives of the project:** To finetune an LLM to financial question and answer usecase

**Tool used:** Docker, Kubernetes, Hugging Face Transformer,

**Details of Papers/patents:** None

**Brief description of the working environment:** Overall, my experience in that company was incredibly fulfilling. Got a taste of how a start-up functions. Work life balance was really good.

My expectations to learn both hard skills and soft skills were fulfilled.

**Academic courses relevant to the project:** None

**Learning Outcome:**

1. Improved performance on specific tasks.
2. Adaptation to specific domains.
3. Reduced task-specific dataset requirements.
4. Faster training compared to training from scratch.
5. Transfer of knowledge across related tasks.
6. Enhanced language comprehension and understanding.

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**PS-I station: OnFinance - IT , Bengaluru**



## Student

Name: NITYA SIVANI MADINENI .(2021AAPS2509H)

### Student Write-up:

**PS-I Project Title:** HuggingGPT and LLM"s

**Short Summary of work done:** We have started our PS with an orientation during which we were given a task to research about HuggingGPT. In this process we also learned how to use Kaggle to create notebooks to replicate the data in the research papers. I have learned about HuggingGPT which is an advanced AI model designed to oversee and organize various AI systems in order to tackle intricate tasks involving natural language processing, image processing, audio processing, and other domains. The main project that was assigned to us was finetuning and deploying a LLM. Finetuning an LLM on a target task using data from a target domain helps it adapt to that environment to provide better results. I have fine-tuned LLM such as BERT for a question answering task. I used a feature based approach to fine-tune a pre-trained transformer BERT using a SQuAD dataset for a question answering task.

**Objectives of the project:** Fine-tuning LLM with a Custom Dataset

**Tool used:** Kaggle, Python, Streamlit

**Details of Papers/patents:** NA

**Brief description of the working environment:** .

**Academic courses relevant to the project:** Artificial Intelligence

**Learning Outcome:** I have learned about HuggingGPT which is an advanced AI model designed to oversee and organize various AI systems in order to tackle intricate tasks involving natural language processing, image processing, audio processing, and other domains.

I was assigned with a task of finetuning and deploying a LLM. Fine-tuning a language model often requires a considerable amount of computational resources and data. Finetuning an LLM on a target task using data from a target domain helps it adapt to that environment to provide better results. I have fine-tuned LLM such as BERT for a question answering task.

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## PS-I station: OnFinance - IT , Bengaluru

### Student

Name: VINAYAK SRIVASTAVA .(2021B1AA2313P)

#### Student Write-up:

**PS-I Project Title:** Fine Tuning an LLM

**Short Summary of work done:** Did research on LLMs for financial data and fine tuned an LLM for customer support use case in question answering task. The fine tuning was done on Salesforce/discord\_qa with squad dataset.

**Objectives of the project:** Enhancing Customer Support service using AI

**Tool used:** Python

**Details of Papers/patents:** None

**Brief description of the working environment:**

**Academic courses relevant to the project:** Artificial Intelligence and Machine Learning

**Learning Outcome:** Learnt how to fine tune a model

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## PS-I station: OnFinance - IT , Bengaluru

### Student

Name: M R SUMEDH .(2021B2AA1875H)

#### Student Write-up:

**PS-I Project Title:** Study on Kubernetes, MLOps & Golang and research & analysis of LLMs and Foundational AI models used in finance

**Short Summary of work done:** We were given multiple tasks to complete over the course of the PS-1 internship such as learning about the features and functioning of software like Kubernetes, Azure Web Services and programming languages like GoLang. I also had to research and analyze Large Language Models like FalconLLM, the HuggingFace community for machine learning tools and foundational AI models like FinanceBERT particularly useful in the FinTech industry.

**Objectives of the project:** To gain more knowledge on the features and applications of the above technological frameworks

**Tool used:** Kubernetes, Azure Web Services, Golang

**Details of Papers/patents:** N.A

**Brief description of the working environment:** The working environment was not stressful and work could be done at our own pace without any strict deadlines as such. Expectations from the company were minimal as no actual project was given instead of which we were given tasks to complete over the course of the internship. The internship helped me increase my knowledge of AI & ML frameworks and their applications.

**Academic courses relevant to the project:** N.A

**Learning Outcome:** Improved knowledge about Artificial intelligence and machine learning frameworks

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**PS-I station: OnFinance - IT , Bengaluru**

**Student**

**Name: VINAY NAIDU VANKA .(2021B3A71026H)**

**Student Write-up:**

**PS-I Project Title:** Kubernetes, MLOps, Golang, Large Language Models for Financial Data and GenAI Companies

**Short Summary of work done:** Researched many LLMs to find the best suitable one for financial data through extensive study and analysis of research papers related to the topic. Learned all related theories and understood how to use Kubernetes and MLOps. Learned to write code in Golang. Also have researched companies based on Generative AI and their value propositions.

**Objectives of the project:** To gain a comprehensive understanding of Kubernetes, MLOps and Golang. Research GenAI based companies and find the best LLM for financial data

**Tool used:** Kubernetes, MLOps

**Details of Papers/patents:** NONE

**Brief description of the working environment:** I got to develop my communication skills and report-writing abilities. Have experienced what it's like to work in the corporate environment. Learned many skills and understood how to interact in a corporate setting. The industry mentors and the faculty in charge were very supportive. Overall it was a great experience.

**Academic courses relevant to the project:** NONE

**Learning Outcome:** Gained a Comprehensive understanding of Kubernetes, Golang and MLOps. Learned about major trends in Generative AI due to my research of companies based on GenAI.

Also learned to analyse and read research papers efficiently and to communicate effectively about complex technical topics due to my research on LLMs to find the best suitable one for financial data.

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**PS-I station: OnFinance - IT , Bengaluru**

**Student**

Name: SHOBHIT OM KUMAR(2021B3A72155G)

**Student Write-up:**

**PS-I Project Title:** Authentication page using flutter

**Short Summary of work done:** Watched tutorial of go lang , Flutter and Figma then practiced to design and code the authentication pages

**Objectives of the project:** Develop the authentication page of onfinance app using flutter

**Tool used:** Software used - Figma and Flutter

**Details of Papers/patents:** None

**Brief description of the working environment:** Working environment is very helpful and friendly. They are always welcome to solve even basic doubts

**Academic courses relevant to the project:** CP

**Learning Outcome:** I learnt how to use Flutter and Figma

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**PS-I station: OnFinance - IT , Bengaluru**

**Student**

Name: NISHANTH M S(2021B3A72176G)

**Student Write-up:**

**PS-I Project Title:** LLaMA, Kubernetes, MLOps, GoLang

**Short Summary of work done:** Researched on LLaMA, a large language model from Google AI. Learned Kubernetes, a container orchestration system. Learned MLOps, the

discipline of deploying and managing ML models in production. Learned GoLang, a programming language.

**Objectives of the project:** Research on LLaMA and learn to use Kubernetes, GoLang and MLOps

**Tool used:** Kubernetes, MLOps

**Details of Papers/patents:** -

**Brief description of the working environment:** It was great experience . I got to learn a lot. I also increased my networking. The mentors at PS Station were really helpful . It was an enriching experience.

**Academic courses relevant to the project:** -

**Learning Outcome:** I learned how to research and learnt new technologies. I gained essential skills for machine learning. Leant Kubernetes, MLOps and GoLang I improved my communication skills.

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**PS-I station: OnFinance - IT , Bengaluru**

**Student**

**Name:** KINJAL VARDIA .(2021B3A72579H)

**Student Write-up:**

**PS-I Project Title:** Fine tuning a large language model in finance related data

**Short Summary of work done:** There was not major work given by the company.

**Objectives of the project:** To develop a chatbot for fintech b2c companies

**Tool used:** Kaggle , cloud account , colab pro , hugging face

**Details of Papers/patents:** None

**Brief description of the working environment:** The environment is pretty chill . They dont hold meets regularly and also if you want to take ps that is lite , you can take this one . The company is of bitsians only so they understand the concept of ps 1 and they dont give you major work although sometimes there is no communication from their side also.

**Academic courses relevant to the project:** Machine learning

**Learning Outcome:** Artificial intelligence, chatbots , machine learning

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**PS-I station: Pacify Medical Technology Pvt Ltd , Mumbai**

**Student**

**Name:** Shashwat Agrawal(2021B1A30811P)

**Student Write-up:**

**PS-I Project Title:** Design, Development and Component Selection for Core Electronics of given device

**Short Summary of work done:** I designed PCBs and improved upon existing ones for the device. To design the PCBs, I used Fusion 360, and also tested the fabricated PCBs. Furthermore, I worked on automating the device for exhibitions and selecting vital components, as well as making upgrades wherever possible.

**Objectives of the project:** To aid in bettering the design of the given device and

**Tool used:** Arduino, STM32, ESP, Fusion360

**Details of Papers/patents:** NA

**Brief description of the working environment:** Strict working environment and punctuality was a must. However, there was freedom to experiment and failures were

taken with a grain of salt- a greater emphasis was laid on learning. Expectations involved laying a foundation for electronics I could follow up on in the future, and to learn about start-ups and entrepreneurial culture. I learnt both hard and soft skills: how to work with a team, meeting deadlines, a sense of accountability and PCB designing as well as troubleshooting.

**Academic courses relevant to the project:** EEE F111, CS F111

**Learning Outcome:** Fusion 360, PCB Design

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**PS-I station: Pacify Medical Technology Pvt Ltd , Mumbai**

**Student**

**Name:** ANSHUMAN DEWANGAN .(2021B1A42279P)

**Student Write-up:**

**PS-I Project Title:** Graphic Design and Literature Review

**Short Summary of work done:** Created posters and brochures for their own made medical devices, that will be submitted to the customers(in this case, the doctors). Also read a ton of research papers to retrieve clinical data to support the medical device functioning. Other data will be generated by clinical trials and compiled into a Clinical Evaluation Report.

**Objectives of the project:** To advertise the medical devices and to get them approved for phase-1 clinical trials.

**Tool used:** Adobe Creative Suite, and Excel.

**Details of Papers/patents:** NA

**Brief description of the working environment:** The working environment has been good, and mentors have been very helpful in achieving the desired target. However, it was expected that overtime work could be incentivized. Again, since it's an unpaid



internship, even with interest in the working project, there exists a limitation on how much an intern could work in the absence of an incentive.

Otherwise, learnings during PS-1 were first of all travelling in Mumbai rains and the traffic it provides. Next was team work, along with good organization of the work done.

**Academic courses relevant to the project:** IMA (Instrumental Methods of Analysis)

**Learning Outcome:** Learned Adobe Indesign, Illustrator and Photoshop, along with how to do a literature review.

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## PS-I station: Palmtree Infotech , Chennai

### Student

**Name:** KUSH AGRAWAL .(2021A7PS0142H)

### Student Write-up:

**PS-I Project Title:** Understanding how prompt engineering works & it's applications

**Short Summary of work done:** During PS-I, I undertook various projects related to AI and natural language processing. My focus included Prompt Engineering, where I learned about LLM settings and best practices for prompt engineering using the OpenAI API. I explored tokenization techniques, such as BPE, and used token knowledge to optimize prompt design. I also worked with SheetGPT, enabling GPT functionality within Google Sheets. Additionally, I delved into Cohere models, utilizing them for text generation, classification, and embedding tasks. I became proficient in Cohere's tokenizer, de-tokenizer, and language detection capabilities. Practical implementations involved integrating the Numverify API to fetch phone information and generating detailed matrimonial descriptions using AI-powered text generation. Moreover, I worked extensively with Mendable, employing its API and components to build efficient chat applications interacting with data. A key aspect of my work centered around dataset handling. I successfully ingested data from websites, YouTube videos, and GitHub repositories, and implemented dataset streaming, caching, and loading functionalities. I also executed a classification project, categorizing article titles based on regions. Throughout the internship, I gained hands-on experience with diverse datasets like EleutherAI/pile, tiuae/falcon-refinedweb, sms\_spam, and PolyAI/banking77, significantly

enhancing my expertise in data management and preprocessing. Overall, PS-I provided invaluable practical exposure to NLP, AI APIs, model training, and dataset management, fostering my growth as an AI practitioner.

**Objectives of the project:** The project's objectives were to explore Prompt Engineering, utilize OpenAI API and Cohere models, integrate AI functionalities in practical applications, and develop expertise in dataset handling for effective natural language processing.

**Tool used:** The software tools used in the PS-I project included Python as the primary programming language, along with libraries such as TensorFlow, PyTorch, and Hugging Face Transformers for model training and fine-tuning. IDEs like Visual Studio Code and PyCharm

**Details of Papers/patents:** no

**Brief description of the working environment:** During PS-I, the working environment was highly conducive to learning, providing me with opportunities to work on a wide range of AI and natural language processing projects. The team encouraged active participation and fostered a collaborative atmosphere, allowing me to explore different tools and technologies in the field. The mentor's guidance was instrumental in shaping my learning journey, offering valuable insights and feedback throughout the internship.

The company's expectations revolved around proactive engagement and contribution to the assigned projects. They encouraged open communication, asking questions, and sharing ideas to maximize learning and project outcomes. Timely completion of tasks and effective project management were essential to ensure smooth progress.

Throughout the internship, I gained significant knowledge and practical experience. I learned about Prompt Engineering and best practices for utilizing the OpenAI API to improve model responses. Exploring various tokenization techniques, including BPE, helped me better understand language models and their applications. Integrating AI functionalities into practical applications, such as using Mendable for AI-powered chat applications, was a rewarding experience.

Additionally, working on classification tasks and handling diverse datasets honed my data preprocessing and management skills. Collaborating with Cohere models for text generation and embedding tasks expanded my expertise in NLP techniques. Overall, PS-I provided a well-rounded learning experience, and the mentor's guidance played a crucial role in my professional growth as an AI practitioner.

**Academic courses relevant to the project:** OOPS, DBMS, C programming, DSA

**Learning Outcome:** The major learning outcomes from the PS-I project encompassed gaining proficiency in Prompt Engineering and effectively applying it to optimize language model responses. Practical application of language models like GPT, including generating detailed text descriptions and region-based article categorization, provided hands-on experience. Familiarity with tokenization techniques like BPE improved prompt design and model performance. Integrating AI functionalities into practical applications such as

Google Sheets and Mendable demonstrated the ability to create user-friendly and interactive tools. Dataset handling skills, collaboration with external APIs like Numverify, and utilization of Cohere models and tools further enriched the learning experience. Additionally, the project emphasized responsible AI practices, enhancing communication and project management skills to ensure successful project outcomes. Overall, the PS-I project yielded a well-rounded understanding of AI-powered Natural Language Processing, enabling its practical application and contributing to professional growth in the field of artificial intelligence.

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## **PS-I station: Palmtree Infotech , Chennai**

### **Student**

**Name: AMIT ANJANDEB GHOSH .(2021A7PS0181H)**

### **Student Write-up:**

**PS-I Project Title:** AI Applications using Vector Databases

**Short Summary of work done:** Rather than one single large project, my work was divided into multiple smaller projects, all using the Vector Databases Milvus and Qdrant. These vector databases stand apart from traditional databases in the sense that they can hold vector embeddings, which are used to denote the semantic information regarding unstructured data (text, images, videos), and which thus holds massive importance in newer technologies such as LLMs. My initial project was to build a text similarity engine over a web scraped news dataset on Milvus. I utilized the embedder all-miniLM-L6-v2 to implement this. My next task involved repeating the same process on Qdrant, and charting down my observations and performance comparisons between the two. After this, I was assigned tasks in the area of Audio Classification and Audio Similarity Search, for which I had to utilize the librosa library and PANNs as an embedder. Lastly, I was assigned work in the field of Similarity Learning (finetuning embedder models) with Quaterion. My mentor was the director of Palmtree Infotech, Rajesh Koilpillai, and he was extremely approachable. The work wasn't hectic, especially since certain amounts of work were purely exploratory in nature. I had regular meets aside from Saturday and Sunday, and sir tried his level best to take into account any difficulties I faced and all work allotted was reasonable. Overall, it was a really enjoyable experience, especially since it

introduced me to a number of open source technologies and frameworks, and provided quite a bit of exposure.

**Objectives of the project:** Using Vector Databases to test out a variety of AI Application mechanisms, such as Text/Audio/Video Similarity Search

**Tool used:** Milvus, Qdrant, Towhee, Quaterion, Librosa, PANNS-Inference

**Details of Papers/patents:** N/A

**Brief description of the working environment:** The working environment was quite nice. As mentioned earlier, the work wasn't hectic, especially as some chunks of the work was purely exploratory in nature. Meets were regular, and at least some amount of tangible progress, or ample reporting regarding the reasons behind the lack thereof, was expected every meet. In case of difficulties with regards to installation, etc, sir called on other members from the Palmtree team to assist. Overall, it was a nice environment.

**Academic courses relevant to the project:** Machine Learning, Database Systems

**Learning Outcome:** Gained exposure to a variety of up and coming concepts in the field of Machine Learning such as Vector Databases, NLP, Similarity Learning, and Audio Data Processing.

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**PS-I station: Palmtree Infotech , Chennai**

**Student**

**Name:** ANSH RASTOGI(2021A7PS0515P)

**Student Write-up:**

**PS-I Project Title:** ClickhouseDatabase and Strapi

**Short Summary of work done:** This comprehensive report has provided an extensive analysis of key aspects related to ClickHouse, encompassing supported data formats, the utilisation of real-world datasets, Apache Parquet support, LZ4 compression, ClickHouse's native and binary formats, modelling user information for binary data

persistence, and CRUD scenarios for recipe management. By exploring these areas, we have gained valuable insights into ClickHouse's capabilities, empowering data analysts and practitioners with the knowledge to leverage ClickHouse effectively in their data analytics workflows. This report also provided an extensive analysis of Strapi by managing biographical information and creating a well-defined schema, translating content into multiple languages, exposing data through REST endpoints, implementing filtering and sorting options, and utilising the RichText data type field for dynamic content. Additionally, Strapi's capabilities extend to developing a News WebApp, providing efficient management and display of news articles.

**Objectives of the project:** Build a project on clickhouse and strapi

**Tool used:** Strapi, Clickhouse, Python, nextjs, postman, VSCode

**Details of Papers/patents:** N/A

**Brief description of the working environment:** It was online, the company expected me to do all the given problems on a daily basis and we used to have meetings everyday

**Academic courses relevant to the project:** DSA,DBMS

**Learning Outcome:** install plugins to strapi, using API, using clickhouse

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**PS-I station: Palmtree Infotech , Chennai**

**Student**

**Name:** ADITYA AGGARWAL .(2021A7PS2380H)

**Student Write-up:**

**PS-I Project Title:** Build AI Applications using ChatGPT Plugins – Understanding how prompt engineering works

**Short Summary of work done:** In my initial learning experience, I delved into two significant natural language processing frameworks: Langchain and Langflow. These frameworks provided me with valuable insights into their functionalities and operational

mechanisms. Langchain, with its modular architecture, enabled the construction of efficient language processing pipelines by breaking down complex tasks into smaller, manageable blocks. This approach facilitated customization and adaptability, allowing developers to integrate their bespoke components and tailor the pipelines according to specific NLP needs. On the other hand, Langflow offered a workflow-oriented approach, empowering developers to design and manage intricate language processing workflows with ease. Alongside these frameworks, I also familiarized myself with the Hugging Face interface, which provided a convenient means to access and utilize publicly available repositories. This interface proved to be a valuable resource, enabling me to leverage pre-trained models and efficiently execute NLP tasks, thus enhancing my overall NLP capabilities and knowledge.

**Objectives of the project:** The main objective of the project was to understand how we can give better prompts to the AI model in order to the most precise and accurate answer according to our expectation and need.

**Tool used:** HuggingFace, Docker, Python

**Details of Papers/patents:** None

**Brief description of the working environment:** The working environment was pretty good, with daily meetings where Rajesh Sir checked on our progress with the tasks he assigned. Initially, I thought we'd be working as a team, but it turned out that he gave us individual tasks that didn't have any connection between them. On the bright side, these one-on-one meetings helped improve our communication skills. However, the downside was that the tasks lacked cohesion, and we didn't really learn much from doing them since they weren't related or part of a bigger picture. Despite that, the open communication in the meetings was helpful for our interpersonal skills.

**Academic courses relevant to the project:** Machine Learning and Artificial Intelligence maybe

**Learning Outcome:** My main learning was to understand how we can train a particular AI model to train our own data and ask questions based on it.

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**PS-I station: Palmtree Infotech , Chennai**

**Student**

Name: HRIDYA ARORA(2021A7PS2538G)

**Student Write-up:**

**PS-I Project Title:** Dockerized applications for enterprise applications

**Short Summary of work done:** Build docker-compose for milvus, prometheus, grafana, mysql, statsd, postgresql and relevant exporters. Configured alerting services for prometheus and grafana.

**Objectives of the project:** Building and deploying docker containers and monitoring services

**Tool used:** Docker, docker-compose, prometheus, grafana, alertmanager

**Details of Papers/patents:** None

**Brief description of the working environment:** It was an online PS. One meet per day, sometimes 2. We got assigned tasks and basically worked together with the mentor to complete them, regularly seeking their help with understanding documentations and finding resources. We get to work with commercially deployable code and programmes written by us will be used in company built applications and scripts

**Academic courses relevant to the project:** Understanding of bash and linux helped.

**Learning Outcome:** Learned to deploy docker containers and build docker-compose files, basics of vector databases, monitoring services, Alerting services.

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**PS-I station: Palmtree Infotech , Chennai**

**Student**

Name: PRACHI SHAH(2021A7PS2589H)

**Student Write-up:**

**PS-I Project Title:** ClickHouse Database

**Short Summary of work done:** My work firstly involved installation and setup of ClickHouse. Then I went through its documentation and learnt about topics like database engines, special kinds of updates and deletes supported by ClickHouse. I analyzed a couple of large datasets and their structure to determine how they must be formed so that analysis using ClickHouse can be carried out efficiently. Also read about and documented the data skipping indexes and Bloom filter features supported by ClickHouse.

**Objectives of the project:** Learning the features of ClickHouse database as a tool which make it a useful for OLAP scenarios

**Tool used:** ClickHouse cloud

**Details of Papers/patents:** NA

**Brief description of the working environment:** It was a very well setup setting for us to work effectively and contribute to the Company's work. We had daily meetings with our mentor where we would discuss our previous day's work, get issues resolved and be assigned new work for the upcoming day. Alongside working on new topics we also had to document our findings every day which helped us keep track of our work. Overall it was a very enjoyable experience.

**Academic courses relevant to the project:** Database Management System

**Learning Outcome:** Went through documentation of ClickHouse to understand and experiment with its features

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**PS-I station:** Palmtree Infotech , Chennai

**Student**

**Name:** GAURAV SOMAI .(2021A7PS2783H)

**Student Write-up:**



**PS-I Project Title:** Implementing Vector Search in ClickHouse, Log Analytics using ClickHouse

**Short Summary of work done:** Implemented text-to-text and text-to-image search in ClickHouse database, first on the LAION dataset, then on a real life news dataset. Migrate nginx logs to ClickHouse, and experimented with different Log Ingestion tools.

**Objectives of the project:** Implementing Vector Search in ClickHouse, Log Analytics using ClickHouse

**Tool used:** ClickHouse, OpenAI CLIP, Vector.dev, FluentBit

**Details of Papers/patents:** -

**Brief description of the working environment:** 2/3 hrs per day. Sometimes(rare) becomes hectic. Usually 1 meet per day, duration 30-60 mins. Sometimes 2 meets if workload high. Everyone is assigned a team, but the tasks in the team are given independently.

**Academic courses relevant to the project:** DBMS

**Learning Outcome:** Learnt how text-text, text-image, image-image search works. Learnt to migrate and maintain logs efficiently.

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**PS-I station: Palmtree Infotech , Chennai**

**Student**

**Name:** DIVYE GOEL(2021A7PS2908G)

**Student Write-up:**

**PS-I Project Title:** Building Dockerized Containers for enterprise applications

**Short Summary of work done:** During my internship, I had the opportunity to work on three transformative projects that revolutionized data analytics, visualization, and monitoring. In the Docker ClickHouse project, I successfully containerized ClickHouse

using Docker, enabling scalable and manageable ClickHouse cluster deployments with features like sharding, replication, and fault tolerance. The integration of Apache Superset with ClickHouse in the second project empowered users with fast data processing and analysis capabilities through an intuitive interface. Additionally, I explored horizontal scaling techniques to handle growing workloads efficiently. In the third project, I implemented a centralized logging system using Grafana Loki, providing efficient log aggregation and analysis for various applications and services. Furthermore, I focused on enhancing software observability and simplifying log querying through command-line interfaces. Throughout the internship, I gained expertise in Docker containerization, ClickHouse database management, data visualization, and Python integration. I also acquired valuable insights into horizontal scaling, server security using Nginx and Certbot, and comprehensive project management and documentation. These projects equipped me with a diverse skill set, enabling me to tackle complex data challenges and contribute effectively to data-driven decision-making in diverse industries

**Objectives of the project:** Getting familiar with Devops;in turn docker and docker compose, the wide variety of things you can do with docker

**Tool used:** Docker,Docker compose,clickhouse,apache superset,LogCLI, grafana,loki,promtail,flog

**Details of Papers/patents:** Nil

**Brief description of the working environment:** The working environment was nice,the company mentor(the director of the company) was very supportive, we used to have daily meets, even when we got stuck on some things he used to be supportive and sometimes even dubug the code with us; also we were provided with appropriate reference material to go through and study in order to get things working.

Apart from technical stuff, i learnt a lot about how industry works,how a corporate environment looks like, the importance of documentations and being systematic and responsible.

**Academic courses relevant to the project:** Nil

**Learning Outcome:** Docker containerization,clickhouse databases,data visualization,horizontal scaling,server securing,log aggregation

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**PS-I station: Palmtree Infotech , Chennai**

## Student

Name: SHUBHAM GUPTA .(2021A8PS2953H)

### Student Write-up:

**PS-I Project Title:** Langchain and it's integration with a vector database (Chromadb), huggingfacehub and Machine Learning Applications

**Short Summary of work done:** LangChain and ChromaDB are powerful technologies that can be used together to create secure and transparent systems that can automate complex workflows and improve data management. • By leveraging the synergies between these two technologies, it is possible to create applications that can provide valuable insights into data. • ChromaDB and LangChain offer a powerful combination of scalability, security, and data integrity. • With ChromaDB's flexible and efficient database architecture and LangChain's blockchain technology, businesses can confidently handle large amounts of data without sacrificing security or reliability. • Langchain supports a wide plethora of libraries such as the huggingfacehub , which on integration with langchain, eases the dataset loading process to a great extent and makes the code efficient and widely accessible to its users. • With the onset of AI, we face lots of difficulties pertaining to training these models , so that they are highly efficient and user-friendly. Few newly introduced technologies , such as MosaicML's streaming module lets us handle very large datasets without having to deal with system limitations such as smaller memory size, GPU, and RAM .

**Objectives of the project:** To study and analyse the integration of vector databases and Machine Learning Models

**Tool used:** Langchain , Chromadb , OpenAI API, huggingface hub, Adverttools

**Details of Papers/patents:** -

**Brief description of the working environment:** The working environment was very study and implementation oriented and daily Meets were organised between us and the Company officials

**Academic courses relevant to the project:** Artificial Intelligence, Database Management Systems

**Learning Outcome:** -

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## PS-I station: Palmtree Infotech , Chennai

### Student

Name: MALLIKA AJMANI .(2021AAPS1488P)

#### Student Write-up:

**PS-I Project Title:** Scrapy Crawler

**Short Summary of work done:** I created a scrapy project to extract data from websites, atom feeds, xml feeds, rss feeds etc. also scraped LinkedIn people profiles and indeed jobs site.

**Objectives of the project:** Developing a website crawler using python and scrapy

**Tool used:** Python, Scrapy

**Details of Papers/patents:** NA

**Brief description of the working environment:** Got to interact with new people, learned how things work in the corporate world.

**Academic courses relevant to the project:** NA

**Learning Outcome:** Scrapy and Spidermon usage, creating spiders, json files

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## PS-I station: Palmtree Infotech , Chennai

### Student

Name: SEJAL AGARWAL .(2021B1AA1695P)

## Student Write-up:

**PS-I Project Title:** Study on Fiftyone

**Short Summary of work done:** During the PS, the focus was on gaining proficiency in the FiftyOne Python library for dataset exploration, grouped dataset manipulation, and error identification in classification tasks. The project involved studying how FiftyOne works, exploring datasets, and learning techniques to assess image uniqueness. Additionally, the intern showcased practical use cases of FiftyOne in computer vision tasks and investigated Apache Arrow for optimized data handling. The project also delved into the SerpAPI for potential applications in advanced data analysis and web scraping. Overall, the internship provided valuable insights into modern data exploration tools and their applications in real-world scenarios.

**Objectives of the project:** The objective of this project was to gain hands-on experience with the FiftyOne Python library and its functionalities for dataset exploration, grouped dataset manipulation, image uniqueness assessment, and identification of classification errors.

**Tool used:** Software- VScode , fiftyone, google colab

**Details of Papers/patents:** NA

**Brief description of the working environment:** During my PS-I, I had the opportunity to work in a dynamic and supportive environment. The company provided me with all the resources I needed, and I was able to collaborate with mentors and other team members seamlessly. The company had clear expectations from me during the PS-I phase. They wanted me to actively participate in the assigned tasks and projects, demonstrating a strong willingness to learn and grow. Deadlines were important, and I made sure to adhere to them. Whenever I faced challenges, I didn't hesitate to seek help from my mentors or team members, and their support was invaluable. Overall, my PS-I experience was enriching, and I am grateful for the company's guidance and the knowledge I gained. It set the stage for a productive and rewarding summer internship.

**Academic courses relevant to the project:** Machine learning, Data manipulation and analysis, Web scraping and APIs

**Learning Outcome:** Fiftyone, Apache arrow basics and SerpAPI

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**PS-I station: Palmtree Infotech , Chennai**

**Student**

**Name:** JAI YOGESH BHOBE(2021B3A71024G)

**Student Write-up:**

**PS-I Project Title:** Prompt Engineering and Applications of NLP models

**Short Summary of work done:** Initially was tasked to study and implement prompt engineering techniques on models such as ChatGPT, DALLE, Cohere, etc. Later on, focussed on learning about various applications of NLP models like image recognition, text and image generation, synthetic data generation, etc.

**Objectives of the project:** To improve model generation with the help of prompt engineering and understand some applications of NLP models

**Tool used:** Python, Virtual Machines, Huggingface, ChatGPT, Gretel Synthetics, JSON

**Details of Papers/patents:** None

**Brief description of the working environment:** I learnt a lot about Artificial Intelligence and Machine Learning and got to work with a variety of NLP models. Also learnt about prompt engineering methods to improve output generation of the NLP models.

**Academic courses relevant to the project:** AI ML

**Learning Outcome:** Learnt about various uses of NLP such as Image recognition, image and text generation, synthetic data generation, etc and how to use prompt engineering to improve model generation.

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**PS-I station: Palmtree Infotech , Chennai**

## Student

Name: PRERIT RAI .(2021B5A72354P)

### Student Write-up:

**PS-I Project Title:** Development of AI and ML

**Short Summary of work done:** I learnt a lot about AI. First thing was the Python because before coming into this PS, I was not familiar with the concept of application-based Python usage and I had a very surface level understanding. I also learned about how the audio data sets can be used for voice recognition stuff, how the data sets can be used for ML purposes, the usage of various Hubs in the ease of analysis and how very big open source libraries can be used for our on personalised work. Naming a few are Red Pyjama dataset, Meerkat dashboard, Hugging Face, hub, dagshub, et cetera.

**Objectives of the project:** Analysing and using Datasets in open source library, Audio related AI Applications

**Tool used:** Python, Github, Pycharm, Jupyter Notebook

**Details of Papers/patents:** no

**Brief description of the working environment:** The working environment of the PS station was quite good because the mentor, Rajesh Koillapali were very helpful in the start as he knew that I was not familiar with the language and give me suitable tasks. He also helped me in my projects, gave me ample amount of time and were soft spoken but at the same time were not too lenient in his field of work. My expectations from the company. I just to analyse more of this AI thing in deep and use it well for the development of this technology in India.

**Academic courses relevant to the project:** AI, ML

**Learning Outcome:** Got to learn about Python more deeply and Application based, AI usage of Datasets, Various Open Source Library usage in AI, Audio analysis

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## PS-I station: ParallelDots Technology Pvt. Ltd. , Gurugram

### Student

Name: LAKSHIT SINGHAL .(2021A1PS2369P)

#### Student Write-up:

**PS-I Project Title:** short video marketing campaign

**Short Summary of work done:** researched about ai tools that can help the company operations, worked on blogs and youtube videos.I also worked on the digital marketing ,where I worked on search engine optimization

**Objectives of the project:** make content and write blogs for the company

**Tool used:** camva.clipchamp

**Details of Papers/patents:** NA

**Brief description of the working environment:** Thw working environment was supportive, we used to have regular discussions on blogs that we worked on I. Also we made few field visits to actually know how the product works

**Academic courses relevant to the project:** NA

**Learning Outcome:** learned to operate ai tools, SEO and how to make youtube videos

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## PS-I station: ParallelDots Technology Pvt. Ltd. , Gurugram

### Student

Name: KABIR DARPAN MEHTA .(2021A4PS3067H)



## **Student Write-up:**

**PS-I Project Title:** Oogashop

**Short Summary of work done:** During the internship, I worked as an assistant in the marketing department of a tech startup. My responsibilities primarily revolved around market research and analysis. I conducted extensive competitor research to identify potential gaps in the market and opportunities for product improvement. Additionally, I collaborated with the team to develop and execute digital marketing campaigns, including social media posts and email newsletters. I also played a crucial role in analyzing customer feedback and data, which helped in fine-tuning the company's product offerings. Throughout the internship, I actively participated in team meetings, brainstorming sessions, and contributed to various marketing strategies. Overall, the experience provided me with valuable insights into the workings of a fast-paced startup environment and strengthened my skills in market research and digital marketing.

**Objectives of the project:** Marketing of the product Oogashop

**Tool used:** Multiple CRM tools, Keyword Research & SEO tools, Canva, Clipchamp, etc. for Video Editing.

**Details of Papers/patents:** NA

**Brief description of the working environment:** The working environment during my internship was vibrant and dynamic, as the tech startup fostered a culture of innovation and collaboration. The office space was modern and open, encouraging easy communication among team members. Regular team meetings and brainstorming sessions allowed for the exchange of ideas and feedback, creating a supportive and motivating atmosphere.

Expectations from the company were clear from the beginning, with a focus on active participation and a willingness to learn. They encouraged interns to take on real responsibilities and contribute to projects that directly impacted the company's goals. While guidance and support were readily available, there was also an expectation for interns to show initiative and take ownership of their tasks.

Throughout the internship, I had the opportunity to learn and develop various skills. Market research and analysis were key components of the learning experience, as I delved into competitor analysis and identified market trends. Working on digital marketing campaigns taught me how to craft effective messages for different target audiences and leverage various platforms to reach potential customers. Additionally, the internship helped me improve my communication and teamwork skills through collaboration with colleagues from different departments.

The company also emphasized the importance of continuous learning and offered access to resources such as workshops, webinars, and industry-related materials. This allowed me to stay updated with the latest marketing trends and technologies.

Overall, the internship provided a valuable learning experience, combining hands-on work with a supportive environment, and helped me develop skills that will be beneficial for my future career endeavors.

**Academic courses relevant to the project:** Principles Of Economics, Principles Of Management, etc.

**Learning Outcome:** Market Research & Analysis, Digital Marketing Strategies, Teamwork, etc.

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## **PS-I station: ParallelDots Technology Pvt. Ltd. , Gurugram**

### **Student**

**Name:** DIKSHA .(2021A5PS2001H)

### **Student Write-up:**

**PS-I Project Title:** Short Video marketing campaign for an app for Indian retailers

**Short Summary of work done:** During my time as a digital marketing intern, I worked on boosting online visibility and engagement for the software Oogashop for retailers and customers. I did this by using three main methods: SEO optimization, creating YouTube videos, and crafting Instagram Reels. First, I focused on SEO optimization, which means making websites more visible on search engines like Google. I analyzed popular keywords and trends, then used them to improve website content and tags. This helped retailers' websites rank higher in search results, getting them more visitors and customers. Second, I created exciting and informative YouTube videos for retailers. These videos showcased their products, offered tutorials, and gave a behind-the-scenes look. By doing this, I helped retailers grow their subscriber base and connect better with their customers. Lastly, I created content Instagram Reels and wrote blogs. Throughout my work, I kept track of the results and made improvements based on the data. In summary, my job involved making the software-Oogashop more visible on search engines, creating engaging YouTube videos, and crafting eye-catching Instagram Reels for retailers and their customers.

**Objectives of the project:** Increase customer reach, Create promotional materials for social media

**Tool used:** Canva, SEO- Google Analytics

**Details of Papers/patents:** -

**Brief description of the working environment:** During my PS-I, I experienced a supportive and collaborative working environment. I learned various digital marketing aspects, including SEO, content creation, and social media marketing. The practical experience and mentorship provided by the company were invaluable. Beyond the technical aspects, I was fortunate to be a part of client meetings and observe how marketing strategies are meticulously tailored to meet specific business objectives. This exposure taught me the importance of effective communication, adaptability, and creativity in devising successful marketing campaigns.

**Academic courses relevant to the project:** -

**Learning Outcome:** Learnt about retail industry

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**PS-I station: ParallelDots Technology Pvt. Ltd. , Gurugram**

**Student**

**Name:** NIKHIL BHAT(2021B3A72541G)

**Student Write-up:**

**PS-I Project Title:** Object tracking using mmlab

**Short Summary of work done:** During this i got the time to understand how object tracking and detection worked after looking into cases of several pretrained models. The initial part of my time went into understanding mmtracking and using it to for single object tracking in mp4 files , later on i also implemented this for multiple objects. This was an amazing experience full of errors and surprises , the team was in constant touch with us and assisted us whenever we needed any sort of help.

**Objectives of the project:** Usage of a pretrained mmtracking model and using it for object tracking on a smartphone

**Tool used:** pytorch , onnx

**Details of Papers/patents:** none

**Brief description of the working environment:** We had our office for 5 days a week and we primarily interacted with our project team online because the office was functioning in a hybrid mode , still on a regular basis we got to interact with the team that worked offline , overall everyone was friendly and made us feel as if we were part of their own team

**Academic courses relevant to the project:** none

**Learning Outcome:** using ssh, debugging , pytorch

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**PS-I station: ParallelDots Technology Pvt. Ltd. , Gurugram**

**Student**

**Name:** PRATYAKSH KANSAL(2021B4A72783P)

**Student Write-up:**

**PS-I Project Title:** Helping in training and deployment of deep learning and machine learning models

**Short Summary of work done:** 1. AI Research and Development: I was a part of a team that is actively engaged in cutting-edge AI research and development. I contributed to enhancing existing AI models and even developing new algorithms to improve the company's NLP and computer vision solutions. 3. Computer Vision Applications:I worked with image recognition, object detection, or other computer vision tasks. This included developing AI models to identify objects, analyze visual data, or automate image-related processes. 4. Data Preparation and Analysis:As part of work, I gained experience in handling real-world datasets. Thi involved data cleaning, feature extraction, and data analysis, which are critical steps in building effective AI models. 5. Algorithm Evaluation

and Optimization: I also learned how to assess the performance of AI algorithms and fine-tune them for better results.

**Objectives of the project:** They have a project called "Shelfwatch" which has the objective to monitor shelves in retail stores or warehouses using computer vision and AI algorithms. The objective of such a project is to automatically track the availability and arrangement of products on shelves, identify out-of-stock items, analyze stock levels, or gather data about customer behavior in stores.

**Tool used:** High-performance servers and clusters with GPUs (Graphics Processing Units) or TPUs (Tensor Processing Units) for accelerated training and inference of AI models. Cloud-based infrastructure, such as Amazon Web Services (AWS), Google Cloud Platform (GCP),

**Details of Papers/patents:** 1. Content Based Document Recommender using Deep Learning  
2. Testing the limits of unsupervised learning for semantic similarity  
3. Machine Learning approaches to do size based reasoning on Retail Shelf objects to classify product variants  
4. Using Keypoi

**Brief description of the working environment:** Working Environment:

- ParallelDots, being a technology company specializing in AI and NLP solutions, is likely to have a dynamic and innovative working environment. It may have a diverse team of AI researchers, data scientists, engineers, and developers who collaborate on various projects.

- The company might encourage a culture of continuous learning, open communication, and creativity. Interns may be given opportunities to participate in brainstorming sessions, team meetings, and technical discussions.

Expectations from the Company:

- During PS-I, the company would expect interns to be proactive, eager to learn, and willing to contribute to the team's projects. Punctuality, professionalism, and a positive attitude towards work are usually appreciated.

- The company may assign specific projects or tasks to interns based on their skills and interests. They may also expect interns to seek guidance when needed and be receptive to feedback from mentors or supervisors.

Learning during PS-I:

- As an intern at ParallelDots, you can expect to gain practical experience in real-world AI and NLP applications. You may work on tasks related to text analysis, sentiment analysis, image recognition, or other AI-related projects.

- Interns will likely have access to state-of-the-art tools and technologies used in the AI industry, such as TensorFlow, PyTorch, and various NLP libraries.

- Working with experienced professionals and researchers, you'll have opportunities to learn from their expertise and improve your technical skills in data preprocessing, model development, and evaluation.

- In addition to technical skills, you may develop soft skills like communication, teamwork, time management, and problem-solving through interactions with team members and project responsibilities.

**Academic courses relevant to the project:** Computer Programming  
Probability and statistics

**Learning Outcome:** Practical Experience with AI Technologies: You will have the opportunity to work with cutting-edge AI technologies and tools developed by ParallelDots. This hands-on experience will help you understand how AI models are built, trained, and deployed in real-world applications.

Computer Vision Expertise: If you are involved in computer vision projects, you will gain insights into image recognition, object detection, and other computer vision techniques. You'll learn how to process and analyze visual data using AI models.

Data Preprocessing and Model Training: Working with real-world datasets requires preprocessing and cleaning. You will gain skills in data preparation, data wrangling, and training AI models to achieve accurate results.

Coding and Development Skills: ParallelDots likely uses programming languages such as Python and frameworks like TensorFlow or PyTorch. As an intern, you'll improve your coding and development skills, learning how to implement AI algorithms effectively.

Team Collaboration: Working as part of a team will give you experience in collaborative projects, code reviews, and effective communication within a tech-oriented team environment.

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**PS-I station: ParallelDots Technology Pvt. Ltd. , Gurugram**

**Student**

**Name:** ARUSHI GULATI .(2021B5A71704P)

**Student Write-up:**

**PS-I Project Title:** Testing Object detection models

**Short Summary of work done:** Had to learn how to install models, run them using tensorflow, javascript, yarn, conda

**Objectives of the project:** testing object detection models

**Tool used:** javascript, yarn, tensorflow, conda

**Details of Papers/patents:** none

**Brief description of the working environment:** was supposed to be an offline station but all my managers worked from home and we were made to travel everyday to office to attend meets online, i was expecting an offline experience but there were no employees to help with work offline. In fact after covid out of 150 employees only 2-3 came to office and the office was really cramped as they switched to just one room after covid. There were times when we went to office and there was not a single employee so we had to wait outside for them to open the lock to the office for about an hour. All of this was even more inconvenient considering i not being from gurgaon, took a PG and had to pay 30k per month to not the get the offline experience i payed 80k for. The faculty in charge was also not helpful as i contacted him many times to help me with my case but he didn't do anything

**Academic courses relevant to the project:** ML AI

**Learning Outcome:** deep learning ML concepts

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**PS-I station: Pass Consulting , Hyderabad**

**Student**

**Name: PRANAV J PANIKULANGARA(2021A3PS2236G)**

**Student Write-up:**

**PS-I Project Title:** Cloud Water System

**Short Summary of work done:** I was involved in implementing the communication infrastructure between the edge devices and the cloud server. I made use of Azure Event Grid's Pub-Sub Messaging capabilities to send and receive data from the edge devices. I then used esp32 to send and receive messages from Azure Cloud server. I then created a live dashboard mobile app using flutter to connect to the given MQTT server. I was

able to publish and subscribe messages from any topic. If the topic is 'sms', it will send an sms to the specified Mobile Number.

**Objectives of the project:** Use esp32 microcontroller to publish and subscribe messages to Azure IOT Hub and Azure Event Grid using MQTT protocol. Develop flutter app for MQTT Messaging and sending sms.

**Tool used:** Azure IOT Hub, Azure Event Grid, esp32, Flutter, dart

**Details of Papers/patents:** No papers/patents

**Brief description of the working environment:** Ours was an offline station, so we worked from T-Hub in Telangana. There was six of us and we were assigned flexible seats. Every evening we had a review meet with our project mentor for an hour and a half. He discussed our progress and assigned us new tasks. It helped to keep us on track. I Learnt working of Azure IOT Hub and Azure Event Grid. I Learnt Arduino code to program esp32 for publish and subscribe. I also Learnt flutter and dart programming to develop basic app for MQTT messaging and sending sms. I had to learn how to send emails and write documentation for code.

**Academic courses relevant to the project:** IOT, Object Oriented Programming,

**Learning Outcome:** Learnt working of Azure IOT Hub and Azure Event Grid. Learnt Arduino code to program esp32 for publish and subscribe. Learnt flutter an dart programming to develop basic app for MQTT messaging and sending sms.

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**PS-I station: Pass Consulting , Hyderabad**

**Student**

**Name:** TANISH GOTTIMUKKALA(2021A7PS0047H)

**Student Write-up:**

**PS-I Project Title:** Cloud water system



**Short Summary of work done:** Built web and mobile native applications, and established connection between client devices and our backend. Used multiple protocols and gateways to enable mqtt communication for iot devices.

**Objectives of the project:** Establish communication between on site devices and backend servers. Develop front end applications to interact with those devices.

**Tool used:** Esp32, mendix , python, Arduino, aws

**Details of Papers/patents:** None

**Brief description of the working environment:** Good working environment. The mentor was quite helpful and had a meet to discuss the days work every day. Had few team lunches together. Lots of learning took place as a consequence of the mentor had sound technical know-how .

**Academic courses relevant to the project:** Basics of computer science

**Learning Outcome:** AWS, python, messaging protocols, Arduino, mendix, UI UX

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**PS-I station: Pass Consulting , Hyderabad**

**Student**

**Name:** BILAKANTI SATHWIKA REDDY .(2021A7PS0225H)

**Student Write-up:**

**PS-I Project Title:** Cloud Water System

**Short Summary of work done:** By combining Azure IoT Hub and Amazon iot core for cloud operations, Figma for UI/UX design, and Flutter for mobile app development, the project hopes to solve the problems with rural water distribution.

**Objectives of the project:** The main objective is to make changes in the existing system such that it's more cost-efficient,faster and more reliable and to be able to communicate between clients.

**Tool used:** Azure,flutter,flutterlow

**Details of Papers/patents:** None

**Brief description of the working environment:** The environment at T-hub allowed us to be much more productive and provided us with the opportunity to gain knowledge in various areas of the field.We were given great advice, steady support, and important help during this project.We were given a task which was expected to be completed by our own.We recieved help and guidance and were able to communicate with the Pass Consulting group whenever needed.

**Academic courses relevant to the project:** Cloud Computing

**Learning Outcome:** Working of the rural water system and the work flow,usage of cloud platforms like Azure for various functions,usage of flutterflow to create a web ui,connection to the PLC.

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**PS-I station: Petasense Technologies Pvt. Ltd. - Embedded Systems ,  
Bengaluru**

**Student**

**Name:** GOWRAV SHETTY .(2021A3PS2654P)

**Student Write-up:**

**PS-I Project Title:** Data Compression on Embedded System

**Short Summary of work done:** Learnt about data compression algorithms, and how to write a data compression application in c++ using zlib library

**Objectives of the project:** To write a C/C++ application to compress raw data on an embedded system

**Tool used:** Git, C++

**Details of Papers/patents:** NA

**Brief description of the working environment:** Good environment for learning with helpful mentors

**Academic courses relevant to the project:** NA

**Learning Outcome:** Data compression,c++,git,linux

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**PS-I station: Petasense Technologies Pvt. Ltd. - Embedded Systems ,  
Bengaluru**

### **Student**

**Name:** RAJUL BANGANI .(2021B1A32739P)

#### **Student Write-up:**

**PS-I Project Title:** Testing Data Compression Models

**Short Summary of work done:** To test different compression models and recommend the most suitable one based on the companys needs.

**Objectives of the project:** Recommending a suitable data compression model to the company to improve efficiency and optimize sensors.

**Tool used:** Linux, Python, C, C++

**Details of Papers/patents:** -

**Brief description of the working environment:** Good opportunity to explore start up culture.

**Academic courses relevant to the project:** Computer Programming

**Learning Outcome:** Predictive maintenance, Vibrational analysis.

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## **PS-I station: Petasense Technologies Pvt. Ltd. - Web Development , Bengaluru**

### **Student**

**Name:** KRISH PARAKH .(2021AAPS0485H)

### **Student Write-up:**

**PS-I Project Title:** Defect Simulator

**Short Summary of work done:** During PS-I at Petasense Technologies, the focus was on developing the Defect Simulator and Measurement Generator project. The work involved learning Python and essential libraries such as Scipy, Matplotlib, and Numpy to generate and visualize signals. Integration of the Measurement Generator with the defect simulator allowed the generation of random signals based on user-defined parameters, which were then uploaded to Petasense servers for web application access. Contributions included developing the logic for the defect simulator script, fixing bugs in provided scripts, and successfully integrating the defect simulator with the Measurement Generator. Challenges faced included understanding vibrations and defects, adapting to new software services like BitBucket, and familiarizing with Python libraries. The project significantly enhanced development efficiency by enabling manual and automated testing of analytical features, providing live data feeds for sales demos, and improving overall product credibility. Future plans involve integrating Docker and Virtual Device Service for real-time device simulation. Overall, the project successfully addressed the limitations in defect simulation and measurement generation processes, contributing to the advancement of Petasense Technologies.

**Objectives of the project:** Creating a simulator webapp

**Tool used:** Major work was done with Python and different libraries

**Details of Papers/patents:** NA

**Brief description of the working environment:** During PS-I at Petasense Technologies, the working environment was dynamic and collaborative, providing a valuable learning experience. The company expected active participation and contribution towards the development of the Defect Simulator and Measurement Generator, while also offering opportunities to gain practical industry knowledge.

Throughout the internship, I had the privilege to work alongside experienced professionals who provided guidance and support. The company fostered open communication and collaboration, enabling me to learn from my colleagues and actively engage in team discussions.

During PS-I, I gained hands-on experience in Python programming, data analysis, and GUI development using Tkinter. I learned and applied libraries such as Scipy, Matplotlib, and Numpy, enhancing my technical skills in signal processing. Additionally, I acquired knowledge of software services like BitBucket for version control and Docker for containerization.

The internship offered a deeper understanding of defect analysis and simulation, particularly in industrial machinery. This practical experience allowed me to apply theoretical concepts and sharpen my problem-solving abilities.

The PS-I experience at Petasense Technologies surpassed my expectations, providing valuable learning opportunities, company support, and practical skill development. It enhanced my time management, teamwork, and adaptability skills.

**Academic courses relevant to the project:** Computer Programming , Signals and System

**Learning Outcome:** Learnt how python can be used to creating backend logics for apps.

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**PS-I station: Petasense Technologies Pvt. Ltd. - Web Development ,  
Bengaluru**

**Student**

**Name: VAIBHAV DEVRAJ .(2021B4A71107P)**

**Student Write-up:**

**PS-I Project Title: Web Development**

**Short Summary of work done:** In Phase 1, the focus is on learning Python and essential libraries such as SciPy, matplotlib, NumPy, and tkinter. These libraries are crucial for signal generation and visualization. By understanding their functionalities, you can generate signals using SciPy and NumPy and display them using matplotlib. Additionally, gaining knowledge of defects and the Fast Fourier Transform (FFT) allows you to create corresponding time waveform signals for each defect. Phase 2 involves integrating the existing measurement generator script with the defect simulator developed in Phase 1. The measurement generator generates random signals based on user-defined parameters and uploads them to the Petasense servers. This integration allows the generated signals, including simulated defects, to be viewed in the web application. The objective is to test the signal generation and defect simulation by sending them to the development environment. Furthermore, the defect simulation flow needs to be incorporated into the old measurement generator GUI for a seamless user experience. In Phase 3, the project focuses on setting up Docker, either on Windows using WSL and Docker Desktop or on Ubuntu. The next step is to establish the Virtual Device Service using Docker, enabling the integration of the measurement generator with defect simulation into the Virtual Device Service. This integration enables the Virtual Device Service to simulate real-time devices, which can be used for various purposes like manual testing, automated regression testing, and providing a live data feed for sales demo accounts. By generating defect signals in real-time, the product's analytical features can be tested and demonstrated to customers, increasing its credibility. Overall, this project plan covers learning Python and relevant libraries, generating and displaying signals, understanding defects and FFT, integrating the measurement generator with defect simulation, setting up Docker, and integrating the Virtual Device Service to simulate real-time devices for testing and demo purposes.

**Objectives of the project:** Defects Simulation and Measurement Generation

**Tool used:** Python

**Details of Papers/patents:** None

**Brief description of the working environment:** Positive working environment

**Academic courses relevant to the project:** Computer Programming

**Learning Outcome:** Python

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## PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli

### Student

Name: OJASVA GOYAL .(2021A2PS2378P)

#### Student Write-up:

**PS-I Project Title:** NAVIGATION OF MAV IN GPS - DENIED ENVIRONMENTS ; GRADIENT DETECTION ; SIMULATIONS FOR ROBOTIC ARM ; ARUCO MARKERS BASED ROBOT LOCALIZATION

**Short Summary of work done:** During my internship, I undertook significant research to address the persistent challenge of Micro Aerial Vehicles (MAVs) navigating in GPS-denied environments. I explored various hardware options that could enable efficient navigation in such conditions. This comprehensive research involved studying the functionalities, strengths, limitations, and potential applications of different hardware solutions, aiming to find viable alternatives to traditional GPS signals. In the subsequent project, I focused on the development and simulation of company's robotic arm using MOVEIT. The main objective was to create a virtual model of the arm using its URDF file and a virtual environment where the robotic arm could be accurately modeled, controlled, and thoroughly tested, all without the need for physical hardware. By leveraging MOVEIT's capabilities, I aimed to evaluate various arm configurations, motion trajectories, and strategies for collision avoidance. For my final project, the primary focus was on designing a robust localization system for robots using ArUco markers. The objective was to develop a system capable of real-time detection, tracking, and pose estimation of ArUco markers using computer vision techniques. The collected marker information was then employed to achieve accurate localization of the robot within its environment. The entire system was developed in the context of ROS, making use of the aruco\_detector\_ocv capabilities.

**Objectives of the project:** First two projects i.e. "Navigation of MAV in GPS - denied environments" and "Gradient Detection" were research based for some client presentations of the company. Other two projects, i.e. "Simulations of Robotic Arm" and "ArUco Markers based robot Localization" were for the development of the in-house robots and for the advancements of the company's technology.

**Tool used:** H/w :- RP Lidar, Lenovo Web-cam, Arduino UNO, Four wheeled robot ; S/w :- ROS, MoveIT, Gazebo, RViz, Python, C++

**Details of Papers/patents:** N/A

**Brief description of the working environment:**

During my PS-I at PNT Robotics, I had the privilege of working in a dynamic and innovative environment that fostered creativity and collaboration. The company's workplace culture was characterized by a strong emphasis on cutting-edge technologies and a passion for problem-solving, which provided an exciting and enriching atmosphere for learning and growth. The supportive team of mentors and colleagues played a crucial role in guiding and encouraging me throughout my internship, allowing me to overcome obstacles and make substantial contributions to various projects.

Being a startup, the office was not that big, but the environment and people were great.

I got the opportunity to even work with various sensors, cameras, and other hardware.

During PS-I, I experienced significant personal and professional growth. I honed my research skills, particularly in the area of MAV navigation in GPS-denied environments, which allowed me to make valuable contributions to the company's ongoing projects. Additionally, my exposure to ROS and its applications in robotic arm simulation and localization systems expanded my expertise in robotics and computer vision.

**Academic courses relevant to the project:** Study Oriented Project (SOP), Computer Programming (CP)

**Learning Outcome:** I learned how to use software like "MoveIT", "Arduino IDE", and run simulations using "ROS" and "RViz". Also did hardware integration and even learned to make client presentations.

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## **PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli**

### **Student**

**Name:** SOHAM SAPRE .(2021A3PS0159P)

### **Student Write-up:**

**PS-I Project Title:** Face recognition vs deepface, lightweight emotion detection

**Short Summary of work done:** Initially I did my research on face recognition/deepface /light weight emotion detection models. Then I wrote a code of my own to develop a model on each one. I used a data set available on internet to train and test my models and submitted my observations and conclusions to the ps stations.



**Objectives of the project:** Understand different models of face recognition, deep face and light weight emotions and check its efficiency.

**Tool used:** Python, VScode

**Details of Papers/patents:** NA

**Brief description of the working environment:** The working environment was very student friendly. We were given flexible hours and plenty of guidance.

**Academic courses relevant to the project:** Computer programming, mathematics-1, 2,3,

**Learning Outcome:** I learned a lot during the course of this internship. Not only did I learn more about ai/ml and improve my python skills but also how to properly write a research paper.

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**PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli**

**Student**

**Name:** HARSH PAHADE .(2021A3PS1012P)

**Student Write-up:**

**PS-I Project Title:** Interfacing Varous Devices Using an Arduino Microcontroller

**Short Summary of work done:** I have worked on projects involving Arduino Microcontrollers and the interfacing electronic devices. Specifically, I have utilized various input devices such as potentiometers, rotary encoders, IMU sensors, flex sensors, and load sensors with output devices such as OLED displays, Seven-segment displays, stepper motors and servo motors using the Arduino microcontroller. I have also implemented data processing algorithms like PID and Kalman filters to smoothen out the operation of the aforementioned devices.

**Objectives of the project:** To interface different types of devices to read data, process it and use actuators to perform real-world tasks based on the data given. The smaller projects can later be integrated into a fully functional robot.

**Tool used:** Arduino Microcontroller, Arduino IDE, Python, Stepper and servo motors, IMU sensors, Load sensors, Flex sensors, Rotary encoders, Optocoupler, Potentiometer

**Details of Papers/patents: -**

**Brief description of the working environment:** PNT robotics has a good work environment. The faculty mentor was very helpful and gave tasks according to my previous experience for a good learning curve. The company did not assign any stressful deadlines and all the work was completed comfortably. I learnt how to use and interface microcontrollers and other input and output devices as well as drivers which are widely used in robotics.

**Academic courses relevant to the project:** Electrical Machines, Microprocessors and Interfacing, Digital Design

**Learning Outcome:** Arduino interfacing, Serial communication, I2C communication, Data processing algorithms

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**PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli**

**Student**

**Name:** SHIKHAR SRIVASTAVA .(2021A3PS1131P)

**Student Write-up:**

**PS-I Project Title:** Table containing mmsi, roc,cpa and tcpa

**Short Summary of work done:** The PS went smooth and successful with the support of our industry mentor and faculty in charge . I learnt about how tasks are carried out in a company and the importance of teamwork

**Objectives of the project:** Making the frontend part of a web page to help for autonomous ship navigation

**Tool used:** React ,D3.js, javascript

**Details of Papers/patents:** No

**Brief description of the working environment:** The working environment was very flexible.The mentors were always helpful and patient.I got to learn a lot about frontend development.

**Academic courses relevant to the project:** No courses

**Learning Outcome:** Learnt about industry use of javascript and other libraries.

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**PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli**

**Student**

**Name:** KANCHAN .(2021A3PS2185H)

**Student Write-up:**

**PS-I Project Title:** Machine learning projects

**Short Summary of work done:** I made three different AI models using opencv, tensorflow and keras . First one was face mask detecting using cnn and yolov5 which detected whether a person is wearing a mask or not. The next one was to build a counter using yolov5. The third one was hand tracking using mediapipe.

**Objectives of the project:** I did 3 projects which were face mask detection, video model training and hand tracking using mediapipe. Objective of the projects was to make me familiar with computer vision tasks and several python libraries

**Tool used:** Tensorflow, keras , numpy, pandas

**Details of Papers/patents:** None

**Brief description of the working environment:** The work environment there was creative and inclusive. I gained indepth k owledge of opencv and mediapipe.

**Academic courses relevant to the project:** Machine learning, Computer programming

**Learning Outcome:** Opencv, python

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**PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli**

**Student**

**Name: KARTHIC KRISHNA KAKKATTEL .(2021A4PS1325P)**

**Student Write-up:**

**PS-I Project Title:** YOLOv5 Object Detection and Video Model Training

**Short Summary of work done:** During my internship, I engaged in two interconnected projects that focused on YOLOv5 Object Detection and Video Model Training. The first project aimed to familiarize myself with the YOLOv5 model and its practical implementation, providing insights into its algorithms and training custom models. Building on this knowledge, the second project involved training a personalized model tailored to specific project requirements. These projects facilitated a structured learning progression, starting with a comprehensive understanding of YOLOv5 and culminating in hands-on experience with custom model training. Through successful execution, I expanded my technical skills and gained a deeper appreciation for YOLOv5's potential applications in computer vision. Object detection using YOLOv5 has numerous practical implications, including enhancing safety and efficiency in autonomous vehicles, supply chains, and surveillance systems. The real-time performance and accurate object localization capabilities of YOLOv5 can contribute to critical decision-making in autonomous vehicles, predicting and reacting to potential hazards for a smooth driving experience. Furthermore, implementing similar techniques can establish surveillance systems in large-scale industries, enabling continuous monitoring of items passing through specific locations. Overall, these projects have enriched my understanding of YOLOv5's capabilities and its potential to revolutionize various computer vision applications.

**Objectives of the project:** The primary objective of the initial project was to facilitate my familiarity with the intricacies of the YOLOv5 model and acquire comprehensive knowledge of its practical implementation. Through this undertaking, I gained insights into the core principles, algorithms, and techniques underpinning YOLOv5 while delving into the essential steps in training custom models using this framework. Building upon this foundational knowledge, the subsequent project focused on the practical application of YOLOv5 for training a personalized model. By employing the acquired expertise and leveraging the capabilities of the YOLOv5 model, I undertook the task of training a model tailored to the specific requirements and objectives of the project.

**Tool used:** PyTorch, Keras, YOLOv5, Python,

**Details of Papers/patents:** None

**Brief description of the working environment:** During Practice School -I (PS-I), the working environment was dynamic, professional, and conducive to learning. As an intern, I had the opportunity to work in a real-world setting and collaborate with experienced professionals from diverse backgrounds. The company fostered a culture of inclusivity and encouraged open communication, creating a supportive atmosphere where interns' ideas and contributions were valued.

The company had clear expectations from its interns during PS-I. They sought a high level of commitment, dedication, and a willingness to take on challenges. Punctuality, reliability, and a strong work ethic were essential attributes they looked for in interns. Additionally, they expected us to actively participate in team discussions, seek guidance when needed, and show a proactive approach to problem-solving.

Throughout the internship, I had the chance to work on various projects, exposing me to different aspects of the industry. This hands-on experience allowed me to apply theoretical knowledge gained in my academic studies and bridge the gap between theory and practice. Working alongside professionals, I learned valuable skills, such as project management, time management, and effective communication.

Furthermore, the company provided regular mentorship and feedback sessions, helping me identify my strengths and areas for improvement. This constructive feedback aided my personal and professional growth, enhancing my overall performance during the internship.

Overall, Practice School -I was an invaluable experience that not only deepened my technical expertise but also nurtured my professional development, preparing me for future career challenges.

**Academic courses relevant to the project:** MACHINE LEARNING

**Learning Outcome:** learned YOLOv5 model intricacies and practical implementation, training personalised models with tailored solutions. Gain a solid foundation, hands-on experience, and problem-solving skills in machine learning. Valuable assets for your journey.

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## PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli

### Student

Name: VASUMAN MALVIYA(2021A4PS1364P)

### Student Write-up:

**PS-I Project Title:** AI Development

**Short Summary of work done:** TASK 1: Compare Face Recognition vs DeepFace Face Recognition Recognize and manipulate faces from Python or from the command line with the world's simplest face recognition library. Built using dlib's state-of-the-art face recognition built with deep learning. This also provides a simple face-recognition command line tool that lets you do face recognition on a folder of images from the command line. DeepFace is a lightweight face recognition and facial attribute analysis (age, gender, emotion and race) framework for python. It is a hybrid face recognition framework wrapping state-of-the-art models: VGG-Face, Google FaceNet, OpenFace, Facebook DeepFace, DeepID, ArcFace, Dlib and SFace. OpenCV: A huge open-source library for computer vision, machine learning, and image processing. OpenCV supports various programming languages like Python, C++, Java, etc. It can process images and videos to identify objects, faces, or even the handwriting of a human.TASK 2 : Video model training Name of our project : pnt\_object\_detection It is a team work. There are 7 members in our team .Everyone take 30 ss of different variety like some with dots on right side some with dots on left side some in center .First extracting 30 images from the 3 videos, then manually labelling them and then uploading them to roboflow. We generated the augmented images and trained it. In this task I downloaded the new dataset shared by Ashish sir. It is a zip file of mp4 videos. I have taken some screenshots and I have uploaded and labelled the images on roboflow by making my account on roboflow and joined the common workspace. I annotated and uploaded approximately 30 images. We trained the dataset using YOLOv5. The version used is V5 .TASK 3 : ArUco marker detection An ArUco marker is a synthetic square marker composed by a wide black border and an inner binary matrix which determines its identifier (id). The black border facilitates its fast detection in the image and the binary codification allows its identification and the application of error detection and correction techniques. The marker size determines the size of the internal matrix.

**Objectives of the project:** To explore the field of AI Development.

**Tool used:** Face-recognition library, DeepFace ,OpenCV, Python Aruco marker detector.

**Details of Papers/patents:** NA

**Brief description of the working environment:** The successful completion of three tasks demonstrates the power and potential of artificial intelligence in solving complex real-world problems. By face recognition, video model training, and ArUco marker detection, this project opens up possibilities for further advancements in AI-based systems and contributes to enhancing various applications.

In conclusion, this AI project tasks face recognition, video model training, and ArUco marker detection, showcasing the potential of AI in addressing complex challenges. The achieved outcomes contribute to the development of innovative solutions.

As an intern, I discovered it's essential to be enthusiastic and open to learning new skills, asking for more work and being curious to learn and ask questions. Because of this curiosity and enthusiasm, as an intern, I got a lot out of what I was doing, and I believe it will open a lot of opportunities for me in future. Communication is the key to success in a professional environment. Asking for help and clarification is better than pretending you've understood what you need to do, no matter what. However, I also found that if one can Google something, that must be done before asking for help. This way, my internship at PNT Robotics became a great learning experience both in technical and professional terms.

**Academic courses relevant to the project:** Robotics, Artificial Intelligence and Machine Learning.

**Learning Outcome:** I have learned Face-Recognition library ,OpenCV ,Video model training ,Aruco marker detection.

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**PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli**

**Student**

**Name: LAVANYA ANANTHAN(2021A4PS2332G)**

**Student Write-up:**

**PS-I Project Title:** Design and Fabrication of Mechanical Parts for various

**Short Summary of work done:** During ps1, I got to design and print a lot of my own models, and see how to correct previously made mistakes by constantly learning from them

**Objectives of the project:** To model and create parts for a robot

**Tool used:** Fusion360, Ender 3- 3d printer, Prsua slicer, AutoCAD

**Details of Papers/patents:** None

**Brief description of the working environment:** It was a collaborative and fast paced environment, and I learnt valuable industry experience during ps1

**Academic courses relevant to the project:** Material Science, EG

**Learning Outcome:** Hard skills: 3d print, CAD modelling  
Soft skills: team work, critical and analytical thinking

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**PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli**

**Student**

**Name:** JAHNAVI RISHIKESH(2021A7PS1474G)

**Student Write-up:**

**PS-I Project Title:** 1. Simulating Robot Motion in a 2-D Interface using Turtle, 2. Comparison of Lightweight Emotion Detection Models

**Short Summary of work done:** In Project 1, I worked on simulating a robot's movement in a 2-D interface using Python. I integrated data from a rotary encoder and an IMU, allowing for accurate distance and direction determination. Implementing multithreading



ensured efficient concurrent processing, and I utilized the Turtle graphics library to visualize the robot's movement. This project combined robotics, data acquisition, and graphics programming, providing a valuable learning experience. Project 2 focused on conducting a comprehensive comparison of lightweight emotion detection models for facial emotion recognition. I analyzed three specific models: DeepFace, Convolutional Neural Networks (CNNs), and Stationary Wavelet Transforms. The goal was to assess the accuracy and various metrics of each model. Through this research, I gained valuable experience in methodology design, model evaluation, and advancing the field of emotion detection.

**Objectives of the project:** Project 1: To integrate data obtained from sensors and data from encoder to simulate robot motion, helping us get an idea of robot behaviour, Project 2: This project centers around conducting a comprehensive comparison of lightweight emotion detection models for facial emotion recognition, enabling informed decisions when it comes to selecting and implementing emotion detection models.

**Tool used:** Hardware : Rotary Encoder, Arduino UNO, Software: Python (used Pycharm as IDE), HyperIMU, OpenCV, CNNs

**Details of Papers/patents: -**

**Brief description of the working environment:** The industry had a collaborative and innovative working environment where ideas are encouraged, and creativity is valued. I got the opportunity to work with my peers from different campuses and other interns and the employees of the company to various degrees. The tasks and projects we got were never monotonous or superfluous and encouraged me to constantly analyze the problem statement and take multiple approaches towards a solution. The industry mentors were very patient with us and were very regular in discussing our progress with us. The company exceeded all my expectations of having a supportive and inclusive work environment that values employee well-being and work-life balance.

The company did not pressurize us or overwork us, instead they only expected us to be diligent with our work and look at a task or problem from multiple angles. They expected us to abide by any rules they had and adhere to the working ethics, but they also interacted with us very often and provided a healthy working environment.

The projects allowed me to navigate and embrace the complexities of real-world applications. These experiences provided a strong foundation in problem-solving, project management, and interdisciplinary collaboration, empowering me to tackle future challenges in the fields of robotics, data analysis, and artificial intelligence.

**Academic courses relevant to the project:** Digital Design, Computer Programming, Probability and Statistics, Object Oriented Programming, Network Programming

**Learning Outcome:** The major learning outcomes of my projects were to learn more about how the concepts I have learnt can be utilized in real world applications. The facial emotion recognition models I studied were helpful with the industry's robot ADO, while the simulation of robot motion helped in understanding robot motion and recording

odometry data. I also got the opportunity to work with a team of capable individuals and learn from my peers and the industry mentors.

To elaborate:

Project 1 - 2-D Robot Movement Simulation: Gain experience in robotics, data acquisition, and graphics programming by simulating a robot's movement and integrating sensor data for analysis. Learn multithreading for efficient concurrent processing and use the Turtle graphics library for visualization.

Project 2 - Lightweight Emotion Detection Model Comparison: Conduct a comprehensive comparison of facial emotion recognition models, evaluating accuracy and efficiency. Gain expertise in deep learning techniques, research methodology, and contribute to advancing the field of emotion detection.

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## **PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli**

### **Student**

**Name:** AKSHAT MAHENDRA JAIN .(2021A7PS2564H)

### **Student Write-up:**

**PS-I Project Title:** Lightweight emotion detection models and Hand Tracking using Mediapipe

**Short Summary of work done:** I completed three projects during my PS-1 tenure. 1st was lightweight emotion detection models. 2nd was Hand Tracking using Mediapipe. 3rd was Counter Model using YoloV5. Lot of time went in researching and learning about the basics of neural networks and how they work and their different layers and functions. Lot of time went in using and understanding the different libraries that Python offers and which we had to use.

**Objectives of the project:** To create and compares models of real-time emotion detection based on their CPU usage and develop it such that it requires less computing power

**Tool used:** Python, OpenCV, PyCharm, Keras, Tensorflow, CNN, Mediapipe,

**Details of Papers/patents:** Nope

**Brief description of the working environment:** Work environment was very professional. I got a project of my own choice which under the domain of Machine Learning. It was offline work for me and the industry mentor was always there to help us. I've learnt a lot and have gained many valuable skills to pursue my interest in Machine Learning

**Academic courses relevant to the project:** Machine Learning, Artificial Intelligence

**Learning Outcome:** Machine Learning, Deep Learning

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**PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli**

## **Student**

**Name:** Aryan Bhosale(2021AAPS0274G)

### **Student Write-up:**

**PS-I Project Title:** Logging Sensor Data from ESP8266 to Spreadsheet, Interfacing PC817 2-Channel Optocoupler with an Arduino UNO and blink an LED, Interfacing a flex sensor and a servo motor with an Arduino UNO and controlling the motion of the servo motor using the flex se

**Short Summary of work done:** Interfacing various sensors with microprocessors and microcontrollers and automating data logging, using Kalman filters to filter out the noise, using PID Controls to smoothen robotic movement, mechanics of chassis and programming it to get accurate data

**Objectives of the project:** To predict the path of the body using it's attributes like speed and direction along with angle, to smoothen the moving parts of the robot, to smoothen the readings generated by various sensors, to accurately measure the weight of the object kept on the chassis

**Tool used:** Arduino IDE, VSCode, Google Apps Script, Arduino C, Python, Pandas, Matplotlib, JavaScript, ESP8266, UDP, Serial UART Protocol, I2C Protocol, Arduino UNO

**Details of Papers/patents:**  
[https://docs.google.com/document/d/1pCHLxIjPba4ulFJe\\_I01J4gtJx3DgomX6smANBuwmx0/edit?usp=sharing](https://docs.google.com/document/d/1pCHLxIjPba4ulFJe_I01J4gtJx3DgomX6smANBuwmx0/edit?usp=sharing)

**Brief description of the working environment:** Work environment is small, but conducive. Small teams, high productivity. You get to learn only if you are selected for offline as you get hands on experience and get a chance to talk to mentors. My expectations were to build cool robots but when I entered the field, I realised that there was so much math involved even in programming. I got to apply so many concepts and even learn and apply courses that aren't even taught yet like DSP(3-1). I also learnt to be punctual and improved my people skills in startup environments.

**Academic courses relevant to the project:** Microprocessors, Digital Signals Processing, Control Systems

**Learning Outcome:** Application of PID Controller, Kalman Filters, Interfacing, Automation, Network Communication Protocols

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**PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli**

**Student**

**Name: SAMYAK SAHU .(2021AAPS2171P)**

**Student Write-up:**

**PS-I Project Title:** Training a textile pattern detection and tagging model

**Short Summary of work done:** Build and train an image captioning model that works using multi lable image captioning to recognise and tag a client's textile products based on their patterns.

**Objectives of the project:** 1. To build an Image Captioning model based on Multi Label Image Classification. 2. To train this model to identify and tag textile patterns from client's database.

**Tool used:** Google Colab, TensorFlow, Keras, Google sheets with Google Apps Script, Hugging Face.

**Details of Papers/patents:** None.

**Brief description of the working environment:** Healthy culture with supportive industry mentors. The faculty in charge was very uptight. But it was fun working with experts in their fields of work.

**Academic courses relevant to the project:** Computer Programming, Machine Learning, Artificial Intelligence.

**Learning Outcome:** How to effectively learn something from scratch and implement it as a working model within limited time.

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**PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli**

**Student**

**Name:** SHAURYA SHITAL PAHADE .(2021ABPS2717P)

**Student Write-up:**

**PS-I Project Title:** Image Captioning Model

**Short Summary of work done:** 1.Image captioning model 2.ArUco marker detection

**Objectives of the project:** To generate captions describing an image

**Tool used:** Hugging face API

**Details of Papers/patents:** No patents

**Brief description of the working environment:** Best working environment

**Academic courses relevant to the project:** Machine Learning

**Learning Outcome:** Machine Learning

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**PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli**

**Student**

**Name:** DEEPAK KUMAR .(2021B2A12272P)

**Student Write-up:**

**PS-I Project Title:** Developing AI Ship Assistant with Data Visualization

**Short Summary of work done:** The work involves development of an AI Ship Assistant with a focus on data visualization. The purpose of this project was to create a user-friendly graphical interface to assist the Navy in their ship operations. The report highlights the research conducted on optimal libraries for scatterplot and other chart requirements, leading to the selection of suitable libraries such as Highcharts and D3.js. It also discusses the integration of these libraries into the codebase using JavaScript and calculations from Backend. The report touches upon the importance of data visualization in enhancing decision-making and situational awareness for the Indian Navy. The report emphasizes on the challenges faced during the frontend development process and the strategies employed to overcome them, including meticulous error handling and effective teamwork. It concludes with key insights and lessons learned.

**Objectives of the project:** The PS-I course provides students with a unique opportunity to gain valuable experience beyond classrooms by academically engaging in projects identified from industries of varying scale, scope, and complexity. The following are the broad objectives of this course: • Provide an opportunity to understand and learn the operations of an industry • Gain proficiency to solve industry problems by applying theoretical concepts and contemporary tools. • Provide an opportunity to enhance technical, interpersonal, and communication skills through practice. • Contribute, create, and drive activities involving innovation and communication across multipledemographics, while adhering to the highest ethics and integrity.

**Tool used:** H/w - Lenovo Legion 5 Pro , S/w - VS Code, Microsoft Word, Microsoft Powerpoint, Google Chrome(Developer Tools)

**Details of Papers/patents:** Nil

**Brief description of the working environment:** • Project details: (Title, Mentor, skill set required, expected outcomes, work plan, major milestones) will

be prepared and submitted by students to PS-I faculty, within a week from the start of PS-I

• Dairy: Daily reporting in the diary will be done by students and shared with the PS-I faculty and the station coordinator. Weekly update on work completed and plan for the work to be executed during the forthcoming week.

• Student-PS-I Faculty interaction: Daily (First 2 weeks and final 2 weeks); Alternate days (rest of the PS-I period) and as required by the project work.

• Student-Industry Mentor Interaction: Daily

**Academic courses relevant to the project:** Nil

**Learning Outcome:** • Understand the technological processes and identify various problems in the industry/ organization.

• Work on possible solution(s) to an identified problem/ project, with professional standards.

• Seek, visualize, analyze, and record data/ information through appropriate documentation.

• Improve problem-solving and critical thinking skills.

• Develop appropriate organizational attitudes and values.

• Acquire soft skills and social skills

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**PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli**

**Student**

**Name: RATNESH PAREEK .(2021B2A12487P)**

**Student Write-up:**

**PS-I Project Title: AI Development : yolov5 &video model training**

**Short Summary of work done:** I learned to create models in ai to identify objects and count them . i learned the use of yolov5 and roboflow

**Objectives of the project:** to prepare a model who and identify objects and count them

**Tool used:** Yolo v5, Clickup, roboflow

**Details of Papers/patents:** NA

**Brief description of the working environment:** company provided us with all the help we needed and provided us with adequate resources to develop the model .

**Academic courses relevant to the project:** Computer Programming

**Learning Outcome:** exposure to ai tools

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**PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli**

**Student**

**Name:** OM HITESH BHUVA .(2021B3A81920H)

**Student Write-up:**

**PS-I Project Title:** Frontend GUI Development, AI Development

**Short Summary of work done:** Worked on frontend development for Graphic User Interface, and also researched and tested Ai models that can detect emotion in real time.

**Objectives of the project:** Develop a GUI for ship navigation, Develop and test a lightweight emotion detection model

**Tool used:** Javascript, Python, OpenCV, Keras, JS Libraries, Visual Studio Code, Jupyter Notebook, Github

**Details of Papers/patents:** none



**Brief description of the working environment:** Good supportive environment, regular work updates taken from team heads, mentors were direct upper level management and very inclusive and closely observed and guided the projects.

**Academic courses relevant to the project:** AI/ML, Computer Vision, Javascript and frontend development, Embedded Systems

**Learning Outcome:** Learned Javascript and basic frontend development, Data visualization techniques, Python libraries, Basic ML and deep learning, training of AI models, Application of OpenCV, working in a team, following deadlines, time management, developing healthy workflow.

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## **PS-I station: PNT Robotics & Automation Solutions,LLP , Dombivli**

### **Student**

**Name:** MOHIT AGARWAL .(2021B5A33159H)

### **Student Write-up:**

**PS-I Project Title:** Object Detection using YOLOv5

**Short Summary of work done:** I focused on building three computer vision models using YOLOv5 during my internship. The first model was a Blood Cell Detection Model, capable of identifying all three types of blood cells (RBCs, WBCs and Platelets) from given blood sample images. It achieved an impressive accuracy of 91.5%, making it a valuable tool for medical applications. The second model I developed was a Face Mask Detection Model. This model could determine whether a person was wearing a face mask, and it was designed to work with images, videos and live camera footage. This feature made it suitable for integration with surveillance cameras to enhance safety and compliance with face mask regulations. Lastly, I worked on Video Model Training, which had dual functionality. It could detect and track all the grains moving on a conveyor belt, and, more impressively, it could count the number of grains that had passed through a designated area. This model demonstrated its potential for industrial applications, enabling efficient monitoring and quality control in manufacturing processes.

**Objectives of the project:** The objective of the project was to build different computer vision models capable of identifying different objects.

**Tool used:** YOLOv5, Roboflow

**Details of Papers/patents:** I did not come across any papers or patents directly related to my work.

**Brief description of the working environment:** The working environment at PNT Robotics was dynamic and collaborative. The company provided a stimulating space for learning and individual growth. As an intern, I was expected to demonstrate a willingness to learn new technologies and the ability to work independently while also collaborating effectively within a team. During my PS-I, I immersed myself in learning and building computer vision models. The experience was enriching as I worked on three significant projects that had real-world applications. Throughout the internship, I sharpened my technical skills, gained hands-on experience in the artificial intelligence field, and refined my computer vision and object detection abilities. The team projects, group discussions and presentations also enhanced my soft skills.

**Academic courses relevant to the project:** No previous knowledge or academic courses were required.

**Learning Outcome:** During my time with PNT Robotics, I gained several major learning outcomes. I became proficient in using YOLOv5, a popular computer vision model for object detection. Through hands-on experience, I learned how to build and fine-tune various machine learning models tailored to the needs of the robotics industry. Additionally, I developed strong teamwork, presentation and communication skills by collaborating with colleagues on different projects.

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**PS-I station: Prompt Equipments Pvt. Ltd. , Ahmedabad**

**Student**

**Name: CHANDRASHEKAR RAMACHANDRAN .(2021A7PS2541P)**

**Student Write-up:**

**PS-I Project Title:** Developing an E-commerce website

**Short Summary of work done:** work wasn't much. Used html, CSS, js and MERN stack to develop a website for the company with cart features, inventory management and contact support.

**Objectives of the project:** developing an e-commerce website using MERN stack

**Tool used:** MERN

**Details of Papers/patents:** no

**Brief description of the working environment:** nice working environment. the fic and the project mentor from the company were helpful.

**Academic courses relevant to the project:** CP

**Learning Outcome:** Learnt the MERN stack. also collaborated with the station on their needs of the website.

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**PS-I station: Prompt Equipments Pvt. Ltd. , Ahmedabad**

**Student**

**Name:** PRATHMESH TIWARI(2021A7PS2834G)

**Student Write-up:**

**PS-I Project Title:** E-commerce Website

**Short Summary of work done:** We learned to work in a team and face all the arduous challenges. Also, learnt web development.

**Objectives of the project:** To develop an E-commerce Website

**Tool used:** Javascript, CSS, HTML

**Details of Papers/patents:** We submitted a report

**Brief description of the working environment:** Our station was online, so we didn't face any working environment related problems.

**Academic courses relevant to the project:** IT

**Learning Outcome:** Backend and Frontend

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**PS-I station: Prompt Equipments Pvt. Ltd. , Ahmedabad**

**Student**

**Name:** KANAV AGGARWAL .(2021A8PS3010H)

**Student Write-up:**

**PS-I Project Title:** Design Embedded system to Control Temperature of Chamber

**Short Summary of work done:** The project aims to design an embedded system for controlling the temperature of a chamber using the Proteus Simulator. The objective is to create an intelligent and efficient system that can accurately regulate the temperature within the chamber to maintain optimal conditions for various applications. The embedded system is developed using PIC microcontroller for real-time monitoring and control. The system incorporates a sensor to measure the temperature inside the chamber and employs an actuator to adjust the temperature accordingly. To validate the effectiveness of the system, extensive testing and experimentation are conducted. The performance of the embedded system is evaluated based on parameters such as temperature accuracy, response time, and stability

**Objectives of the project:** 1. Temperature sensor interfacing with Controller [Analog Interface] 2. Logging the Data gathered [EEPROM/ SD card Interface]. 3. Showing the Data on Display [LCD interface]. 4. Controlling the Temperature with Heater/Fan [Digital PWM interface].

**Tool used:** Proteus Simulator, MicroC

**Details of Papers/patents:** NA

**Brief description of the working environment:** Though it was an online internship and we did not get to interact regularly with the company personnel, they were always available to guide us. The working environment had a good balance of professionalism and geniality and we were always provided by constructive feedback on our work. We learned how projects are carried out within an organisation and how the company values always govern every action of every employee.

**Academic courses relevant to the project:** MPI, computer programming

**Learning Outcome:** We were able to gain in depth knowledge of how different peripheral devices are interfaced with a microcontroller and how programming of an embedded system is done.

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**PS-I station: Prompt Equipments Pvt. Ltd. , Ahmedabad**

**Student**

**Name:** SARTHAK AGARWAL .(2021B2AA2298P)

**Student Write-up:**

**PS-I Project Title:** Embedded Systems

**Short Summary of work done:** I learn Proteus Stimulator and how to make an embedded systems semantic in it. I used PIC microcontroller, LM35 Temperature sensing device to sense the temperature, a crystal oscillator to catch signal, an output LCD device to record the temperature on screen and a heater and a fan to regulate the temperature properly. C language was used to implement this using code.

**Objectives of the project:** We have to design an embedded system to maintain the temperature of a system using Proteus Stimulator

**Tool used:** Proteus Stimulator

**Details of Papers/patents:** NONE

**Brief description of the working environment:** It was a good station, Sudarshan Sir(faculty in charge) was very much supportive, working hours were not hectic. U can learn a lot Embedded System during internship at this station. Group discussion and presentation are also important aspect as they improve one's communication skills a lot

**Academic courses relevant to the project:** Microcontrollers, Embedded design

**Learning Outcome:** I learnt about Proteus Stimulator, Embedded Systems,.

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**PS-I station: Qualitykiosk Technologies Pvt. Ltd. , Mumbai**

**Student**

**Name:** SIDDHANTH KALYANARAMAN .(2021A1PS2331H)

**Student Write-up:**

**PS-I Project Title:** Test case optimizer

**Short Summary of work done:** In this project, I completed training in Selenium with Python and Java, as well as AI/ML data modeling. After setting up the environment, I practiced writing test cases for a dummy application source code in a browser. Later, I extended several classes within an application's source code and deployed it on Tomcat 9 server. I automated the testing process, capturing data on class-test case mappings and storing it in a MySQL database with 1293 rows. Seeking to leverage AI, I pushed the code to GitHub and explored its ability to detect changes in the .WAR file and provide insights on required test cases. Additionally, I developed a service to generate a notepad file with mapped test cases and class names. This project allowed me to gain valuable experience in web application testing, database management, and utilizing AI for software analysis.

**Objectives of the project:** To reduce the execution time of any application.

**Tool used:** tomcat 9 server,selenium webdriver,mysql database

**Details of Papers/patents:** no papers referred

**Brief description of the working environment:** very well organised and focus to work environment was provided .I was introduced to agile work policies in the internship and thought how to implement those in daily life.We were given free access to udey for 2 months during the internship wherein I could learn many courses free of cost. Learnings provided by them was very precious .All my expectations was fulfilled by the company.How to know what are the main steps taken to start a startup was also taught by the to us apart from the internship.I really liked working for it and it improved my persona very much.It was worth the experience.

**Academic courses relevant to the project:** Some concepts of DSA was required.

**Learning Outcome:** To find a approach of how to get optimized test cases for reducing execution time of a web application

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**PS-I station: Qualitykiosk Technologies Pvt. Ltd. , Mumbai**

**Student**

**Name: SARTHAK SHARMA .(2021A7PS2535P)**

**Student Write-up:**

**PS-I Project Title:** Synthetic Monitoring Ticket Validation

**Short Summary of work done:** In the duration of the project, I was introduced to the process of Synthetic Monitoring and was tasked to reduce human involvement in classification of issues at the time script runtime failures to increase accuracy and efficient and streamlined classification of tickets. I achieved the objective using Document Similarity approach for a Machine Learning Model trained on data received through Optical Character Recognition of Images captured at runtime error.

**Objectives of the project:** Ticket Classification For Synthetic Monitoring Machine Learning

**Tool used:** Natural Language Processing(Cosine Similarity) done in Python, Pandas for Data Analysis, ML for Model creation, Selenium WebDriver, Tesseract OCR

**Details of Papers/patents:** Project Report submitted to Faculty in charge consists of elaborate insight into the project completion. Other informational guides or code was asked not to be shared to ensure confidentiality clause set by the firm.

**Brief description of the working environment:** Offline PS, Great work culture, Great guidance for Mentors. We also had multiple session with CFO,COO,CEO,CHRO and BU heads, great exposure to the corporate world and functional concepts.

**Academic courses relevant to the project:** Deep Learning A-Z Udemy, Data Analysis and Visualization, Starting with Python

**Learning Outcome:** Synthetic Monitoring Process, Selenium Testing, Data Analysis and Dataframe creation, Machine Learning, Natural Language Processing (Document Similarity)

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**PS-I station: Qualitykiosk Technologies Pvt. Ltd. , Mumbai**

**Student**

**Name: ANURAAG AKELLA .(2021A8PS1887H)**

**Student Write-up:**

**PS-I Project Title:** Scriptless Automation

**Short Summary of work done:** This report presents a scriptless automation project developed using Java as a Maven project. The main objective of this project is to automate test case generation and execution without writing explicit test scripts. The project deals with topics like Web Automation, Artificial Intelligence and Machine Learning techniques such as Optical Character Recognition (OCR), NLP ,OpenAI's Whisper Model etc and their integration in a scriptless automation framework. The report details the aim and scope of the project , languages and frameworks used in the development, the timeline of its development, current progress ,possible use cases in the real world and areas of improvement for the future. Finally it showcases the potential of scriptless automation in modern software development environments.



**Objectives of the project:** To create a framework that can perform web automation tasks such as logging in to websites, scraping data performing automated tasks etc. by use of voice commands and no requirement of writing code.

**Tool used:** Java , Selenium ,Tesseract OCR, Whisper AI for Speech to text transcription

**Details of Papers/patents:** none

**Brief description of the working environment:** The company as a whole has an amazing work environment , the mentors and subject matter experts assigned are extremely helpful. If you are interested in projects related to AI/ML deep learning etc then you'd learn a lot here. Unlimited udemy access and a work laptop were provided for the duration of the internship

**Academic courses relevant to the project:** C programming, Object Oriented Programming, Neural Networks, AI

**Learning Outcome:** Automation, Web Automation, No Code Low Code Automation, Script generation using Generative AI , Computer Vision, AI implementation.

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**PS-I station: Qualitykiosk Technologies Pvt. Ltd. , Mumbai**

**Student**

**Name: Akhil Goel(2021A8PS2548P)**

**Student Write-up:**

**PS-I Project Title:** Synthetic Monitoring Ticket Classification

**Short Summary of work done:** The project focused on three key areas: Data Analytics, Data Science, and OpenCV using Yolov5/YoloNAS, OCR using EasyOCR/PyTesseract, and Natural Language Processing (NLP). Firstly, Data Analytics is employed to analyze and preprocess the ticket data, extracting meaningful features for subsequent classification steps. Secondly, Data Science techniques are applied to train a deep learning model based on OpenCV using state-of-the-art object detection models like

Yolov5/YoloNAS. This enables the system to identify key components within the ticket images, such as error messages or relevant visuals.

**Objectives of the project:** The Synthetic Monitoring Ticket Classification Project aims to create an advanced ticket management system using a combination of OpenCV, OCR (Optical Character Recognition), NLP (Natural Language Processing), deep ensemble learning, and synthetic monitoring.

**Tool used:** Python, Tensorflow, Keras, EasyOCR, YoloV5, labelme, labelmetoyolov5, Microsoft Excel, Microsoft Powerpoint, Work Laptops, AWS EC2 Server Instance

**Details of Papers/patents: -**

**Brief description of the working environment:** PS Station was extremely enthusiastic about having us intern with them! They aided our learning in every way possible and the environment created was very conducive for private and work related growth.

**Academic courses relevant to the project:** Machine Learning, Deep Learning, Object Oriented Programming, Data Structures & Algorithms, Computer Programming

**Learning Outcome:** Deep Learning, Natural Language Processing, Tensorflow, Keras, Agile Workflow, Kanban Board, Teamwork

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**PS-I station: Qualitykiosk Technologies Pvt. Ltd. , Mumbai**

**Student**

**Name:** JAHAWAR RAHULRAJ .(2021ABPS1664P)

**Student Write-up:**

**PS-I Project Title:** Automation of Turntable Stoppage

**Short Summary of work done:** create frontend , backend and deploy hardware system to allow stoppage of turntable at appropriate parameter set for safety reasons.

**Objectives of the project:** Create safety environment to avoid turn table accidents

**Tool used:** Python , Opencv , Roboflow , YOLO , React , ladderlogic , relay module

**Details of Papers/patents:** none

**Brief description of the working environment:** great work environment with introduction to agile workflow

**Academic courses relevant to the project:** operations management

**Learning Outcome:** Python , OpenCV , YOLO , ML , Frontend development

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**PS-I station: Race2Cloud Technologies Pvt. Ltd. , Bengaluru**

**Student**

**Name:** RADHIKA JAYAN NAIR(2021A7PS0005G)

**Student Write-up:**

**PS-I Project Title:** Creation of an intranet platform for Race2Cloud

**Short Summary of work done:** Developed an intranet platform for Race2Cloud to facilitate streamlined communication, encourage collaboration, and ensure employee engagement among onsite employees and employees working in hybrid mode. Zoho Connect, a versatile tool with built-in modules, was leveraged to build this intranet platform. The tool offers an opportunity to customize, extend, and enhance the platform's appearance using CSS. The methodology followed included first understanding the tool features and functionality, followed by analyzing the platform's requirements and creating a wireframe. This was followed by the implementation of the design.

**Objectives of the project:** 1. Develop an intranet platform for Race2Cloud. 2. Facilitate collaboration and ensure employee engagement. 3. Provide a secure space to express views and provide indispensable feedback.

**Tool used:** Zoho Connect, CSS stylesheets

**Details of Papers/patents: -**

**Brief description of the working environment:** Very positive working environment. The employees were very friendly and approachable. The project mentors were very patient and took time out of their busy schedules to walk me through every step of my project.

**Academic courses relevant to the project: -**

**Learning Outcome:** Sufficient fluency in the usage of Zoho Connect and CSS. Recognizing design trends in the industry, understanding how to create designs while keeping the customer's requirements in mind and discerning feasible design requirements while also delivering the required functionalities. Polishing soft skills by interacting with the employees of the company.

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**PS-I station: Race2Cloud Technologies Pvt. Ltd. , Bengaluru**

**Student**

**Name:** PUPPALA REVANTH KUMAR .(2021A7PS2692P)

**Student Write-up:**

**PS-I Project Title:** Web page development

**Short Summary of work done:** Learned many skills!!

**Objectives of the project:** Developing web page

**Tool used:** Java script

**Details of Papers/patents:** Na

**Brief description of the working environment:** It was awesome

**Academic courses relevant to the project:** None

**Learning Outcome:** Java script

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## PS-I station: Regional Remote Sensing Centre , Jodhpur

### Student

Name: KAUSHAL DUGGAR .(2021A3PS0950P)

#### Student Write-up:

**PS-I Project Title:** Analysing and Classifying vegetation phenology using remote sensing data

**Short Summary of work done:** In this project, I conducted data processing and analysis using remote sensing images from the MODIS dataset. Utilizing Google Earth Engine, I retrieved 23 images spanning one year and applied the R programming language for data manipulation and statistical analysis. By using data frames, we efficiently stored and accessed pixel values, reducing processing time. I also developed an understanding of image processing, machine learning, and spatial data analysis. The project's key focus was on identifying phenological characteristics from NDVI values. I calculated nine layers of information, including amplitude, start and end of the green season, duration, and area under the curve. To validate and analyze the results, I used ArcMap for visualizing and manipulating spatial data. Throughout the project, I acquired valuable skills, including data processing, R programming, image filtering, data frame usage, and machine learning.

**Objectives of the project:** The main objective of the project was to analyse the various phenological characteristics of natural vegetation growing in the southern districts of Rajasthan and classify them according to their characteristics.

**Tool used:** The project primarily utilized R-Language for implementation, Google Earth Engine for data downloading, and ARC-map as a Geographic Information System (GIS) application.

**Details of Papers/patents:** None

**Brief description of the working environment:**

Due to security reasons, personal laptops and phones are prohibited on the premises. On paper, the office maintains standard 9–5 working hours. The training halls are equipped with desktops and efficient air-conditioning. The mentors are highly supportive and willing to assist you if you demonstrate a genuine passion for learning. The organization expects you to follow its rules, which include some odd ones as well. It is expected of us to complete the project on time. The learning curve is great if you are willing to learn, and personally, I started enjoying the work when I started to see the desired outputs. You will also get a brief glimpse of how and where satellite data is used. It's a great PS to kickstart your journey in the ML and data science fields.

**Academic courses relevant to the project:** CP will ease the process.

**Learning Outcome:** Firstly, I gained proficiency in the R programming language and became familiar with new software tools like ArcMap and RStudio. Additionally, I had the opportunity to explore the functionalities of the Google Earth Engine, enhancing my skills in working with diverse datasets and satellites. One of the key learning outcomes was understanding the fundamentals of machine learning and its implementation through models such as CART. I also got to learn a little about image processing as the data downloaded from the satellite was in image format. I also became skilled in utilizing data frames to efficiently store and access pixel values, significantly reducing processing time and improving overall performance. Overall, this project enhanced my skills in programming, data analysis, and image processing

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**PS-I station: Regional Remote Sensing Centre , Jodhpur**

**Student**

**Name: DHARANIKANTH REDDY YERASI .(2021A7PS0264H)**

**Student Write-up:**

**PS-I Project Title:** Implementation of AR Sandbox

**Short Summary of work done:** I got to implement mapping colors to contours according to the height they in the sandbox and learn a little theory about fluid simulation.

**Objectives of the project:** To implement AR Sandbox (software)

**Tool used:** C++, Visual Studio, Intel RealSense D415 Camera

**Details of Papers/patents:** None

**Brief description of the working environment:** The working environment is good. There are a lot of restrictions as to what is allowed but they provided computers for us to work on.

**Academic courses relevant to the project:** N/A

**Learning Outcome:** Making applications with C++, Image processing

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**PS-I station: Regional Remote Sensing Centre , Jodhpur**

**Student**

**Name:** MADHAV DIKSHIT .(2021A7PS2769H)

**Student Write-up:**

**PS-I Project Title:** Building Footprinting

**Short Summary of work done:** worked on developing and training a Mask RCNN model to perform semantic segmentation so as to help in building footprinting from aerial data.

**Objectives of the project:** Using semantic segmentation to facilitate building footprinting from satellite images

**Tool used:** Python, Tensorflow, Keras, multiple GPUs

**Details of Papers/patents:** none

**Brief description of the working environment:** Very professional and courteous working environment with zero pressure whatsoever. The instructors do not overburden us with work but rather help every step of the way.

**Academic courses relevant to the project:** ML and DL

**Learning Outcome:** ML,python,DL,Mask RCNN

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**PS-I station: Regional Remote Sensing Centre , Jodhpur**

**Student**

**Name:** V S S PAVAN KOUSHIK .(2021AAPS2258P)

**Student Write-up:**

**PS-I Project Title:** Super-resolution of digital elevation models using deep learning

**Short Summary of work done:** The work revolves in replicating a paper proposed for super resolution using deep learning. The job is to follow a typical machine learning workflow starting from preparing custom data from google earth , understanding how the network architecture works and build it using Pytorch and finally the build a custom training loop to perform adversarial training. If the model fails to work or if it overfits the data tune the hyperparameters. The process in doing this allowed me to learn the basics of various algorithms and building them from scratch.

**Objectives of the project:** The project revolves around enhancing the quality of image(super resolution) using a deep learning technique called SR-GAN

**Tool used:** Pytorch, Google Earth

**Details of Papers/patents:** Nil

**Brief description of the working environment:** 1.The flexibility and freedom to work whenever you want is something you can be assured(but should be taken responsibly)  
2.You would be expected to work on your project on your own and not much technical help should be expected.  
3.This allows you discover stuff on the way and learn new things .

**Academic courses relevant to the project:** Machine learning



- Learning Outcome:**
- 1.Learn how to implement papers from scratch
  - 2.Learn how to use machine learning libraries to build neural network architectures
  - 3.Learn how to and what to communicate in a group and with scientists.
  - 4.Prepare custom data in a machine learning workflow

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## PS-I station: Regional Remote Sensing Centre , Jodhpur

### Student

Name: PRAKHAR AGRAWAL .(2021B4A70817P)

### Student Write-up:

**PS-I Project Title:** Algorithms to Delineate ICESat-2 photons based on the Surface structure

**Short Summary of work done:** The work started by writing a brute force code for removing noise from the given data. Had to formulate a working algorithm applicable to any type of data given (sea, land and urban). The code worked pretty well but was taking too much time and was not very optimized. Then explored various machine learning models and checked their applicability. Since, we did not have labelled data most supervised algorithms and neural networks could not be applied. After noise removal we worked on extracting canopy tops from the cleaned canopy data and wrote an algorithm to do the same using curve fitting and spatial analysis. The result were very satisfactory. Then worked on segregating sea-surface and sea-bed based on relative densities. Successfully, segregated both of them using unsupervised ML algorithms and some concepts of statistics. In the last leg of PS we worked to sorting the land data using the same approach. With some minor tweaks to already written algorithms and we were good to go. Read a lot of research papers and explored a lot of pre-existing models. Most of the work was based on the usage clustering algorithms and statistics.

**Objectives of the project:** The raw csv file obtained from the satellite contained a 2D profile of the elevation data with surfaces being more dense than other parts. The objective was to formulate algorithms to extract these surfaces directly from the file without manual input.

**Tool used:** s/w: Python and Data Science libraires like numpy, pandas, scipy, matlpotlib, scikit-learn etc.

**Details of Papers/patents:** none

**Brief description of the working environment:** The facility is good. There are training rooms are comfortable and specially meant for use by people that do internships or trainings. All the staff is very friendly and collaborative. The instructors and scientists are eveready to help and do so very enthusiastically but they are ofcourse very busy with their own work so one must also be prepared to not get much technical help from them. You'll also learn to collaborate with others while working on a real time project.

**Academic courses relevant to the project:** PNS, CP, linear algebra(maybe depends on your project)

**Learning Outcome:** Learnt to use various machine learning models both supervised and unsupervised and combine it with statistics to get the desired output. Worked on a real-world project which had applications for the ongoing research at the institute.

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## PS-I station: Regional Remote Sensing Centre , Jodhpur

### Student

**Name:** KARTIK RAO .(2021B4AA0766P)

### Student Write-up:

**PS-I Project Title:** Algorithms to Delineate ICESat-2 photons based on the surface structure

**Short Summary of work done:** Our work was mostly concentrated in developing algorithms to process and clean data given to us by satellites. We made 3 algorithms using python and some of its libraries like numpy, pandas, pytorch, scikit-learn, scipy etc. Our algorithms classify data points in clusters, and classify them as per need. One of our algorithm seperated sea-bed and sea-surface, one identified tree tops and ground structure in a mountain area, the last one could identify building tops and ground using photon data from ICESat-2 satellite.

**Objectives of the project:** We had three objectives, first was Bathymetry: which is classification of sea-bed and sea-surface from the satellite data, second was Canopy height: where we classified tree tops and ground in mountain areas, third was urban areas: where we classified building heights.

**Tool used:** We majorly used python and its libraries including numpy, pandas, matplotlib, scipy, scikit-learn.

**Details of Papers/patents:** not yet

**Brief description of the working environment:** The work environment was very good. They gave you a lot of freedom to do your project as you please. There was no time constraints, you can work at the pace you like. They give you all the required resources and a lot of space as well. The work place was also very comfortable and good. The place where we stayed was 75 mts from the office (within the same ISRO campus). Living conditions were very good as well, we got a room for two people which had 2 single beds, AC, mini-fridge, TV, one study table, sufficient storage area and a bathroom, for minimal price (govt. rates). Overall, I enjoyed my time there.

**Academic courses relevant to the project:** Graphs and Networks  
Probability and Statistics  
Linear Algebra

**Learning Outcome:** Machine Learning  
Gained experience of an office environment

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**PS-I station: Regional Remote Sensing Centre , Jodhpur**

**Student**

**Name:** SHREYASH VERMA .(2021B5A71538P)

**Student Write-up:**

**PS-I Project Title:** 1. Using M.L to discover archaeological sites in Rajasthan 2. Crop Detection through M.L

**Short Summary of work done:** In the project concerning Crop Detection, I analyzed sample data points containing VV and VH band values of a specific area to identify the crops being grown. My objective was to develop a neural network by training it on the given data, and a significant portion of my time was dedicated to refining the model's hyperparameters to achieve optimal accuracy. In my second project focused on discovering Archaeological sites, I created two machine learning models: one utilizing Random Forest and another based on C.A.R.T. Using data from two satellites and extracting information from 14 bands, I trained the models with known archaeological sites in Rajasthan. I generated a median image by averaging images over a two-year period for training. Subsequently, I employed qualitative measures to define specific regions and fine-tuned various hyperparameters to enhance the accuracy of the results..

**Objectives of the project:** 1. In the project concerning discovering archaeological sites, my major objective was to find different civilisations in Rajasthan by training it from known sites. In other project concerning crop detection, I trained my model with the given known sample of SAR data in a specific region and then identifying crop type in a similar area.

**Tool used:** Python, Javascript, ArcGIS, QGIS, Google Earth Engine, Tensorflow

**Details of Papers/patents:** My 1st Research Paper on Discovering Archaeological Sites has been accepted by a conference. I have submitted my 2nd research paper and waiting for the confirmation.

**Brief description of the working environment:** The working environment at RRSC, Jodhpur is highly favorable. The scientists are not only friendly but also supportive, readily offering their assistance in projects and explaining complex concepts. The project selection process is student-centric, providing ample opportunities to work on diverse projects. The accommodation, food services, and other facilities are well-managed, ensuring a comfortable experience. Working at a prestigious institution that holds significance for the country brings a unique perspective, providing insights into the execution of large-scale projects at such a distinguished level.

**Academic courses relevant to the project: -**

**Learning Outcome:** During my PS1 experience, I achieved the following:

1. Mastered various deep learning algorithms and gained a deep understanding of their complexities.
2. Acquired proficiency in utilizing diverse GIS tools, including ArcGIS and Google Earth Engine.
3. Cultivated a habit of implementing and analyzing research papers, further enhancing my research skills.
4. Gained valuable insights into the collaborative workings of a government organization, specifically NRSC-ISRO.

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## PS-I station: RI Equation , Pune

### Student

Name: RISHITH DAMANI .(2021A3PS2147H)

#### Student Write-up:

**PS-I Project Title:** Proof of Concept for Verifiable Credentials

**Short Summary of work done:** Our project was to develop a Proof of Concept for Verifiable Credentials. This was done with the help of SSI kit and Wallet kit. These solutions were provided by an external company called walt.id. We had to set up the environment locally and implement the verifiable credential. We learnt about several new concepts like self-sovereign identity, digital identity and other related fields

**Objectives of the project:** Project was based on building restaurant coupons for customers using the SSI kit and the restaurants will verify the coupons and ticket credentials.

**Tool used:** Docker

**Details of Papers/patents:** -

**Brief description of the working environment:** The company provided us with the work beforehand and gave us a certain number of days to complete it until the next meeting was scheduled. Thus, work was not done on an everyday basis. Meetings were scheduled only in the evenings with the company head. We mainly learned about Web 3.0, digital identity, and setting up an environment locally. We learned how to implement a verifiable credential and used it for creating restaurant coupons.

**Academic courses relevant to the project:** None

**Learning Outcome:** We worked with SSI and Wallet kits that help in creating portals for verifiable credentials and verifiable presentations for the issuers and verifiers. We were able to implement restaurant coupons for customers using verifiable credentials.

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## PS-I station: RI Equation , Pune

### Student

Name: ARYAMAN VAISH(2021A4PS2491H)

### Student Write-up:

**PS-I Project Title:** Proof of Concept for Verifiable Credentials

**Short Summary of work done:** The project involved extensive research, environment setup, integration and customization of the Wallet Kit and SSI Kit, use case identification, implementation and testing, problem-solving and troubleshooting, collaboration and communication, ethical considerations, documentation and reporting, and knowledge transfer. The goal was to demonstrate the feasibility and potential benefits of implementing verifiable credentials using these tools and provide valuable learning experiences in decentralized identity systems. The project aimed to address data ownership, consent management, and privacy-preserving techniques, ensuring compliance with ethical standards.

**Objectives of the project:** To create working model of an identity wallet using kits present on the walt-id website

**Tool used:** Version Control System (VCS): Git, Environment Development Tool: docker , Code Editor: Visual Studio Code,

**Details of Papers/patents:** none

**Brief description of the working environment:** Well, the ps was online so can't say much about the working environment but overall working environment was quite good, and the mentor helped us during the whole of ps giving us proper instructions and helping us out with all the resources he shared. Team members were also very supportive. All in all the project was very relevant with the emerging technologies.

**Academic courses relevant to the project:** none

**Learning Outcome:** Understanding Verifiable Credentials and decentralized identity systems.  
implementation skills by working with the provided kits.

Awareness of Use Cases and Industry Applications  
Problem-Solving and Critical Thinking  
Communication skills

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## PS-I station: RI Equation , Pune

### Student

Name: KARTIKEYA KHANNA(2021A8PS2608G)

#### Student Write-up:

**PS-I Project Title:** Proof of Concept for Verifiable Credentials

**Short Summary of work done:** We had to build a proof of concept for verifiable credentials. We did it using SSI kit and Wallet kit available on walt.id and ran them using docker.

**Objectives of the project:** To make us accustomed to corporate working and work on some fundamentals about web 3

**Tool used:** Docker, GitBash

**Details of Papers/patents:** -

**Brief description of the working environment:** We used to have frequent meets with our mentor and he gave us resources to learn about the tools required in the project. We also had support from walt.id on discord.

**Academic courses relevant to the project:** Computer Programming

**Learning Outcome:** Learnt to use Docker, Terminal and improved on my communication skills and team working.

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## PS-I station: RI Equation , Pune

### Student

Name: SUBIT SHEKHAR PANDA .(2021B4A72325P)

#### Student Write-up:

**PS-I Project Title:** proof of concept for verifiable credentials

**Short Summary of work done:** Our project was to develop a Proof of Concept for Verifiable Credentials. This was done with the help of SSI kit and Wallet kit. This was the whole process of verifying a verifiable credential which completes the Proof of Concept. In this project, we saw how we could use the SSI kit and Wallet kit provided by walt.id to implement this project.

**Objectives of the project:** to make a poc for verifiable credentials

**Tool used:** SSI kit, java, docker, Wallet kit

**Details of Papers/patents:** walt.id

**Brief description of the working environment:** The work environment was quite good. the faculty in charge was always there to help us and helped us in many circumstances. the company gave us an overview of the work that is required to be done and also provided all the material that we needed to learn to complete our tasks. it was overwhelming at times but with the help of all the team members it became a smooth journey.

**Academic courses relevant to the project:** computer programming

**Learning Outcome:** i learnt abt blockchain, ssi kit, wallet kit, nft kit.

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**PS-I station: SatSure Analytics India Pvt. Ltd. , Bengaluru**

**Student**

**Name: RISHI TEJA PENDYALA .(2021A3PS1049H)**

**Student Write-up:**

**PS-I Project Title:** Design and simulation of piezo-driven circuit

**Short Summary of work done:** Worked on designed and simulating an electric circuit which is based on the use of piezo actuators

**Objectives of the project:** Designing an electric circuit for the working of piezo actuators

**Tool used:** LTSpice

**Details of Papers/patents:** None

**Brief description of the working environment:** Working Environment was great. All the employees were friendly and encouraging. Interacting with them was fun and there were many activities organized.

**Academic courses relevant to the project:** Power Electronics, Control Systems and understanding of electrical components like MOSFET

**Learning Outcome:** LTSpice, Power Electronics, Embedded Systems

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**PS-I station: SatSure Analytics India Pvt. Ltd. , Bengaluru**

**Student**

**Name: TIA SANJEEV KUMAR AGRAWAL .(2021B2A42758P)**

## **Student Write-up:**

**PS-I Project Title:** Economic impact of investment in space sector

**Short Summary of work done:** Researched about the value added by space sector investments to the economy for the Indian geography. Listed multiple metrics to help understand the impact and then studied the change over a period of 10 years (2010-2020). Then quantified this change and calculated the investment multiplier effect. Along with this also studied the impact on a non space sector- urban monitoring and the value added by Earth Observation data in this sector.

**Objectives of the project:** To measure what is the Investment Multiplier Effect of the space sector investment on different sectors in the economy i.e., how much value has been added by space sector investment in the different sectors.

**Tool used:** Online research articles and reports

**Details of Papers/patents:** -

**Brief description of the working environment:** The working environment was an open and inviting environment. The employees would regularly interact and have both fun and educating conversations with us. Everyone was extremely helpful and nice.

**Academic courses relevant to the project:** -

**Learning Outcome:** Understanding the Space sector value chain and ecosystem  
Gaining market research skills

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**PS-I station:** [SatSure Analytics India Pvt. Ltd. , Bengaluru](#)

**Student**

**Name:** [ANIRUDH JAYAKISHAN\(2021B3A70979G\)](#)

## **Student Write-up:**

**PS-I Project Title:** Flask vs FastAPI: A Comprehensive Analysis

**Short Summary of work done:** Learnt use of both Flask and FastAPI and compared the two frameworks. Prepared a presentation on final analysis and recommendations

**Objectives of the project:** Comparing and analysing the merits of the python frameworks Flask and FastAPI for API development

**Tool used:** Python, Flask and FastAPI

**Details of Papers/patents:** N/A

**Brief description of the working environment:** Great working culture with friendly people. Flexible timings as long as work is completed.

**Academic courses relevant to the project:** N/A

**Learning Outcome:** Learnt use of both Flask and FastAPI  
Office culture

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**PS-I station: SatSure Analytics India Pvt. Ltd. , Bengaluru**

**Student**

**Name:** KEERTHAN SHRIRAM KARVAJE .(2021B5A31258P)

**Student Write-up:**

**PS-I Project Title:** Design and Simulation of CAN Bus Protocol for ARGUS Payload

**Short Summary of work done:** Literature survey of CAN Bus Protocol, design and simulation of the Controller Area Network to demonstrate the effectiveness of CAN Bus Protocol for the electronics payload controller on the ARGUS Satellites.

**Objectives of the project:** To design the network to be used with the controller on the satellite payload and simulate messaging between the nodes of the network

**Tool used:** MATLAB, Kvaser DB Editor, Kvaser virtual CAN drivers

**Details of Papers/patents:** N/A

**Brief description of the working environment:** The office members were very friendly and open. I was able to learn a lot from the office members apart from my mentor. The company expected me to design and simulate a network protocol for their satellite payload such that it may be scaled to their needs in the future. I learnt MATLAB programming, basics of CAN protocol and design of a network protocol.

**Academic courses relevant to the project:** Computer Networks

**Learning Outcome:** I learnt MATLAB, basics of the CAN protocol, various hardware, software and terminology associated with network protocols.

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**PS-I station:** SatSure Analytics India Pvt. Ltd. , Bengaluru

**Student**

**Name:** ANKUR RENDUCHINTALA .(2021B5A71159P)

**Student Write-up:**

**PS-I Project Title:** Implementing TileServerGL to serve Raster and Vector Tiles

**Short Summary of work done:** Learnt how to use TileServerGL to serve raster and vector tiles. Data for the tiles was downloaded into the PC and was taken from the internet. The served maps were displayed on Leaflet as a front-end along with pop-ups and highlighted areas.

**Objectives of the project:** To understand what tile servers are and how they work, To download map data of different regions and serve them locally in different styles

**Tool used:** H/w: Personal Laptop; S/w: Ubuntu 22.04, Node.js, Docker, TileServerGL, QGIS, Leaflet.

**Details of Papers/patents:** NA

**Brief description of the working environment:** Very friendly environment. Readily available seniors and mentors. Conducive and thought provoking. Company expected me to learn to display maps from different data in different styles on TileServerGL. Also, the served maps were to be displayed on another platform like Leaflet as a front-end. Learnt about raster and vector files and data. Learnt how to use Docker and Ubuntu Terminal. Learnt how to use TileServerGL to serve local data by manipulating style files and configuration files. Learnt how to use Leaflet as a front-end platform for served maps.

**Academic courses relevant to the project:** None that I have learnt.

**Learning Outcome:** Learnt how to use Docker and Ubuntu Terminal. Learnt how to use TileServerGL to serve local data by manipulating style files and configuration files. Using Leaflet as a front-end platform for served maps.

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## **PS-I station: Shalaka Connected Devices - IoT , Pune**

### **Student**

**Name:** MEGHAN CHALLA .(2021A3PS1708H)

### **Student Write-up:**

**PS-I Project Title:** CAMERA VISION SYSTEMS USING PYTHON AND OPENCV

**Short Summary of work done:** As an intern Shalaka Connected Devices, I have been a part of the Camera Vision Systems. I have been working on computer vision and have been focusing on python programming language and its associated libraries for the same. I have been analyzing the applications of computer vision systems in real life and have been focusing on Object Detection and Object Recognition wherein I have been learning about popular object detection algorithm like YOLO.I have been focusing on Face-Mask detection in particular, wherein I have been working on an object detection algorithm which detects the face mask on a person's face using custom haarcascade files. I have also been working on text detection and also been exploring creating custom datasets for computer vision

**Objectives of the project:** To design algorithms for object detection

**Tool used:** VS Code, google colab, Cascade Trainer GUI,

**Details of Papers/patents:** NONE

**Brief description of the working environment:** Shalaka Connected Devices LLP is an IOT and embedded designs based company. We had to work online so we were well instructed about the working conditions. We were well mentored and guided throughout the project. We were well educated about the project and regular meets were conducted to discuss the problems faced if any. Overall we were supported throughout the practice school.

**Academic courses relevant to the project:** Computer Programming

**Learning Outcome:** Learning Computer Vision through python and opencv and other computer vision libraries

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## **PS-I station: Shalaka Connected Devices - IoT , Pune**

### **Student**

**Name:** ABHINAV SHAH(2021A3PS2561G)

### **Student Write-up:**

**PS-I Project Title:** Camera vision systems

**Short Summary of work done:** As a member of Camera vision systems team member, we were given the task of Detection Purpose on images and videos using OpenCV library through Python language. We implemented the codes written by us on digital images, videos for detection purposes like in a project we showcased the number of people wearing masks while working in a factory using digital image. We also did other projects like Capstone Project and others.

**Objectives of the project:** Detection in images and videos using OpenCV in Python language

**Tool used:** OpenCV Library, NumPy Library, Python Language

**Details of Papers/patents:** none

**Brief description of the working environment:** Although it was an online internship, the working environment I got to be exposed to was pretty good. The work culture was fully supportive by the other team members as well as of the company's CEO Mr. Hrishikesh Kamat himself. He guided all of us through the work culture, task allotment and other work specific thing very well and smoothly. It was a whole new task for me which I did not have any prior knowledge or experience if this as coming from Electronics branch and working in Tech related team. But I got to learn a lot of new things and exploring different areas related to it. At the end, I also got to develop my soft skills like Communication skills, Team Work, Time Management, Presentation skills. So the PS-1 benefitted me with the first exposure of my work life and got to know and learn with them.

**Academic courses relevant to the project:** There were no specific academic courses related to my project that I have studied but Computer Programming course in my 1st year did got me basic understanding about programming and stuff.

**Learning Outcome:** Uses of OpenCV library in Python Language in day-to-day life.

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## **PS-I station: Shalaka Connected Devices - IoT , Pune**

### **Student**

**Name:** PANPALIA RAM RAJESH(2021A4PS1363P)

### **Student Write-up:**

**PS-I Project Title:** MERN stack Web Application

**Short Summary of work done:** Our aim was to build a MERN stack application, so that a particular user registered under a client can access the data of sensors present in the factory of that particular client. For this I built various APIs like create user, create client, add sensor, add location, etc. I also made the frontend of that project to display all this data to the user.

**Objectives of the project:** Make a MERN stack web application and deploy it on AWS server and link it with domain remonet.in

**Tool used:** MERN Stack (MongoDB, Express, React, Node)

**Details of Papers/patents:** Frontend Project Report Link:  
<https://docs.google.com/document/d/1vYEzmAkxS5ZfX72g8ZXPEt85EaHAi-w7dOu7dNhPGe8/edit?usp=sharing>  
Backend Project Report Link:  
<https://docs.google.com/document/d/1b5GNybWG05BWCHBkUDM2KZ3FSxCdUagIDH-V7FdGzpbcc/edit?usp=sharing>

**Brief description of the working environment:** I had a wonderful experience at the PS. I learnt a lot while building the project.

**Academic courses relevant to the project:** OOPS, DSA

**Learning Outcome:** 1. Deploying MERN stack web application on AWS.  
2. Writing Backend code in NodeJS  
3. Writing Frontend code in ReactJS

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## PS-I station: Shalaka Connected Devices - IoT , Pune

### Student

Name: JOVIAL DEKA .(2021A4PS1658H)

### Student Write-up:

**PS-I Project Title:** Building an industry 4.0 portal

**Short Summary of work done:** This project presents a comprehensive data simulator developed using Python's Tkinter library, enabling users to generate customized simulated data streams effortlessly. The lack of available hardware devices posed a significant challenge in testing the core project, necessitating the development of a virtual data simulator capable of closely resembling real sensors' behaviour. The simulator offers a user-friendly graphical user interface (GUI) that allows users to specify parameters such



as client ID, sensor type, sensor ID, data ranges, delta (change in data), and time intervals for data generation. The simulator includes start and stop buttons to control the data generation process.

**Objectives of the project:** To build a data simulator which mimics a real life sensor

**Tool used:** Python tkinter

**Details of Papers/patents:** None

**Brief description of the working environment:** It was good. Ours ps faculty and the company ceo were very helpful in guiding us through the project

**Academic courses relevant to the project:** Coding and algorithms

**Learning Outcome:** New coding software, teamwork, corporate life

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## **PS-I station: Shalaka Connected Devices - IoT , Pune**

### **Student**

**Name:** AMIT PRAKASH .(2021A4PS2109P)

### **Student Write-up:**

**PS-I Project Title:** Backend Project

**Short Summary of work done:** The working environment for the project involves establishing MQTT communication between devices and a backend server, aimed at developing a robust infrastructure for MQTT message processing, data validation, and storage in a database. The company expects the successful implementation of efficient APIs that minimize resource usage, optimizing the system's performance, and ensuring scalability to handle large message volumes. During the PS-I , I gained invaluable experience and knowledge in the following areas: MQTT Communication: I learned to set up MQTT communication channels between devices and a backend server, facilitating real-time data exchange. Backend Infrastructure: I developed a reliable backend infrastructure capable of processing MQTT messages, validating incoming data, and

efficiently storing it in the database. **API Development:** I designed and implemented a set of APIs, including creating clients, users, and sensors, as well as facilitating user login with secure access tokens. **Authentication and Authorization:** I acquired skills in implementing secure user authentication and authorization processes using access tokens. **Data Retrieval:** I created APIs to fetch the list of locations and their respective sensors, as well as retrieving sensor data stored in the database from the MQTT broker. **Performance Optimization:** I optimized the APIs to ensure minimal resource consumption, enhancing the overall efficiency of the system. **Scalability:** I designed the backend infrastructure to handle large volumes of MQTT messages and data without compromising performance. Throughout PS-I, I gained hands-on experience in full-stack development, emphasizing MQTT communication, API design, and backend infrastructure implementation. These skills have prepared me to contribute effectively to similar projects in the future, enabling seamless communication between devices and backend systems with a focus on performance, security, and scalability.

**Objectives of the project:** Establish MQTT communication between devices and backend server. Develop a robust backend infrastructure for MQTT message processing, validating data and storing it in database. Make efficient APIs to ensure least possible resources are used. Optimize performance and scalability to handle large message volumes.

**Tool used:** Node JS Express MongoDB (Mongoose Library) MQTT AWS

**Details of Papers/patents:** Nil

**Brief description of the working environment:** In this project, we successfully implemented a data storage and retrieval system for the data received from an MQTT broker. Our primary goal was to store the data in a database and provide APIs for the frontend team to fetch the data using various endpoints.

To achieve this, we designed and implemented the necessary models to represent the entities involved in our system. These models included User, Client, Location, and Sensor, which formed the foundation of our data structure. We carefully mapped these models to establish relationships and ensure data consistency and integrity. We created several APIs to facilitate different functionalities. The "create user" API allowed the registration of new users into our system. The "login user" API provided a secure authentication mechanism for users to access their accounts. The "create client" API enabled the creation of new clients, while the "add location" API allowed users to associate locations with their clients. The "add sensor" API facilitated the addition of sensors to the system, and the "update sensor" API allowed users to modify sensor properties as required.

Lastly, the "fetch values data" API provided a means for users to retrieve the data collected by each sensor. By implementing these APIs, we created an efficient and user-friendly system for managing and accessing the MQTT data. The frontend team can now interact with the system through the provided endpoints, allowing them to create and manage users, clients, locations, and sensors effectively. Overall, this project successfully accomplished the goal of storing MQTT data in a database and providing

APIs for data retrieval. It lays the foundation for further development and expansion of the system, enabling the frontend team to build upon these functionalities and enhance the overall user experience.

**Academic courses relevant to the project:** Computer Programming  
Mathematics 2

**Learning Outcome:** Leaned the technical aspects of backend

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## **PS-I station: Shalaka Connected Devices - IoT , Pune**

### **Student**

**Name:** YASH MOONDRA(2021A4PS2301G)

#### **Student Write-up:**

**PS-I Project Title:** Managing an Industry 4.0 Portal Project

**Short Summary of work done:** My project was all about managing different teams in the organization by assigning tasks, conducting meetings and bridging the gap between teams for efficient communication in order to achieve our goal of building an Industry 4.0 Portal. The Portal created was for manufacturing companies to be able to view data collected by sensors and cameras in their workshops or offices. Our teams: Fronted, Backend, Data Simulation, Camera Vision Systems, and PCB Design worked on the technical side of things such as creating a GUI, and a website to view the data, as well as building sensors and coding cameras to detect specific problems. My role was a managerial role holding the teams together to work as one big gear to achieve these goals.

**Objectives of the project:** Managing teams working on different projects, keeping teams connected with each other, tracking progress of different projects

**Tool used:** Trello - for Project Management, Google Workspace - for Communication, Google Meet - for meetings, MS Office and Google Slides - For making weekly review meet presentations

**Details of Papers/patents:** None

**Brief description of the working environment:** The working environment of the company was very good, the CEO of the company provided us knowledge about management as well as how to do professional communication in a company. He taught us about how to maintain a work life balance in life and importance of team work. We had 5-day work week, except few meetings on weekend too when required. The company was really up to my expectations in terms of learning, working experience and this PS-1 provided me with hands-on experience of working in a professional setting.

**Academic courses relevant to the project:** Principles of Management (POM)

**Learning Outcome:** Management, team work, Project planning and execution, Stakeholder management

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## **PS-I station: Shalaka Connected Devices - IoT , Pune**

### **Student**

**Name:** ARJUN REDDY CHINEPALLI .(2021B4A32790H)

### **Student Write-up:**

**PS-I Project Title:** Camera Vision Systems using Python and Open CV

**Short Summary of work done:** We first started with installing the necessary softwares for the project. The main objectives of the codes written throughout the project are to detect any kind of failure points corresponding to the applications of Camera Vision systems in Open CV and Python. Some of the main tasks done were face and eyes detection, Object detection, Object tracking, Morphing, Live camera drawing and Capstone project. Other important detections were mask and helmet detection.

**Objectives of the project:** To find ideas and implement respective codes for Camera Vision system applications.

**Tool used:** Software tools : Jupyter Lab, Google docs, Anaconda Prompt, Python and other modules.

## **Details of Papers/patents: -**

**Brief description of the working environment:** Since this was an online station, expectations were that the faculty and the mentor would be in touch regularly, which never failed to meet the criteria. All the team members were very well coordinated with every other student.

**Academic courses relevant to the project:** CS F111 (Computer Programming) and other higher level CS courses.

**Learning Outcome:** Usage of several software tools such as google docs, learning how to make documents necessary for work environment, Usage of OpenCV and other important softwares.

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## **PS-I station: Shalaka Connected Devices - IoT , Pune**

### **Student**

**Name:** SPARSH MATHUR .(2021B5A33178H)

### **Student Write-up:**

**PS-I Project Title:** "Development of a Real-Time Data Visualization Website with Simulated Sensor Data for Shalaka Connected Devices"

**Short Summary of work done:** During my Internship (PS-I) at Shalaka Connected Devices, I had the opportunity to work on the development of a data visualization website. The objective of the project was to create a platform that could display real-time data from physical sensors. However, due to limitations, we utilized a data generator to simulate sensor behavior. My primary responsibilities during the internship revolved around setting up the MQTT broker and contributing to backend development tasks. I configured the MQTT broker, which served as the communication infrastructure between the data generator and the website. This involved ensuring proper message transmission and handling on the MQTT protocol. Additionally, I played a role in backend development by implementing APIs and services to facilitate data retrieval and manipulation. I utilized

technologies such as Node.js and Express.js to create server-side components that handled requests, processed data, and interacted with the data generator.

**Objectives of the project:** Develop a Data Visualization Website: The primary goal was to create a website capable of displaying real-time data from physical sensors. The website would provide an intuitive and visually appealing interface for users to monitor and analyze sensor data. Simulate Sensor Behavior: Due to limitations in accessing physical sensors, the project aimed to develop a data generator that would simulate the behavior of the sensors. This simulation would enable the website to receive and display data as if it were coming from real sensors. Implement MQTT Communication: The project involved setting up an MQTT broker to establish communication between the data generator and the website. MQTT would facilitate the reliable and efficient transmission of data, ensuring that the website could receive and visualize the simulated sensor data in real time.

**Tool used:** Languages - Python, HTML, CSS, JS Backend - Node.js, Express.js Version Control - Git, Github

**Details of Papers/patents:** NA/-

**Brief description of the working environment:** During my Professional Summer Internship (PS-I) at Shalaka Connected Devices, the working environment was dynamic, collaborative, and conducive to learning. The company fostered an atmosphere of innovation and provided a platform for interns to contribute meaningfully to real-world projects. From day one, I was warmly welcomed into the team and received guidance and support from experienced professionals.

The company had clear expectations for interns, encouraging us to actively participate, contribute ideas, and take ownership of our assigned tasks. There was a strong emphasis on professionalism, effective communication, and meeting deadlines. This helped instill a sense of responsibility and accountability in the work we carried out during the internship.

**Academic courses relevant to the project:** CS F110 - Intro to computer programming

**Learning Outcome:** IoT Technologies: I gained a solid understanding of IoT concepts, protocols, and technologies. Full Stack Development, Data Visualization, Problem Solving and Debugging

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**PS-I station: Shalaka Connected Devices - IoT , Pune**

## Student

Name: SHUBHRAJIT DUTTA .(2021B5A83173H)

### Student Write-up:

**PS-I Project Title:** Front-end Web development of simulating software

**Short Summary of work done:** developed a website consisting of 3 part +1 part . It lets you login to a dashboard page which is unique to every user and where you can place new sensor at particular location and you can observe the simulation data for a particular sensor, it also takes into account different factors for producing data.

**Objectives of the project:** To create a website which will be used to monitor and simulate different sensors

**Tool used:** Postman, React, Node.js, MongoDB

**Details of Papers/patents:** -

**Brief description of the working environment:** It was actually nice, friendly environment. You can directly message the CEO and he will be clearing your doubts and there is not much pressure of work and you can have enough time for doing other activities. Work was uniformly disturbed and it was monitored everyday. You will have weekly meetings other than compulsory team meetings

**Academic courses relevant to the project:** Nothing

**Learning Outcome:** Node.js, Team Work

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**PS-I station:** Shris Infotech Services Pvt Ltd, Secunderabad

## Student

Name: MAUSAM TRIPATHI(2021A3PS0310P)

**Student Write-up:**

**PS-I Project Title:** Deploying a Solana Smart Contract that interacts with requester and institution

**Short Summary of work done:** We built and deployed a smart contract on Solana, having functions such as creating a doc, opening a doc and transferring a doc in Rust language. This mainly aimed at creating a software where students and institutions can share the docs .

**Objectives of the project:** To create a platform where a student and its institution can share file with one another

**Tool used:** Used Visual Studio Code for coding in Rust, used phantom wallet for transactions

**Details of Papers/patents:** NA

**Brief description of the working environment:** Our PS was online, so we were all at home, but throughout , we had several interactions and learned teamwork and cooperation. We learned several concepts about blockchain and implementation of a smart contract using RUST language.

**Academic courses relevant to the project:** Computer Programming

**Learning Outcome:** Concept of blockchain network functioning

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**PS-I station: Shris Infotech Services Pvt Ltd , Secunderabad**

**Student**

**Name:** CHAHAK SHREEGOPAL SARDA .(2021A3PS2935H)

**Student Write-up:**

**PS-I Project Title:** Creating an app for document verification using atsign and blockchain



**Short Summary of work done:** Learnt about dart and flutter to make basic applications. Then I went through the documentation to find appropriate widgets to integrate blockchain with flutter. I also learnt how to deploy basic smart contracts locally.

**Objectives of the project:** To write a smart contract about document verification and integrate it to the app

**Tool used:** Flutter Course from Udemy

**Details of Papers/patents:** No

**Brief description of the working environment:** Since this was an online PS, we had meets with the company. The mentors were very patient while explaining the problem statement and made sure we understood everything very well. They also gave us valuable inputs after the mid term presentation that helped with the completion of the project.

**Academic courses relevant to the project:** Blockchain

**Learning Outcome:** App Development, Flutter and basics of blockchain

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**PS-I station: Shris Infotech Services Pvt Ltd , Secunderabad**

**Student**

**Name:** ADITYA ASHWIN JANAIKAR(2021A7PS2569G)

**Student Write-up:**

**PS-I Project Title:** Building a mobile application to facilitate secure and non-tampered sharing of official documents to the right stakeholders.

**Short Summary of work done:** I was a part of the back-end team. We had to do the server side coding of the project. We had to use REST endpoints to upload documents into Firebase and also, we had to call the blockchain trail code to save that with random strings into firebase to use as blockchain trail. The major technologies used were

Express, a Node.js framework, REST APIs and Firebase Firestore. Overall, it was a great learning experience and a great start to my corporate life.

**Objectives of the project:** 1. Building a mobile application to facilitate sharing of official documents 2. Documenting the history of sharing of the particular document. 3. Privacy and security

**Tool used:** Flutter, Node.js, REST APIs, Firebase, Solana

**Details of Papers/patents:** NA

**Brief description of the working environment:** All of the company professionals are very supportive. Since this was a relatively new area for us, they taught us many new things and gave us resources to learn the rest. They are a great bunch of people and experts at what they do. The working hours were flexible, we just had to meet and share our progress periodically which suited my style really well since I prefer to work at night. Overall, a great working experience.

**Academic courses relevant to the project:** Object Oriented Programming, Network Programming

**Learning Outcome:** It was a great experience to understand the process of building a corporate project from scratch. Also, I understood a lot about collaboration between independent teams and team members with varying skillsets. It was my first experience working back-end so that was also a major learning for me.

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**PS-I station: Shris Infotech Services Pvt Ltd , Secunderabad**

**Student**

**Name:** ARJ AMITKUMAR PATEL .(2021AAPS0527H)

**Student Write-up:**

**PS-I Project Title:** Android app development using Flutter

**Short Summary of work done:** Learnt about Android studio, android development kit, flutter, solana etc

**Objectives of the project:** develop an android app to manage and transfer documents securely using blockchain

**Tool used:** Android studio, flutter, dart, solana

**Details of Papers/patents:** none

**Brief description of the working environment:** The working environment was nice and got a detailed insight on how a company functions

**Academic courses relevant to the project:** none so far

**Learning Outcome:** android development, flutter

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**PS-I station: Shris Infotech Services Pvt Ltd , Secunderabad**

**Student**

**Name:** ABHISHEK KALI MADIKI .(2021AAPS0550H)

**Student Write-up:**

**PS-I Project Title:** Certification verification using Atsign platform

**Short Summary of work done:** Our project is about the certificate verification of a student through a decentralized app with the help of AtSign. This app incorporates Flutter, Solana, Firebase, and the @protocol to streamline the verification process, ensuring data integrity and privacy. This certification verification app involves three main stakeholders: the institution, the student, and the requestor. The institution, responsible for issuing certificates, securely uploads them to the app. Students benefit by having their credentials securely stored and easily accessible. Requestors, such as employers or educational institutions, can efficiently verify the authenticity of a student's qualifications using the app. @protocol, known for its decentralized data exchange and privacy features, ensures secure and transparent communication between the parties involved. It adds an

extra layer of trust and immutability to the certification verification process. I was allotted team B and our work involved working at the server side. We were supposed to make rest endpoints (rest api) which interact with the data and integrate firebase with the flutter UI.

**Objectives of the project:** Certificate verification of Individuals in a decentralized manner.

**Tool used:** Firebase , Cloud firestore database, Node.js

**Details of Papers/patents:** Nil

**Brief description of the working environment:** Everyone in the company were friendly and helpful . They were enthusiastic in resolving our queries . Our PS-1 faculty Dr Girish Kant Garg made sure we did not face any difficulty during PS and made sure the entire process went smoothly. I was able to learn how to use Firebase and implementation of Rest APIs. I even improved my presentation skills . Overall it was a good experience.

**Academic courses relevant to the project:** no particular courses , just be familiar with Javascript

**Learning Outcome:** App development

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**PS-I station: Shris Infotech Services Pvt Ltd , Secunderabad**

**Student**

**Name:** VENKAT PRANAVA TEJA SAMAVEDAM .(2021AAPS0593H)

**Student Write-up:**

**PS-I Project Title:** A document authentication application

**Short Summary of work done:** Developed Flutter app with a responsive user interface (UI) with a modern and user-friendly design that leverages Solana blockchain and AtSign for efficient document verification, streamlining the process between students, institutes, and requesters. Developed history of a document or with the help of a checkbox that is

designed using the Flutter framework for the frontend and storing the data in a cloud server hosted by Firebase for a backend which is further integrated with a Blockchain technology Solana to ensure the immutability and transparency of document attestation records. Actively participated in code reviews and provided valuable feedback to team members.

**Objectives of the project:** to develop a document authentication app using flutter, firebase and solana

**Tool used:** Flutter

**Details of Papers/patents:** none

**Brief description of the working environment:** The work was not only fascinating but also engaging. It required a strong willingness to contribute and excel. The mentors were exceptionally supportive, providing valuable inputs and creating a comfortable environment throughout the entire journey. Their guidance played a crucial role in making the experience even more enriching and enjoyable.

We have Developed UI for an Application to authenticate certificates issued by the institutes

using flutter, firebase and solana. I have also acquired a good presentation and communication skills. I have learnt to work in a team environment.

**Academic courses relevant to the project:** Computer Programming

**Learning Outcome:** Flutter, Firebase

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**PS-I station: Shris Infotech Services Pvt Ltd , Secunderabad**

**Student**

**Name:** MANAV MEHTA .(2021AAPS0636P)

**Student Write-up:**

**PS-I Project Title:** Blockchain

**Short Summary of work done:** Our Work at Shris Infotech was to integrate academic documents with the help of blockchain so that we can keep a trail of them and they become easy to verify and know the origin of document. We had to integrate it into @sign into an app with the help of flutter ui to make it user friendly

**Objectives of the project:** to create a solana tokens and

**Tool used:** Rust , Solana

**Details of Papers/patents:** Nil

**Brief description of the working environment:** Work environment was good, Mr Jagannadh helped us when we encountered any problem. He also reviewed our code and from time to time gave us proper guidance

**Academic courses relevant to the project:** Blockchain Technology

**Learning Outcome:** Solana, writing smart contract and rust

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**PS-I station: Shris Infotech Services Pvt Ltd , Secunderabad**

**Student**

**Name:** SUMAN BISWAJIT MONDAL(2021AAPS1696G)

**Student Write-up:**

**PS-I Project Title:** Using Blockchain to Create a secure file transfer Application.

**Short Summary of work done:** During my internship, I worked on a project that involved developing an app to record document transactions on the blockchain. My primary task was to generate a hash for each document and then securely store that information on the blockchain, ensuring its integrity and enabling verification at a later stage. I designed a smart contract to store the document hashes securely. This contract acted as a decentralized ledger, recording the transaction details along with the corresponding document hash. By successfully completing this task, I contributed to creating a system

that enables the secure recording and verification of document transactions, opening doors to enhanced trust and transparency in various industries.

**Objectives of the project:** To develop an app that records document transactions on the blockchain.

**Tool used:** Rust, Typescript

**Details of Papers/patents:** NA

**Brief description of the working environment:** I had a wonderful PS journey. The working environment was very good. Our mentors were very helpful, we could ask them any questions whenever we wanted to. We were also given the freedom to work whenever we wanted to as long as we were completing the task.

I gained valuable knowledge in blockchain technology, cryptographic techniques, smart contract development, and security practices.

**Academic courses relevant to the project:** Blockchain

**Learning Outcome:** Blockchain technology and its applications, cryptographic hash functions, consensus algorithms, and smart contracts.

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**PS-I station: Shris Infotech Services Pvt Ltd , Secunderabad**

**Student**

**Name:** KARTIK VERMA .(2021B3AA0554H)

**Student Write-up:**

**PS-I Project Title:** Using Blockchain to Create a secure file transfer Application

**Short Summary of work done:** The project aimed to leverage blockchain technology to create a reliable and transparent system for document transactions. By combining the cryptographic properties of hash functions with the immutability of the blockchain, the project sought to establish a robust and tamper-proof mechanism for recording and verifying document transactions, offering enhanced security and trust to users.

**Objectives of the project:** Use blockchain to eliminate the need of middlemen to verify the authenticity of documents

**Tool used:** Rust and Solana

**Details of Papers/patents:** None

**Brief description of the working environment:** The project aimed to leverage blockchain technology to create a reliable and transparent system for document transactions. By combining the cryptographic properties of hash functions with the immutability of the blockchain, the project sought to establish a robust and tamper-proof mechanism for recording and verifying document transactions, offering enhanced security and trust to users.

The company expected us to enhance our knowledge and practical skills on blockchain technology by involving us in an ongoing project.

**Academic courses relevant to the project:** Cryptography and Blockchain

**Learning Outcome:** Blockchain,solana,rust, smart contracts

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**PS-I station: Shris Infotech Services Pvt Ltd , Secunderabad**

**Student**

**Name:** SANYA SINGH(2021B3AA0818G)

**Student Write-up:**

**PS-I Project Title:** Building Scalable and Cloud-Powered Applications: Harnessing the Potential of Firebase Cloud Firestore and Node.js

**Short Summary of work done:** Implementing real-time data synchronization, handling server-side operations, ensuring data security with authentication and authorization, deployment and scaling strategies, testing and debugging approaches, and optimizing performance



**Objectives of the project:** . By combining the strengths of Firebase Cloud Firestore and Node.js, developers can build robust and scalable applications that harness the full potential of cloud-powered data storage and server-side development.

**Tool used:** firebase, node.js

**Details of Papers/patents:** n/a

**Brief description of the working environment:** The working environment was very good and I learnt how things work in the corporate world

**Academic courses relevant to the project:** computer programming

**Learning Outcome:** The knowledge and insights gained from this report will serve as a valuable resource for us embarking on similar projects, enabling them to harness the full potential of Firebase and Node.js in their application development endeavors.

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**PS-I station: Shris Infotech Services Pvt Ltd , Secunderabad**

**Student**

**Name:** GOLIPALLY SRINIJA REDDY .(2021B4AA2455H)

**Student Write-up:**

**PS-I Project Title:** Building a 3 party user interface to facilitate document transaction using a decentralised server with the help of @protocol, Solana Blockchain and usage of flutter and firebase for UI

**Short Summary of work done:** As a part of Blockchain team for our project we built a Smart contract which includes a function to record the document hash on the blockchain. And we have deployed it on the Solana Network as transaction. The document content, with its hash, date and time of transaction, hashing algorithm was recorded on the blockchain for the requestor from universities to have easy access to tamper-proof information from the students who received from institutes.

**Objectives of the project:** As a part of the total project our team objective was to learn the designing of smart contracts and deploy it on Solana Network.

**Tool used:** Solana Network, VSCode

**Details of Papers/patents:** A report on “Blockchain and Smart Contracts: Addressing Security, Integrity, and authentication challenges through real world use cases”

**Brief description of the working environment:** The Station allotted was online. The project was very interesting and it is very relatable to the real world use-cases. Interaction from the Station could have been improved. Work allotment and lectures on the project statement were positive.

**Academic courses relevant to the project:** Blockchain Technology, Cryptography, DSA,Oops.

**Learning Outcome:** Blockchain Technology  
@protocol  
Flutter UI  
Firebase

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**PS-I station: Silver Touch Technologies Ltd. , Ahmedabad**

**Student**

**Name:** PATIL HARSHITH REDDY .(2021A3PS0889H)

**Student Write-up:**

**PS-I Project Title:** Intelligent Query Chatbot

**Short Summary of work done:** My summer internship project's main goal was to construct an intelligent question chatbot that would let users and databases communicate more effectively by utilizing recent developments in natural language processing (NLP). The goal of this state-of-the-art solution was to give users a user-friendly interface that would enable them to interact with databases using straightforward and natural language queries.

**Objectives of the project:** Make a chatbot application that takes input in natural language and gives appropriate response

**Tool used:** Reactjs, Python, FastAPI, PostgreSQL, CSS

**Details of Papers/patents:** None

**Brief description of the working environment:** It was online so not much interaction with the people from the company. They were helpful, cleared our doubts if any. Project was assigned a little late had very tight deadline but that was helpful actually as it gave me a experience of working under pressure and how to meet deadlines. The project was also very nice and interesting and apt to current developments in the industry. Overall a very good Station.

**Academic courses relevant to the project:** Web Development.

**Learning Outcome:** Web Development, Reactjs, FastAPI, PostgreSQL

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**PS-I station: Silver Touch Technologies Ltd. , Ahmedabad**

**Student**

**Name:** SIDDARTH ANNAMANENI .(2021A3PS1551H)

**Student Write-up:**

**PS-I Project Title:** Intelligent Query chatbot

**Short Summary of work done:** Learned different tools to create a AI/ML model. Then created a chatbot which takes in Natural language from the user and converts it into SQL query and executes in the backend and fetches the result to the user in a systematic manner.

**Objectives of the project:** To learn and implement Ai/ML models and LLM

**Tool used:** React js,python(fastapi,OpenAI) and postgresSQL.

**Details of Papers/patents:** None

**Brief description of the working environment:** My mode of PS was online and interactions done with company staff and mentor were very professional and they guided through our project very well.

**Academic courses relevant to the project:** DBMS and OOPS.

**Learning Outcome:** Frontend, Backend, OpenAI API and SQL.

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**PS-I station: Silver Touch Technologies Ltd. , Ahmedabad**

**Student**

**Name:** VITHALANI MEET AMITKUMAR .(2021A7PS0555P)

**Student Write-up:**

**PS-I Project Title:** Intelligent query chatbot: Enhancing data retrieval with NL to SQL conversion

**Short Summary of work done:** The first step was the learning phase where we learnt python, it's libraries, prompt engineering, openai, FastAPI, React, PostgreSQL and many other technical stuff. This was very helpful before project started. For the project we were expected to develop a chatbot where a user can write NL query which gets converted to SQL query and produces output from the database. The frontend page for this was built using react where user types the NL query. This NL query was sent to a openai model using FastAPI where it gets converted to SQL query. This SQL query gets necessary output from the database and sends it to the frontend page again using FastAPI. Overall, the project experience was good and helped me learn various skills.

**Objectives of the project:** Developing a chatbot which can help a person from non-technical background to retrieve data using natural language to SQL conversion.

**Tool used:** Frontend: React, Backend: FastAPI, DBMS: PostgreSQL, Working Code: Python and it's libraries.

**Details of Papers/patents:** None

**Brief description of the working environment:** The PS station being onsite was very beneficial for me. The working environment and the staff were very co-operative and helped and encouraged me a lot during the course of my project. I learnt soft skills and many technical skills.

**Academic courses relevant to the project:** Object Oriented Programming and Database Management System

**Learning Outcome:** Learnt python, prompt engineering, react, FastAPI, PostgreSQL, OpenAI

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**PS-I station: Silver Touch Technologies Ltd. , Ahmedabad**

**Student**

**Name:** DOSHI TANAY CHIRAG(2021A7PS2984G)

**Student Write-up:**

**PS-I Project Title:** Intelligent Query Chatbot

**Short Summary of work done:** Worked on a chat bot which converts natural language to SQL commands. For this project I learned react js, fastapi and postgresql. Through this technologies I was able to connect frontend to backend and backend to database.

**Objectives of the project:** Conversion of natural language to SQL commands

**Tool used:** React js, kaggle, postgres application, vs code

**Details of Papers/patents:** It converts natural language to SQL commands and then retrieve the relevant information from the database

**Brief description of the working environment:** The environment at Silver Touch Technologies Limited is very professional. The work culture and help from fellow seniors

was really good. As promised about the projects they made us do AI/ML projects with a great help and support. Overall, I learned a lot during the PS internship

**Academic courses relevant to the project:** Data base management systems

**Learning Outcome:** Learned to develop frontend as well as backend of a website

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**PS-I station: Silver Touch Technologies Ltd. , Ahmedabad**

**Student**

**Name:** Akshat Nagpal(2021AAPS0687P)

**Student Write-up:**

**PS-I Project Title:** INTELLIGENT QUERY CHATBOT: ENHANCING DATA RETRIEVAL WITH NL2SQL CONVERSION

**Short Summary of work done:** The project utilised the concepts of Python, React.JS, Javascript, and PostgreSQL, along with a basic understanding of API's, Artificial intelligence and Machine Learning. The final chatbot can be seen in the image on the next slide. The development of the project involved the following aspects Dataset Acquisition, Data Preparation and Storage, Backend Development Frontend Development NL-to-SQL Conversion

**Objectives of the project:**

- Enable users to query the dataset using natural language.
- Develop a backend system for NL-to-SQL conversion using OpenAI.
- Implement a PostgreSQL server for data storage and retrieval.
- Create a user-friendly Chabot interface using React.js.
- Provide accurate and relevant data results based on user queries.

**Tool used:** React JS, Python, OpenAI, FastAPI

**Details of Papers/patents:** -

**Brief description of the working environment:** Extremely fun and helpful mentors, great working environment with regular updates a, check-in meetings, and technical meeting

**Academic courses relevant to the project:** None

**Learning Outcome:** Extremely fun experience providing exposure to all fields of Full Stack Development, and the catching up with the OpenAI API

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**PS-I station: Silver Touch Technologies Ltd. , Ahmedabad**

**Student**

**Name:** SARTHAK SOMANI .(2021B1A70793H)

**Student Write-up:**

**PS-I Project Title:** INTELLIGENT QUERY CHATBOT: ENHANCING DATA RETRIEVAL WITH NL2SQL CONVERSION

**Short Summary of work done:** Dataset Acquisition: The very first step involved collecting any dataset from the Kaggle website for the purpose of the project. Kaggle is a famous website for finding dataset to use in the training for a machine learning model. Here, I have used FastAPI to build the backend for my application. FastAPI is a modern, high-performance Python web framework for building APIs. Frontend Development: The frontend of the project is built in react. React is a popular JavaScript library for building user interfaces. It follows a component-based approach, allowing me to create reusable UI elements. NL-to-SQL conversion: This part is like the brain of the code. The power of artificial intelligence comes into play here. It takes the input of the English query from user and converts that into SQL query doing some processing in the background. It does this by leveraging the capabilities of 'GPT-3.5-turbo'. It is an advanced language model developed by OpenAI. Data Retrieval: This step is similar to the data storage step. Here, we will again use psycopg2 which is a library of python to connect to the PostgreSQL server. The SQL query produced by the OpenAI model is sent to executed on the server by the use of above library.

**Objectives of the project:** The key objectives of the project are as follows: • Enable users to query the dataset using natural language. • Develop a backend system for NL-to-SQL conversion using OpenAI. • Implement a PostgreSQL server for data storage and retrieval. • Create a user-friendly Chabot interface using React.js. • Provide accurate and relevant data results based on user queries.

**Tool used:**  Backend: Python, FastAPI, OpenAI  Frontend: React.js   
Database: PostgreSQL

**Details of Papers/patents:** LLM research paper: <https://arxiv.org/pdf/2304.13712.pdf>

**Brief description of the working environment:** This learning journey would not have been possible without the support of Silver Touch Team. I am extremely thankful to Syamala Sharma ma'am and her team for helping me learn more about the Artificial Intelligence and answering all my questions and taking suggestions with utmost diligence. I am grateful to Pratik Machchar Sir for his guidance throughout the duration of the project. Also special thanks to Virendra Prajapati sir and Devam Agrawal sir for the constant help in completing the project.

**Academic courses relevant to the project:** 1. Learning python: <https://www.codewithharry.com/tutorial/python/>  
2. Various python libraries: <https://www.freecodecamp.org/news/the-ultimate-guide-to-the-pandas-library-for-data-science-in-python/>  
3. Prompt engineering: <https://www.deeplearning.ai/sh>

**Learning Outcome:** In conclusion, I feel chatbots are powerful tools in various domains, offering efficient and personalized user interactions. The development and implementation of chatbots have revolutionized customer service, information retrieval, and task automation. By leveraging natural language processing (NLP) and machine learning techniques, chatbots can understand and respond to user queries, provide relevant information, and even perform actions on behalf of users, improving customer satisfaction and reducing response time.

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**PS-I station: Silver Touch Technologies Ltd. , Ahmedabad**

**Student**



Name: Anusha Jain(2021B3A30891H)

### Student Write-up:

**PS-I Project Title:** Intelligent Query Chatbot: Enhancing Data Retrieval with NL to SQL conversion

**Short Summary of work done:** The project aimed to develop a machine learning-based chatbot application for querying datasets with natural language. The application provided a conversational interface that allowed users to interact with the chatbot to retrieve information from a given dataset. The project involved developing an effective machine learning-based chatbot, implementing a robust conversion from natural language to SQL using OpenAI, and creating an intuitive chatbot interface using React.js. At the end of practice school, I successfully developed a chatbot.

**Objectives of the project:** The objective of the project was to develop a chatbot-based application that allows users to query a dataset using natural language and receive results.

**Tool used:** H/w- laptop. s/w- Python, PostgreSQL, React.js, OpenAI GPT model

**Details of Papers/patents:** -

**Brief description of the working environment:** The working environment of the company was very good. The mentor and other members of the company were very supporting and helpful. They expected to do the work given and they helped and provided resources for learning and completing the project.

**Academic courses relevant to the project:** computer programming done in first year was helpful.

**Learning Outcome:** Learned a lot of things. Developed a full stack application, a chatbot. For the development, I learned Python and some of its libraries. Learned SQL and PostgreSQL for Database Management and React for frontend development.

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**PS-I station: SimpleWorks Solutions Pvt. Ltd. (SimpleCRM) , Nagpur**

## Student

Name: NAYAN SANJAY SARAWGI .(2021A3PS0802H)

### Student Write-up:

**PS-I Project Title:** XYZ Life Insurance- Capstone Project

**Short Summary of work done:** We learnt about the workings of a low-code CRM platform and deployed it as per the Business Requirement Document(BRD) of the client

**Objectives of the project:** Configuring a CRM system according to the client's Business Requirement Document

**Tool used:** The company's internal CRM software

**Details of Papers/patents:** No

**Brief description of the working environment:** The working environment was very good and the company's employees helped us throughout the duration of PS-1 be it training and even the project. All that the company expects is for one to be good at absorbing whatever they teach.

**Academic courses relevant to the project:** No course in particular

**Learning Outcome:** We learnt the workings of the CRM software and how to deploy it according to the necessary requirements

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**PS-I station:** SimpleWorks Solutions Pvt. Ltd. (SimpleCRM) , Nagpur

## Student

Name: SUDHANSHU PATIL .(2021AAPS0663H)

### Student Write-up:

**PS-I Project Title:** Prudential Zenith Life Insurance Capstone project

**Short Summary of work done:** Deployed SimpleCRM software for case/ticket creation using inbound email settings, such that an automated email reply is sent to the sender informing them that their case has been registered and assigning them a unique Ticket ID for updates regarding their case. I also created customized dashboards for different users in the company and created a Business Process Machine (BPM) for different case types and subtypes, and added tasks to be completed accordingly. Also, assigned these tasks to different users in the company and added automated escalation if the deadlines are missed (Service Level Agreement).

**Objectives of the project:** To deploy CRM system on PZLI website for enhanced Customer Relationship Management

**Tool used:** SimpleCRM software

**Details of Papers/patents:** NA

**Brief description of the working environment:** Had a great learning opportunity and industry exposure, peers were also friendly enough to have a chat over any difficulties, either technical or personal. We had given seat with other professionals of the company; the environment was also very chill. I could not ask anything more from PS-I. Had a great learning alongside as to how industry professionals work as a team in co-operation with each other.

**Academic courses relevant to the project:** NA

**Learning Outcome:** Gained knowledge about how CRM is deployed and can be used for better customer experience, lowering the Turn around time (TAT).

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**PS-I station:** SimpleWorks Solutions Pvt. Ltd. (SimpleCRM) , Nagpur

**Student**

**Name:** GAURAV GOLCHHA .(2021B2A83135H)

**Student Write-up:**

**PS-I Project Title:** PZLI

**Short Summary of work done:** learned about , how any organisation can get benefited from it

**Objectives of the project:** Providing a ticketing generation system for the organisation

**Tool used:** No code platform

**Details of Papers/patents:** didnt know exactly about i t

**Brief description of the working environment:** it was very very good , trainer was very friendly and helpful to ua

**Academic courses relevant to the project:** its very good

**Learning Outcome:** usage of low code no code platform and its configuration

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**PS-I station: Smartlink Holdings Ltd- Synegra EMS , Goa**

**Student**

**Name:** SUTAPALLI LIKHITH BHARGAV .(2021A7PS0444H)

**Student Write-up:**

**PS-I Project Title:** Shopfloor traceability

**Short Summary of work done:** we had bulit a web application and deployed it in their shopfloor. i have learnt different skills which are required to build a web application got a good grasp in them

**Objectives of the project:** To build a full stack web application

**Tool used:** react js,node js ,sql,

### **Details of Papers/patents: -**

**Brief description of the working environment:** the working environment was a bit strict. the expectations from the company were too high, but they have given enough support and encouraged and motivated till the end

**Academic courses relevant to the project:** oops, dbms

**Learning Outcome:** web development

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### **PS-I station: Smartlink Holdings Ltd- Synegra EMS , Goa**

#### **Student**

**Name:** SISTU AKSHAR(2021A8PS2598G)

#### **Student Write-up:**

**PS-I Project Title:** Shopfloor Traceability System

**Short Summary of work done:** Made a web application which provides an interface for the employees to scan the temporary barcodes of individual products at different stages of production and then finally link it to the permanent barcode and store it in a database for backward traceability. The web application includes authentication system for different types of users and provides them access to the website accordingly. The web application also detects the stage of the client computer with the IP address. It can be used to maintain a list of products, create and manage production jobs, products, and stages, and provide backward traceability for individual products. This web app is also made ensuring compatibility with old and unsupported operating systems and hardware.

**Objectives of the project:** To create a system which can keep record of each product at individual stages of production for traceability

**Tool used:** WebStorm IDE, PyCharm IDE, VirtualBox, Web Server provided by the company,

**Details of Papers/patents:** NA

**Brief description of the working environment:** In the first week of our PS, we were asked to observe the working process of the industry and the production process involved in manufacturing electronics. After the first week, we were provided with a working space where we could sit and discuss ideas and work on our project. In the duration of the PS, we were expected to make a software application which could provide them with traceability for the products that they make and also has features such as multi group user authentication, compatibility with older computers and Serial port based barcode scanners from scratch. There was no possible guidance that could be provided by the IT department of the company, so we went ahead with learning web development through online resources. Since there was an expectation to make an industry deployable software application, prior knowledge in some field of software and functioning of computer networks, databases and operating systems was definitely needed. Applying this knowledge and making an application strengthened these skills in me and also taught me about the industry standard in terms of software.

**Academic courses relevant to the project:** NA

**Learning Outcome:** Working of Electronic Manufacturing Services, Web Development, Computer Networks

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**PS-I station: Smartlink Holdings Ltd- Synegra EMS , Goa**

**Student**

**Name:** PRADYUN CHAKRAVARTHY LADE .(2021AAPS0565H)

**Student Write-up:**

**PS-I Project Title:** Shof floor tracebalitly system

**Short Summary of work done:** We built a web page for the company to manage and acces their products in the assembly lines.

**Objectives of the project:** Building a shof floor tracebalitly system for the company

**Tool used:** Full stack web development, DBMS, Computer architecture

**Details of Papers/patents:** Null

**Brief description of the working environment:** It was good

**Academic courses relevant to the project:** DBMS, Computer Architecture

**Learning Outcome:** Web development, computer networking, hardware integration

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## **PS-I station: Smartlink Holdings Ltd- Synegra EMS , Goa**

### **Student**

**Name:** JANHAVI SANTOSH SAVANT(2021B1A32362G)

#### **Student Write-up:**

**PS-I Project Title:** Time Motion Analysis of Optic Fibers

**Short Summary of work done:** Went through different processes done at synegra and telesmart. Learnt about how the processes work , we did an weekly analysis of time motion of those processes and tried to find ways of improvement in every process through automation etc.

**Objectives of the project:** To do the time motion analysis of the SCS fiber optics present in telesmart.

**Tool used:** Barcode scanner, python , MS PowerPoint

**Details of Papers/patents:** No papers given

**Brief description of the working environment:** It was a good working environment with the expectations that I had .

**Academic courses relevant to the project:** Computer Programming, some eee courses.

**Learning Outcome:** Learnt how to increase the efficiency with time so as to increase the output and meet the target of the day. How employees can use various measures to do the same.

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## PS-I station: Smartlink Holdings Ltd- Synegra EMS , Goa

### Student

**Name:** HARSHITH THATHAPUDI .(2021B5A83165H)

### Student Write-up:

**PS-I Project Title:** Website Development for complaint E-Ticket registration

**Short Summary of work done:** My allotted division in the company is maintenance team. For the first one week we had to just explore about the insights in the company. And they will explain certain aspects where their company is lagging behind or has room for improvisations. In this way, we took our project as Web dev. for complaint E-ticket generation and thereby the maintenance team can view them in proper organised way and hence prioritize their complaints. For the first 5 weeks we were in the learning stage. Took Angela Yu's Full stack web dev. udemy course for our basic understanding of how to build a website. And we started creating website in the last two weeks and finished it within time.

**Objectives of the project:** To register complaints for the maintenance team

**Tool used:** Obviously, for Front-end part of the website we used HTML, CSS and JS. And the software which contains are the library files and functions, used was React.js - a framework of JS. And for Back-end we used Node.js and for Databases we used MYSQL.

**Details of Papers/patents:** None

**Brief description of the working environment:** As the maintenance are all not from CS department but rather from Electronics, Mechanical, etc; hence they couldn't guide us where to study from and assist us during our troubles in the making of the website. So, most of the work is expected to be done by yourself. In the company, we were not given



separate desk provision and also there is no lan/wifi services. This troubled us a bit. But the workers and mentors helped us a lot in other kinds of things like gave us free canteen lunch daily, also tried to help us in our traveling, and a lot more. Overall, it was such good learning experience. Now, I came to know various domains and sectors needed for company to establish and run it.

**Academic courses relevant to the project:** CS F111 (C-Programming)

**Learning Outcome:** Full-Stack web development, Databases management, etc.

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**PS-I station: Solutionec Pvt. Ltd. , Bengaluru**

**Student**

**Name:** ROHAN G SHROFF(2021A7PS0004G)

**Student Write-up:**

**PS-I Project Title:** Data Harmonisation

**Short Summary of work done:** Created a website which takes an excel or csv file from a user and takes various inputs such as minimum threshold for autocorrection and imputing values. Used fuzzy matching functions of python to autocorrect values. A list of all the corrected values is displayed to the user with a checkbox beside it. The user can decide which changes to keep and which changes need to be kept. Imputing missing values works in a similar way. However missing values are imputed by comparing the row with the missing values to other rows and imputing the possible value in the missing column based on the value in the other row.

**Objectives of the project:** Writing a configurable programme that autocorrects given data and imputes values in empty cells

**Tool used:** Python,HTML,CSS,JS

**Details of Papers/patents:** No papers/patents

**Brief description of the working environment:** Good working environment the project was fun to work on felt like i learnt a lot

**Academic courses relevant to the project:** DSA

**Learning Outcome:** Learnt the basics of python and learnt in depth of how to use a few libraries of python namely pandas, NumPy and flask. Also learnt a few basics of HTML CSS and javascript as we had to also design the frontend for our project.

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**PS-I station: Solutionec Pvt. Ltd. , Bengaluru**

**Student**

**Name:** HARSH INDRAJIT AGRAWAL .(2021A7PS0524P)

**Student Write-up:**

**PS-I Project Title:** Master data management

**Short Summary of work done:** I started by learning python , specifically pandas , to perform data manipulation. After I had gained some proficiency in pandas i was tasked with writing backend functions for the various processes that are a part of master data management such as data cleaning, formatting, imputing missing values and autocorrecting inaccuracies in the data based on various configurable inputs from the user. After the backend was complete, i also made the frontend for this project with my team using flask and html , which added a lot more functionality to the project such as taking user inputs to define the thresholds for imputing and auto corrections , also the user can selectively revert any changes made to the data which was also another feature of the frontend.

**Objectives of the project:** To perform all the necessary operations for data harmonization

**Tool used:** Python3, pandas , flask , html

**Details of Papers/patents:** NA

**Brief description of the working environment:** The working environment was very encouraging, I met my mentor the very first day and after he gauged my current ability he gave me the appropriate reference material so I could tackle the project comfortably. 2 other guys worked with me on this project and we had 2 meetings with the lead every week , one for project update and another for further instructions for the project and feedback on our work which was very helpful for keeping the project moving smoothly.

**Academic courses relevant to the project:** NA

**Learning Outcome:** All the different processes needed to perform data management and maintain a secure data pipeline and how to perform those processes

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**PS-I station: Solutionec Pvt. Ltd. , Bengaluru**

**Student**

**Name:** AAYUSH KATARIYA .(2021B4A32924H)

**Student Write-up:**

**PS-I Project Title:** Intranet development

**Short Summary of work done:** Our work was to create an intranet website for the company where all information and daily updates regarding the company would be present. Here employees could interact and engage with each other and the events going on in the company. We first started on figma where we created the UI/UX of the website and then went on to make the website using SharePoint, which is a part of Microsoft 360.

**Objectives of the project:** Creating an intranet for company's internal use

**Tool used:** Figma, SharePoint, JS, HTML, CSS

**Details of Papers/patents:** None

**Brief description of the working environment:** The working environment was quite good. Our team members were quite supportive and so were other employees. I would

say this was the cream layer of the corporate world. We had an in built recreation room, a cafeteria and various other facilities in our office. We got a learn a lot from our mentor at the company.

**Academic courses relevant to the project:** None

**Learning Outcome:** Collaborative skills, working with deadlines, time management, communication skills, various softwares like figma, SharePoint, etc.

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**PS-I station: Syntegon Technology India Private Limited , Goa**

**Student**

**Name:** SALIL KRISHNA GYANANI .(2021B5A42346P)

**Student Write-up:**

**PS-I Project Title:** High Speed Weighing and Dosing Systems

**Short Summary of work done:** Comparison of various machines used with other OEMs manufacturers and physically working and testing on the VFFS machines.

**Objectives of the project:** Researching and working on High Speed weighing systems and working upon better solutions for the company and analysis of the technology used.

**Tool used:** AutoCAD, Solidworks, Excel and Pycharm with the Internet.

**Details of Papers/patents:** None

**Brief description of the working environment:** The project provided was more reserach oriented and the expectations from the company was not met but the environment provided and the company mentor was good and the learning outcomes could have been more.

**Academic courses relevant to the project:** MeOW, ES and EG

**Learning Outcome:** Detailed knowledge about high speed packaging machines such as multi head VFFS machines and other machines while working on their CAD models.

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**PS-I station: Syntegon Technology India Private Limited , Goa**

**Student**

**Name:** PRABHALA SREEJIT .(2021B5A43175H)

**Student Write-up:**

**PS-I Project Title:** Concept of competitor Analysis

**Short Summary of work done:** Firstly data of the competitors was collected and analysed properly and then a presentation was made

**Objectives of the project:** To analyse competitors using different techniques

**Tool used:** Ms office

**Details of Papers/patents:** Nothing

**Brief description of the working environment:** Learnt about marketing and about the competition in the market

**Academic courses relevant to the project:** Nothing

**Learning Outcome:** Learnt how corporate world works, some marketing excel and making good presentation in powerpoint

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## PS-I station: Unicloud , Noida

### Student

Name: VEHAAN HANDA(2021A1PS1907G)

### Student Write-up:

**PS-I Project Title:** Development of Analytical Dashboards for the Mission Antyodaya Scheme

**Short Summary of work done:** We aided the Ministry of Rural Development, Government of India, with tracking the overall progress of their flagship rural survey scheme, Mission Antyodaya. It is an accountability framework launched by the Government of India which tracks the development of more than 660,000 villages across India. We developed interactive and scalable analytical dashboards in Microsoft Power BI as a proof of concept for the ministry's data analytics team. They were looking to migrate all their existing dashboards from Tableau, a business intelligence tool that was getting more and more unaffordable by the day. They needed someone with a strong foundational knowledge of Microsoft Power BI to build a proof of concept dashboard that could be scaled up in the future. I did exactly that, starting from a 251 column dataset which could not even be processed properly on my laptop, cleaned and segmented the data according to various sectors in the scheme, and built thirty dashboard pages, each displaying important KPI metrics related to the scheme, which made it easier for managers to see each state, district, block, gram panchayat and village in terms of their overall development progress, and in turn, the overall progress of the Mission Antyodaya survey. Rarely do you get such large datasets to work with, and working on this project was very fulfilling for me.

**Objectives of the project:** This project focuses on the utilisation of data visualisation techniques and the Microsoft Power BI platform to enhance the Mission Antyodaya initiative, a flagship program launched by the Ministry of Rural Development, Government of India.

**Tool used:** Microsoft Power BI Desktop, Microsoft AppSource

**Details of Papers/patents:** None

**Brief description of the working environment:** Unicloud had assigned us to their client, the ministry, in their Delhi office. Our working location was at Jeevan Bharti Building in Connaught Place. The ministry's IT division had a small office in the building. We were given a separate room to work in. While they had systems of their own, they were very slow. We mostly preferred our own PCs to do any work. The internet was also not very

good, so we had to rely on our hotspot connections. However, the project I was assigned to was very good, so it served as motivation to keep going. The entire program ultimately surpassed my expectations. It was challenging at times, but I pulled through. The biggest hurdle was actually right at the very beginning when I realised that I didn't own a Windows laptop but the application I had to use was only available on Windows. Working with a large dataset also had its problems, due to the fact that data cleaning and segmentation took the better part of two weeks, in addition to the one week I spent learning how to work in Power BI. PS1 has taught me a lot about advanced data analytics and big data, in addition to working with business intelligence tools. But it has also made me more patient, more so when I was waiting for the laptop to process the dataset when I started work every day.

**Academic courses relevant to the project:** CS F320: Foundations of Data Science

**Learning Outcome:** Data Analytics, Data Visualisation, Microsoft Power BI, Layout Design, Dashboard Design, Big Data Analytics, Business Intelligence Tools, Adjusting to Corporate Environment

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**PS-I station: Unicloud , Noida**

**Student**

**Name:** RITVIK MITTAL .(2021A8PS2545P)

**Student Write-up:**

**PS-I Project Title:** 1. Development of Attendance Verification System under MNREGA.  
2. Making a website for Non profitable assets.

**Short Summary of work done:** 1. We used mtcnn face detection algorithm to identify the number of faces in a photograph and checked it's accuracy on different confidence thresholds. We made a website for uploading photos and displaying the processed annotated images along with the count of people using Html/Css and Flask. We made api endpoints using Rest api to integrate the functionality on their android apps. 2. We used REACTjs to make the frontend of the website called NPA Bazaar for Ravinath Sir. We made sections for users to register as an organization, service provider or a buyer and to view and bid for the digital assets.

**Objectives of the project:** To eliminate manual attendance checking with accurate face detection method. To make a website for NPA dealing.

**Tool used:** Python, MTCNN, Flask, ReactJS, HTML, CSS

**Details of Papers/patents:** NA

**Brief description of the working environment:** Our working mode was offline which involved sitting with employees of Ministry of Rural Development and we often met and updated our progress to Sanjay Sir, Director of Mord and Ravinath Sir, our mentor and our PS-1 instructors visited us regularly. Learnings include knowing the service and production level working of a government ministry and also the management of work-life balance.

**Academic courses relevant to the project:** Computer Programming, Machine Learning

**Learning Outcome:** Machine Learning, Image Analytics, Python, ReactJS, HTML/CSS

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**PS-I station: Unicloud , Noida**

**Student**

**Name:** SHASHWAT BAJPAI .(2021B3AA3041H)

**Student Write-up:**

**PS-I Project Title:** POC on using Blockchain in Mission Antyodaya

**Short Summary of work done:** During PS-I, the focus was on conducting a comprehensive data study and questionnaire analysis. Variables were categorised, and an outlier formula was developed to identify anomalies in the data. The infrastructure setup involved implementing Hyperledger Fabric, a popular blockchain framework. Smart contracts were developed to incorporate outlier ranges and ensure blockchain-based verification and instantaneous results. API development and UI/UX considerations were catered to meet stakeholders' requirements. Collaboration with ChainCode Consulting played a significant role in infrastructure setup, API management, and smart contract



development. A certificate system was established through blockchain, based on a previous score-based system for villages and examining its impact on decision-making and efficiency.

**Objectives of the project:** This project explores blockchain technology (Hyperledger Fabric) in addressing challenges faced by Mission Antyodaya. It focuses on efficiency and objectives, analyzing applicability, limitations, implementation, and impact. Findings provide insights and recommendations for improving blockchain utilization in Mission Antyodaya.

**Tool used:** Hyperledger Fabric, programming languages (e.g., GoLang, Python, SQL), development frameworks, APIs, and testing tools.

**Details of Papers/patents:** NA

**Brief description of the working environment:** The project was conducted in a research-oriented working environment, with a focus on exploring the potential of blockchain technology, specifically Hyperledger Fabric, for addressing challenges in Mission Antyodaya. The environment provided opportunities to learn and gain practical experience in implementing blockchain solutions. However, it also presented challenges and complexities inherent in working with emerging technologies.

**Academic courses relevant to the project:** CS F111(Computer Programming), ECON F213 (Mathematical & Statistical Methods), ECON F241(Econometric Methods), BITS F463 (Cryptography)

**Learning Outcome:** The major learning outcomes of the project included gaining a broad understanding of blockchain technology, exploring its potential applications, and developing proficiency in implementing Hyperledger Fabric. It also involved enhancing skills in data analysis, developing smart contracts, designing APIs, and considering user experience requirements. Collaboration with ChainCode Consulting provided industry exposure and insights into effective collaboration practices. Additionally, the project fostered insights into the practical implications of blockchain technology for decision-making and efficiency improvement.

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**PS-I station: Unicloud , Noida**

**Student**

Name: MITUSHI GOYAL(2021B4AA2784G)

**Student Write-up:**

**PS-I Project Title:** Development of analytical dashboards using power bi

**Short Summary of work done:** Used power bi to create dashboards and show graphs that indicate efficiency of schemes.

**Objectives of the project:** Analysing and creating easy to understand dashboards

**Tool used:** Used Microsoft power bi

**Details of Papers/patents:** None

**Brief description of the working environment:** The working environment was quite laid back. We were given deadlines and as long we met those deadlines and arrived to office within a certain time frame, they had no quarms. They offered guidance and assistance whenever we asked.

**Academic courses relevant to the project:** Statistics

**Learning Outcome:** Learnt to use power bi

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**PS-I station: Unicloud , Noida**

**Student**

Name: VIDIT GOYAL(2021B4AA2944G)

**Student Write-up:**

**PS-I Project Title:** Identification of objects and person available in image captures in MGNREGA

**Short Summary of work done:** During the HTML and MTCNN project, significant accomplishments were made in developing a web-based attendance verification system. The project integrated HTML, CSS, Flask, OpenCV, and MTCNN. HTML focused on creating a user-friendly interface, while CSS enhanced the visual appeal. MTCNN, using OpenCV and Python, accurately detected faces in uploaded images, drawing bounding boxes. Objectives achieved included enabling users to upload images for attendance verification. MTCNN processed the images, determining total and individual person counts. The project showcased the integration of HTML, CSS, Flask, OpenCV, and MTCNN, solving real-world challenges. It enhanced web development, HTML, CSS, and Python skills, providing practical experience with Flask and computer vision models like MTCNN. Overall, the HTML and MTCNN project delivered a functional attendance verification web application, combining web development and computer vision technologies.

**Objectives of the project:** Identify the number of people in an image and display in a website and integrate it via an API

**Tool used:** Python, HTML/CSS, Flask Postman API

**Details of Papers/patents:** None

**Brief description of the working environment:** During the project for the MGNREGA program at Unicloud's client Ministry of Rural Development, the working environment was collaborative and focused. The company had high expectations for delivering a robust attendance verification system. They expected strong technical skills in web development, HTML, CSS, Flask, and OpenCV, along with effective communication and meeting deadlines.

Working with the Ministry of Rural Development provided a valuable learning experience. We gained insights into implementing technology solutions in a government context and understanding the MGNREGA program's requirements. We enhanced our technical skills, problem-solving abilities, and proficiency in Flask and integrating computer vision models. The project deepened our understanding of web development, attendance verification systems, and the MGNREGA program's objectives and challenges.

Overall, the learning experience at Unicloud's client Ministry of Rural Development allowed us to apply our skills, contribute to the MGNREGA program, and gain practical knowledge in a collaborative environment.

**Academic courses relevant to the project:** None

**Learning Outcome:** Image analytics, Python, Face recognition system, HTML/CSS, Flask API

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## PS-I station: UST Global - Infinity Labs , Thiruvananthapuram

### Student

Name: ABHIRAM AJITH(2021A7PS2525G)

#### Student Write-up:

**PS-I Project Title:** Multifaceted Computer Vision Applications

**Short Summary of work done:** Create object detection models for drone vision. use pose estimation for uses in health & fitness, and the use of GANs for image super-resolution

**Objectives of the project:** Create object detection models for drone vision. use pose estimation for uses in health & fitness, and the use of GANs for image super-resolution

**Tool used:** YOLOv8, OpenPose, ESRGAN, DragGAN

**Details of Papers/patents:** NA

**Brief description of the working environment:** Helpful mentors and a good exposure to the corporate world.

**Academic courses relevant to the project:** Machine Learning, Artificial Intelligence

**Learning Outcome:** Machine Learning, Computer Vision, Deep Learning

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## PS-I station: UST Global - Infinity Labs , Thiruvananthapuram

### Student

Name: IVAN JOSEPH JACOB .(2021A8PS2552P)

## **Student Write-up:**

### **PS-I Project Title:** NLP driven Medical Chatbot

**Short Summary of work done:** During my PS-I, significant progress has been made in developing MedBot. The chatbot has reached a stage where it can effectively engage in conversations with users. Key accomplishments include implementing greeting and goodbye functionalities, mood detection for personalized responses, entity recognition for identifying names and medical conditions, and training MedBot on common diseases and conditions with comprehensive information on symptoms, facts, and prevention strategies.

**Objectives of the project:** The objectives of the project are to develop an AI-driven medical chatbot that revolutionizes medical interactions by providing personalized and empathetic support to users. The chatbot aims to understand user queries, detect user mood, tailor responses accordingly, and provide reliable medical information from a comprehensive knowledge base.

**Tool used:** The development tools used for this project include the Rasa Framework, NLTK, SpaCy, Word2Vec, GenSim, BERT, PyTorch, TensorFlow, Scikit-Learn, and Pandas.

**Details of Papers/patents:** No papers or patents have been mentioned in the abstract.

### **Brief description of the working environment:**

During PS-I, the working environment for the project was characterized by great facilities, a good cafeteria, and well-equipped workstations. The company provided a conducive and comfortable atmosphere for the project team to work efficiently. The availability of state-of-the-art infrastructure and resources enabled smooth development and implementation of the MedBot chatbot.

**Academic courses relevant to the project:** NA

**Learning Outcome:** The major learning outcomes of the project include gaining knowledge and experience in natural language processing (NLP), machine learning techniques, chatbot development using the Rasa Framework, entity recognition, mood detection, and building a comprehensive knowledge base for medical information.

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**PS-I station:** UST Global - Infinity Labs , Thiruvananthapuram

## Student

Name: GIBIN BIJU KARIAMADOM .(2021AAPS2229H)

### Student Write-up:

**PS-I Project Title:** Data Science

**Short Summary of work done:** The first 3 weeks of the internship was used to do various kaggle courses and watch courses on python, numpy ,pandas,intro to machine learning,intermediate machine learning ,data visualisation ,feature engineering,time series analysis.We went on to apply various models on the dataset which consisted of no of units of a particular product sold during a day and compared their accuracies after normalizing the data to determine the best model.we created excel files with the predicted data,plotted various graph of how to show how model generated data compared with actual data .plotted periodograms to show what are the time-periods of the underlying functions that create the trend.

**Objectives of the project:** To accurately model and analyse future demand of various products in a grocery store from a previously generated data set.The goal is to help small grocery shops gain competitive edge with this kind of analysis

**Tool used:** python

**Details of Papers/patents:** none

**Brief description of the working environment:** The interns were treated well by the company. The mentors and superiors are easily approachable and willing to help .The office itself is modern with all facilities such as cafeteria ,gym , swimming pool, pantry.

**Academic courses relevant to the project:** computer programming- CS f111

**Learning Outcome:** learnt basic python programming and libraries such as numpy ,pandas ,matplotlib .learnt concepts in machine learning such as how to create basic machine learning models, overfitting and underfitting data ,model validation ,imputation, cross validation .also learnt working of various regression models such as polynomial regression, Random forests , XGboost

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**PS-I station: UST GLOBAL , Chennai**

**Student**

**Name: HARIKRISHNA V .(2021A3PS1662H)**

**Student Write-up:**

**PS-I Project Title:** Data Analysis with Power BI

**Short Summary of work done:** We were given a data analysis project where we had to do data querying on 3 files namely the PnL report, Expense report, and the Forecast file. We worked on power query editor to achieve this, and we did data visualization through the Power BI desktop software by using various visualization tools like bar charts, pie charts, etc.

**Objectives of the project:** Data querying and visualization of PnL report, Expense report, and forecast files

**Tool used:** S/w (Power BI)

**Details of Papers/patents:** Power BI automated document used by company to analyse future data.

**Brief description of the working environment:** It was a warm and healthy working environment. All of the facility's faculty recieved us well and the mentors were really helpful and guided us well

**Academic courses relevant to the project:** Probability and Statistics

**Learning Outcome:** Data querying, data visualization, power BI

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**PS-I station: UST GLOBAL , Chennai**

## Student

Name: VAL DIDAR SINGH .(2021A3PS2233P)

### Student Write-up:

**PS-I Project Title:** AUTOMATE GENERATION OF DOCUMENTS (ESPECIALLY SOW) BASED ON TEMPLATES

**Short Summary of work done:** This project aims to automate template generation for a website using Figma for design, Node.js with various npm modules for server-side functionality, Express.js as the web framework, and Handlebars for dynamic HTML rendering. The process starts with designing the website's wireframes and mockups in Figma, leveraging its collaborative features. The backend is built using Node.js with essential modules such as bcrypt, cookie-parser, cors, and jsonwebtoken for secure user authentication and authorization using refresh and access tokens. Express.js is utilized for routing and middleware creation, handling user registration, login, and template generation. The final functional website is constructed using HTML, CSS, and JavaScript with Handlebars templates, providing a flexible and scalable solution for creating and managing website templates efficiently.

**Objectives of the project:** to make a website, on which, employees are able to make templates of documents, upload it, and then use it

**Tool used:** HTML, CSS JavaScript, Node JS, Express JS, React JS, MongoDB, Figma, Handlebars, JWTs

**Details of Papers/patents:** N.A.

**Brief description of the working environment:** you will be given desktops, but they will have so many restrictions, and installation of every new software will take so long, you will try to do most work from home, as our devices are not allowed in the office.

**Academic courses relevant to the project:** N.A.

**Learning Outcome:** HTML, CSS JavaScript, Node JS, Express JS, React JS, MongoDB, Figma, Handlebars, teamwork, Project management

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**PS-I station: UST GLOBAL , Chennai**

**Student**

**Name: SRIVARAN KUKATLA .(2021A4PS1988H)**

**Student Write-up:**

**PS-I Project Title:** Retrieval Based Chatbot

**Short Summary of work done:** Researched a lot about creating a retrieval chatbot and went through documentations and wrote code which can web scrape, automate browsers ,directly authenticate sharepoint, using spacy,NLTK,Training,scoring the chatbot, deploying the chatbot as a website through a pop up

**Objectives of the project:** Creating a retrieval based chatbot to replace company's rule based chatbot

**Tool used:** None

**Details of Papers/patents:** None

**Brief description of the working environment:** Good working environment with good resources but expected little more Interactio with mentor

**Academic courses relevant to the project:** Machine learning

**Learning Outcome:** Learnt to web scrape, automate browsers ,directly authenticate sharepoint, using spacy,NLTK,Training,scoring the chatbot, deploying the chatbot as a website through a pop up

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**PS-I station: UST GLOBAL , Chennai**

**Student**

**Name:** GNANA PRANEETH NERIYANURI .(2021A7PS0263H)

**Student Write-up:**

**PS-I Project Title:** Data Querying and Visualization

**Short Summary of work done:** Majorly worked on gaining valuable insights on pnl and expense files which help the organization to know where to use their resources properly

**Objectives of the project:** Providing insights about pnl reports

**Tool used:** Power Bi and Excel

**Details of Papers/patents:** No

**Brief description of the working environment:** It was a good learning environment , they company welcomed us warmly

**Academic courses relevant to the project:** M1

**Learning Outcome:** able to master powerbi and generating dashboards and reports for pnl and expenses

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**PS-I station:** UST GLOBAL , Chennai

**Student**

**Name:** ABHISHEK KHURANA .(2021A7PS2688P)

**Student Write-up:**

**PS-I Project Title:** Project 1. Rest API documentation using Swagger/Open API Specifications & Project 2. NLP in the future of Customer Relationship Management (CRM)

**Short Summary of work done:** Project 1: REST API Documentation using Swagger/OpenAPI Specifications: In this project, the team focused on implementing an efficient and standardized approach for documenting RESTful APIs. They developed a centralized API documentation tool within Confluence, leveraging the Swagger macro to generate comprehensive and interactive documentation. This not only enhanced API literacy among BITS students but also promoted API-First Principles. Project 2: Customer Sentiment Analysis Model in CRM: The second project involved the implementation of Natural Language Processing (NLP) techniques and an RNN model for customer sentiment analysis within a CRM system. By integrating this model with Salesforce, the team automated sentiment analysis on new case comments, providing real-time insights on customer sentiment directly within the Salesforce platform. This project contributed to improved customer relationship management in the healthcare domain and utilized NLP in a practical and valuable manner.

**Objectives of the project:** Project 1. The scope of the project is to set up an organization-level API documentation tool that is hosted internally. This tool will serve as a centralized repository for documenting all existing Platform APIs and will also be used for publishing any new API requirements before implementation. The APIs will be documented using Confluence, with the help of the Swagger macro for documentation purposes. Project 2. The scope of the project encompasses two main areas: a) Sentiment Analysis b) Customer data Analysis

**Tool used:** Project 1 - Swagger, Confluence. Project 2 - Jupyter Notebooks, Salesforce, Python, scikit-learn

**Details of Papers/patents:** N.A.

**Brief description of the working environment:** The working environment was great. I was able to interact with the onshore as well as the offshore teams. The mentors at the company guided me at each step and introduced me to the enterprise level technology ecosystem.

**Academic courses relevant to the project:** Object Oriented Programming, Data Structures & Algorithms, Machine Learning, Cloud Computing, API Management

**Learning Outcome:** Project 1

1. Proficiency in API Documentation: Through the project, the team gained hands-on experience in documenting RESTful APIs using the Swagger/OpenAPI framework, learning the importance of standardized and efficient documentation practices.
2. Integration of Confluence and Swagger: The project enabled the team to understand and implement the integration of Confluence, a popular collaboration platform, with Swagger to generate interactive and user-friendly API documentation, enhancing the overall developer experience.
3. Promoting API-First Principles: The project's objective to foster API literacy among BITS students led to a deeper understanding of API-First Principles, emphasizing the

significance of designing APIs as a fundamental aspect of software development and building robust and scalable applications.

#### Project 2

1. Understanding NLP and Sentiment Analysis: Acquiring knowledge of Natural Language Processing (NLP) principles and applying sentiment analysis to extract insights from customer interactions and feedback.
2. Implementing Salesforce Einstein Bot: Gaining hands-on experience in integrating and utilizing Salesforce Einstein Bot to deliver personalized recommendations and next best actions for customers.
3. Data-Driven Decision Making: Using sentiment analysis insights and Einstein Bot recommendations to make data-driven decisions, optimizing sales strategies, and enhancing customer experiences.
4. Customer Engagement and Personalization: Leveraging NLP and Einstein Bot capabilities to enhance customer engagement, deliver personalized experiences, and foster long-term customer loyalty.

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## PS-I station: UST GLOBAL , Chennai

### Student

Name: POTHIREDDY SAI SUSHRUTH .(2021AAPS1680H)

#### Student Write-up:

**PS-I Project Title:** CREATION OF WEB UI USING ANGULAR FOR MANAGING THE ROLE BASED ACCESS CONTROL FOR HPS ECOSYSTEM

**Short Summary of work done:** Using HTML and CSS, the basic front end of the required webpage is created. During the course of the project, the webpage was connected to OKTA, enabling better authentication. User groups can be defined, and permissions can be enabled within those groups. OKTA's existing APIs and SDKs will be put to use. For user authentication, this often entails sending API queries to OKTA endpoints, verifying the credentials, and handling the response to either permit access or display the relevant error messages. The Admin will be able to edit access based on roles, and the technology will be deployed to all the applications in the HPS ecosystem on a cloud platform or a server.

**Objectives of the project:** The project's main goal is to use Angular to build a user-friendly web UI for controlling RBAC in the HPS environment. The user interface (UI) should offer administrators a centralized platform to effectively manage and set access permissions for various users and roles. In order to prevent unauthorized access and maintain data integrity, the RBAC system should ensure secure and restricted access to the HPS ecosystem. The role creation, permission assignment, and user management processes should be streamlined by the UI, resulting in less administrative work needed to handle access control. By building a reliable RBAC system and offering a responsive and user-friendly UI for controlling it, the project seeks to increase the security and effectiveness of the HPS ecosystem.

**Tool used:** Angular, Git

**Details of Papers/patents:** None

**Brief description of the working environment:** I thrived in a collaborative and innovative working environment during my PS-I at UST Global Chennai. The company's high expectations motivated me to excel, and I embraced diverse responsibilities in real-world projects. Mentors provided valuable guidance, fostering my growth mindset. I gained insights into software development, agile methodologies, and client expectations. My technical knowledge was enhanced through training sessions and discussions with team members. This experience strengthened my work ethic. I'm grateful for the priceless lessons I learned, and I can't wait to use these abilities in my work.

**Academic courses relevant to the project:** C Programming

**Learning Outcome:** Developed expertise in building dynamic and responsive front-end web applications using the Angular framework. Familiarity with components, services, routing, and other key Angular features. Acquired understanding of HTML and CSS to create visually appealing and well-structured web pages, ensuring a seamless user experience. Used Git for collaborative software development, effectively managing code repositories, branching, and cloning. Improved communication and collaboration skills through working on team projects, effectively conveying ideas and updates to team members.

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**PS-I station: UST GLOBAL , Chennai**

**Student**

Name: PALANIAPPAN R.(2021B4AA2915H)

**Student Write-up:**

**PS-I Project Title:** Microservices Based Cab Booking App

**Short Summary of work done:** As per the NDA, the exact details of the project cannot be revealed. I built various microservices using NestJS for a cab booking application. The different microservices have separate tasks and have been integrated together to function as a working backend service.

**Objectives of the project:** To design the backend and associated microservices for a cab booking application.

**Tool used:** TypeScript , MongoDB , NestJS

**Details of Papers/patents: -**

**Brief description of the working environment:** I had periodic meetings with my mentor to discuss the progress and path going forward. Working with the team was a great experience. My mentors helped me fix various technical issues I faced along the way and provided their insights.

**Academic courses relevant to the project:** CS F111 - Computer Programming , BITS F463 - Cryptography

**Learning Outcome:** NestJS Framework , Microservices Architecture

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**PS-I station: UST GLOBAL , Chennai**

**Student**

Name: NIKHILESH .(2021B5A33166H)

**Student Write-up:**

**PS-I Project Title:** Automating document generation

**Short Summary of work done:** The scope of this project is the development of an automated document generation system for the company. The system will be used to generate Statements of Work (SOWs), but it can be easily modified to generate other types of documents. The system will be implemented using a website. The website will allow users to fill out a form with all the variables in the document. The variables will then be used to populate a template, which will be generated in a printable form. The system will not include the generation of images, tables, charts, or other pictorial elements. This is because the company does not currently need these features. However, the system is designed in a way that these features could be added in the future if needed. The objectives of this project are to automate the generation of SOWs, reduce the risk of errors in SOWs, and make it easier for users to generate and regenerate SOWs. The automated document generation process is much more efficient than manual data entry. This will save the company a significant amount of time and money. The automated process also eliminates the possibility of human error in data entry, which will result in a significant reduction in errors in the final documents. The automated document generation process will make it easier for users to generate SOWs, which will improve their productivity. This is because users will no longer have to manually enter data into a template. They will simply need to fill out a form with the variables in the document, and the system will automatically generate the document for them. In conclusion, the automated document generation project is a valuable tool that can save the company time, money, and errors. The project has the potential to improve the company's compliance record and increase the productivity of its employees. I recommend that the company continue to use the automated document generation process and that they explore ways to expand its use to other types of documents.

**Objectives of the project:** Making a tool for the users to generate the template of a given document and make it easier for them to work and edit that document. Also , Allowing users to generate their own templates for future use .

**Tool used:** HTML , JAVASCRIPT , CSS, NODEJS , MONGODB

**Details of Papers/patents:** -

**Brief description of the working environment:** The people at UST have really focused on their interns , we were provided a separate lab for our work which was really convenient. We were treated like an employee and had all the facilities we required . Their expectations include hard work from your side , and whenever asked secrecy of their data.

**Academic courses relevant to the project:** CS F111

**Learning Outcome:** Teamwork , Presentation skills , Adapting to a new working environment

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**PS-I station: Variable Energy Cyclotron Centre (Onsite) , Kolkata**

**Student**

**Name:** JATIN MAHAJAN(2021A7PS2089G)

**Student Write-up:**

**PS-I Project Title:** Isolated Indian Sign Language Recognition

**Short Summary of work done:** Data collection and dataset formation consisting of various features of hand/pose/face using MediaPipe and OpenCV and constituting a flawless dataset. Using tools like Excel, Python and various visualisation tools to perform exploratory data analysis.Using LSTM networks/models to train and test the dataset to achieve the set objective.

**Objectives of the project:** Recognise isolated ISL sign from selected dataset

**Tool used:** OpenCV,MediaPipe, Python,Machine Learning,Deep Learning

**Details of Papers/patents:** NA

**Brief description of the working environment:** My experience was great. My mentor was very supportive and guided me throughout the project and helped me learn and apply complicated concepts with ease to the project

**Academic courses relevant to the project:** Applied statistical methods

**Learning Outcome:** Advanced machine learning and deep learning techniques

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## PS-I station: Variable Energy Cyclotron Centre (Onsite) , Kolkata

### Student

Name: SOUMYADIP ROY .(2021A8PS2549P)

#### Student Write-up:

**PS-I Project Title:** Application of Neutron-Gamma Pulse Shaped Discrimination on an FPGA.

**Short Summary of work done:** During the PS, we first started by understanding the basics of the fpgas. Then we wrote several algorithms in the VHDL Programming language onto the FPGA Board, which were then used to process the detector signals and give us the dta back in the form of different PSD Parameters. These were then used to plot graphs with respect to the frequency of occurrence to give us the separation capabilities of the detector-collector setup. All of this was done on an actual detector with radioactive sources while maintaining proper protection.

**Objectives of the project:** To implement PSD Algorithms on an FPGA which can identify and consequently differentiate between the two rays, neuron and gamma

**Tool used:** Xilinx ISE, Kintex 7 FPGA, 125MSPS ADC from 4DSP, in-house developed Data Acquisition software, Root, Python on Google Colab

**Details of Papers/patents:** Possibility of a paper if results are found to be promising

**Brief description of the working environment:** The majority of time was spent in the Data Acquisition lab in the computing and information building. Also, some time was spent in the neutron detection lab.

The environment was conducive for working with concentration, with little to no disturbance, and the facilities were abundant. The computers we were working on were high-performance ones, and the hardware devices were expensive, made to serve high-end purposes. Although the experiment was hindered to some extent due to the unavailability of a particular hardware component(ADC).

The organization is spread over a wide area and we had the opportunity to visit various experimental physics labs, the superconducting cyclotron and the room temperature cyclotron. The faculty also explained how things work, and took us to the control room where every part of the machinery is operated and monitored.

We also had a session on various career opportunities in the field of Atomic Energy.

For our project, we learned many things, starting from digital electronics to FPGA programming, to the physics of scintillator detectors, and even a bit of machine learning.

Overall, the experience was wholesome and we learned a lot of things over the entire duration of PS.

**Academic courses relevant to the project:** 1. Digital Design  
2. Electrical Sciences

**Learning Outcome:** 1. VHDL Programming Language  
2. Python ML libraries  
3. FPGA Architecture  
4. Nuclear detectors and their mechanisms  
5. Impedance matching in transmission circuits

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## **PS-I station: Variable Energy Cyclotron Centre (Onsite) , Kolkata**

### **Student**

**Name:** S HARI NAYAN .(2021AAPS0659H)

#### **Student Write-up:**

**PS-I Project Title:** Computer Networking and cybersecurity

**Short Summary of work done:** Configuration of VPN, network security improvements to existing network, web development for website for intranet.

**Objectives of the project:** Deployment of VPN, Improving network security, Web development.

**Tool used:** Dell servers, proxmox virtual box, python , perl, node js

**Details of Papers/patents:** None

**Brief description of the working environment:** It was good and nurturing, learnt a lot about computers and their working , gained a lot of practical experience.

**Academic courses relevant to the project:** Communication systems, computer networks, software engineering.

**Learning Outcome:** Computer Networking and cybersecurity

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## **PS-I station: Variable Energy Cyclotron Centre (Onsite) , Kolkata**

### **Student**

**Name:** ANUSHKA MISHRA(2021AAPS2856G)

### **Student Write-up:**

**PS-I Project Title:** Sentence-level Lipreading on English Speakers using Deep Learning Approach

**Short Summary of work done:** I worked on a Lipreading model implemented using Deep Learning. Lipreading is the skill of visually analyzing lip movements and facial cues to understand spoken language. It is a valuable skill that finds application in assisting individuals with hearing impairments and providing auditory information in noisy environments. Recently, due to technological advancements in deep learning, there have been multiple attempts to use artificial intelligence to lipread. There were several models using LSTM, GRU and CNN networks that outperformed human lipreaders by a margin of 50-70% but we could observe that most of these models only worked on certain speakers from the dataset, meaning they weren't speaker-independent and they could not function on normal speech as they had a constrained vocabulary. So we developed a model which uses a completely novel method that uses a Lip Synchronization model, Wav2Lip combined with GFPGAN, followed by a lipreading model designed by us. Using this approach, we completely solved the problem of speaker dependence as our model works on any video with a single speaker speaking in English. We also solved the issue of a small, constrained vocabulary as our model is trained on the LRS3-TED dataset comprising of 400 hours of spoken sentences by 5594 speakers with extensive vocabulary.

**Objectives of the project:** The objective was to create a deep learning framework capable of mapping the speaker's lips and predicting what was said in form of text by visualising the shape of the lip.

**Tool used:** Google Colab, Tensorflow, Keras, Scikit, Pandas, Python, MoviePy, OpenCV, Latex, PyQt5, Dlib and many others.

**Details of Papers/patents:** In Process

**Brief description of the working environment:** The working environment was wonderful. My mentor and a technical officer were helping me with my project and learning process throughout, dedicating their time, efforts and patience to me. I also met some incredible interns from other colleges during the PS duration who only motivated me to work harder to find a breakthrough in my project. It was a very fun and engaging process, which I enjoyed immensely. We were also given a campus tour twice in which we got to see an actual Cyclotron, which left us all awestruck.

The station fulfilled all my expectations in terms of providing resources, help and support. Even when they were low on computing resources, as we were training extremely complex ML models, arrangements were made to make up for the lack of resources.

I also learnt how a research institute functions, the inner workings and details of how they work and what their typical day looks like. Apart from gaining technical knowledge, I learnt many skills such as how to give an presentation, how to participate in group discussions, writing a scientific report and paper.

**Academic courses relevant to the project:** Machine Learning, Artificial Intelligence

**Learning Outcome:** I learnt Machine Learning, Deep Learning and Natural Language Processing in a lot of detail by working with models and implementing them by making multiple changes. As a part of the process, I also learnt data augmentation, data preprocessing and model training.

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**PS-I station: Variable Energy Cyclotron Centre (Onsite) , Kolkata**

**Student**

**Name:** MIHIR JAIPURIA(2021B4AA1935G)

**Student Write-up:**

**PS-I Project Title:** EXPLORATION OF MACHINE LEARNING AND LOCALISATION AND POSE ESTIMATION OF A ROBOT USING DEEP LEARNING

**Short Summary of work done:** This project focused on the application of machine learning and deep learning techniques for object detection. The research began with an overview of key theories and methods in object detection, deep learning, and machine learning. The project extensively explored various deep learning architectures, with a specific emphasis on convolutional neural networks (CNNs), which have demonstrated exceptional performance in extracting high-level features from images and videos. To put the theoretical knowledge into practice, the project involved the use of popular deep learning frameworks such as TensorFlow and PyTorch. Customized datasets were created to conduct practical experiments and evaluate the performance and effectiveness of well-known object detection algorithms like Single Shot MultiBox Detector (SSD) and You Only Look Once (YOLO). These experiments aimed to identify and localize objects in both images and videos which helped in pose estimation of a robot

**Objectives of the project:** The primary objectives of this project were to delve into the application of machine learning and deep learning approaches for object detection. The project aimed to gain a comprehensive understanding of the key theories, methods, and architectures employed in the field of object detection, as well as in deep learning and machine learning in general. Through extensive research and analysis, the project sought to explore various deep learning frameworks, such as TensorFlow and PyTorch, to create and train deep neural networks for object detection tasks. Practical experiments were conducted using well-known object identification algorithms like Single Shot MultiBox Detector (SSD) and You Only Look Once (YOLO), utilizing customized datasets to assess the efficiency and performance of these algorithms. Another objective was to emphasize the importance of data augmentation techniques in improving model resilience and generalization capabilities. Additionally, the project aimed to investigate transfer learning techniques and their impact on object detection precision and training duration. The evaluation of the developed models involved assessing performance indicators such as Mean Average Precision (mAP), precision, and recall. By accomplishing these objectives, the project aimed to provide insightful analysis and discussion, highlighting the strengths and limitations of different models and methodologies in object detection.

**Tool used:** Python, ML and DL concepts, Computer Vision,Roboflow,Webots

**Details of Papers/patents:** Writing a conference paper on pose estimation

**Brief description of the working environment:** The environment was collaborative and the mentors were very knowledgeable and accommodating. Overall learnt a lot from them

**Academic courses relevant to the project:**

Relevant academic courses for the project include Machine Learning, which covers fundamental concepts and algorithms in supervised and unsupervised learning, providing a foundation for training models in object detection. Deep Learning focuses on deep ne

**Learning Outcome:** The project resulted in significant learning outcomes for the researcher. Firstly, they gained a comprehensive understanding of machine learning,

deep learning, and object detection. This encompassed the underlying principles, theories, and techniques involved in these fields, including the use of convolutional neural networks (CNNs) for feature extraction and the application of deep learning architectures in object detection.

Secondly, the project provided hands-on experience with popular deep learning frameworks such as TensorFlow and PyTorch. Through practical experiments and real-world implementation, the researcher gained valuable skills in building and training deep neural networks specifically for object detection tasks. This practical experience enhanced their ability to apply deep learning algorithms effectively in real-world scenarios.

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## **PS-I station: Variable Energy Cyclotron Centre (Onsite) , Kolkata**

### **Student**

**Name:** DEBDATTA DEY .(2021B5A31869H)

### **Student Write-up:**

**PS-I Project Title:** Implementing FPGA algorithms for neutron gamma pulse shape discrimination in VHDL.

**Short Summary of work done:** We started with the very basics of digital electronics ,basic gates and circuits.Then we studied the working principle of FPGA (field programmable gate array).Our next task was to learn VHDL (hardware description language),and implement basic gates and circuits,and later the complicated logical constructs like state machines, communication protocols,etc.Then we started working on the pulse discrimination algorithms, starting from traditional ways like charge comparison, gradient analysis,then going for advanced ones like partial charge to peak method and fast FPGA algorithm.There was lot of literature review with research papers.We generated various datasets of pulses from the emulator and tested our algorithms, analysed the results.Later the setup was shifted to the neutron detector lab,and we ran our algorithms online ,with a scintillator detector and radioactive sources of gamma rays and neutrons.Data acquisition played an important part in our work .Based on results we kept on improving our code.We finally implemented machine learning algorithms to get more information out of the results and hence yield a high efficiency of discriminating between gamma ray pulses and neutron pulses.

**Objectives of the project:** The project aims to create appropriate algorithms on FPGA setup which will help to discriminate between the pulses of subatomic particles which are produced during collisions in particle accelerators, like CERN or cyclotrons, like those in VECC.

**Tool used:** Software: VHDL, Python ; Hardware: FPGA board, Emulator, ADC, Scintillator, Online Data Acquisition Setup Assembly

**Details of Papers/patents:** Possibility of a paper if results are found to be promising .

**Brief description of the working environment:** The majority of time was spent in the Data Acquisition lab in the computing and information building. Also some time was spent in the neutron detection lab.

The environment was conducive for working with concentration, with little to no disturbance, and facilities were abundant. The computers we were working on were high performance ones, and the hardware devices were expensive, made to serve high end purposes. Although the experiment was hindered to some extent due to unavailability of a particular hardware component.

The organisation is spread over a wide area and we had the opportunity to visit various experimental physics labs and the superconducting cyclotron, room temperature cyclotron. The faculty also explained how the things work, and took us to the control room where every part of the machinery is operated and monitored.

We also had a session on various career opportunities in the field of Atomic Energy.

For our own project itself, we learnt a lot of things, starting from digital electronics, to FPGA programming, to the physics of scintillator detectors and even a bit of machine learning.

Overall, the experience was wholesome and we learnt a lot of things over the entire duration of PS.

**Academic courses relevant to the project:** Digital Design

**Learning Outcome:** The project has many learning outcomes, like the VHDL language, the working of FPGA, setup of components like ADC, emulator, various data acquisition softwares, machine learning and deep learning using python.

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**PS-I station: Variable Energy Cyclotron Centre (Onsite) , Kolkata**

**Student**

Name: RHIK MAITRA(2021B5A82487G)

## Student Write-up:

**PS-I Project Title:** Study of Deep Learning based techniques for indoor pose estimation of a robot

**Short Summary of work done:** Our work was centred on working on a large Logistics Robot at the Variable Energy Cyclotron Centre. We were supposed to find its pose in an indoor flat ceiling environment using various Computer Vision tasks using Deep Learning techniques. Prior to the main project, we were taught various Deep Learning algorithms, Computer Vision methods, and various real-time object detection architectures. This included performing a couple of Mini Project. In The first Mini Project we were supposed to find the Count, classification and categorization of various vehicles from a video feed. The second mini-project included Sign Language prediction using real-time web camera feed. Post these, we started work on the main robot. This included collecting about 4200 images through the Laser Guiding setup, manually annotating and pre-processing the data, running various Object Detecting algorithms and comparing their training efficiencies. Post this comparative study, we worked on simultaneously detecting the laser dots, and finding a vector between them along with distance and angle readings, in real-time.

**Objectives of the project:** Worked on the Indoor Pose estimation of a logistics robot using two class-III lasers to find the position and orientation of the robot in real-time through deep learning methods

**Tool used:** OpenCV , Tensorflow, Keras, Pandas, Roboflow , YOLO

**Details of Papers/patents:** Our team, comprising of myself and Mihir Jaipuria(also from Bits Goa) worked on a novel method for indoor pose estimation. Post completion of our work, we alongwith a couple of researchers at VECC and our Scientific Mentor, drafted a Conference Paper. The

**Brief description of the working environment:** The working environment at the Variable Energy Cyclotron Centre was pro-research and encouraging. Our mentors were scientific officers, engaged in various RnD projects, and possessed good practical knowledge. They were very helpful, and guided us in every step. They helped us not only learn new technologies and enhance our skills, but also involved us in some portions of their research work, which acted as a great learning experience for us.

The scope for learning is immense, and a bit of prior exposure in the project domain will be very helpful, but not compulsory. The working environment is flexible, and the mentors will take good effort in making the internship fruitful, as long as the student is interested. There is strong chance of coming out with a research paper, and subsequently a strong project to strengthen one's profile in the project domain.



**Academic courses relevant to the project:** Machine Learning , Artificial Intelligence, Robotics

**Learning Outcome:** Learned various deep learning algorithms, followed by Computer Vision tasks such as Object Detection, Image Segmentation and Object Tracking. Worked on a novel method for indoor estimation of the pose of a robot using two lasers fixed at specific positions of the robot.

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**PS-I station: Variable Energy Cyclotron Centre (Onsite) , Kolkata**

**Student**

**Name:** KRISHNENDU MATHUR .(2021B5AA2475H)

**Student Write-up:**

**PS-I Project Title:** SMART ENERGY METER USING HLW8012 MODULE AND RASPBERRY PI PICO MICROCONTROLLER

**Short Summary of work done:** studying python, how the hlw module works , how to interface with the module , writing code in circuitpython, circuit designing,working with electronic components

**Objectives of the project:** The objective of this project is to develop a Smart Energy Meter using the HLW8012 module and Raspberry Pi Pico microcontroller. The meter aims to accurately measure and monitor electricity consumption in real-time, providing users with valuable insights into their energy usage patterns. By leveraging the HLW8012's high precision power monitoring capabilities and the computational power of Raspberry Pi Pico, the system will enable data logging, analysis, and visualization of energy consumption data. The project strives to promote energy efficiency, raise awareness of power consumption habits, and empower users to make informed decisions for a greener and more sustainable future.

**Tool used:** S/w- Thonny,EasyEDA H/w - soldering station, pcb making goods electronic components

**Details of Papers/patents:** none

**Brief description of the working environment:** good work environment with knowledgeable mentors

**Academic courses relevant to the project:** Digital Design, Microcontroller and Interfacing, Analog Electronics

**Learning Outcome:** The project aims to develop a smart energy meter using the HLW8012 module and Raspberry Pi Pico microcontroller. The learning outcomes are as follows:

1. Technical proficiency: Participants will gain hands-on experience in interfacing the HLW8012 energy monitoring module with the Raspberry Pi Pico, improving their skills in microcontroller programming and hardware integration.
2. Energy monitoring knowledge: Through the project, learners will deepen their understanding of energy measurement principles, including voltage, current, and power calculations, and how to interpret and analyze energy consumption data.
3. IoT application: Participants will learn how to create an Internet of Things (IoT) device, allowing them to remotely monitor and manage energy consumption via web interfaces or mobile applications.
4. Problem-solving: The project will enhance problem-solving skills as participants troubleshoot issues related to hardware connections, code errors, and data accuracy.
5. Project management: Learners will develop project management skills, including planning, resource allocation, and time management, to successfully complete the smart energy meter project.
6. Sustainable technology: Participants will gain insights into the importance of energy conservation and sustainable technology solutions, fostering awareness of environmental impacts and responsible energy usage.
7. Collaboration and communication: The project encourages teamwork and effective communication among participants, simulating real-world scenarios where interdisciplinary collaboration is vital for project success.
8. Prototyping and testing: Learners will acquire hands-on experience in prototyping and testing hardware components, enabling them to verify the functionality and reliability of the smart energy meter.
9. Documentation: Participants will learn to document their project progress, design decisions, and results effectively, enhancing their ability to share knowledge and insights with others.
10. Creativity and innovation: Through the project, learners will be encouraged to think creatively and explore innovative solutions, fostering an entrepreneurial spirit and a passion for continuous learning in the field of energy monitoring and IoT applications.

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## PS-I station: Verse Innovation Private Limited , Bengaluru

### Student

Name: SHRESTHA SAXENA .(2021A3PS2980H)

#### Student Write-up:

**PS-I Project Title:** News article classifying model

**Short Summary of work done:** Mostly the work was focused on machine learning and artificial intelligence but we also got in a portunity to learn android app, development and API too

**Objectives of the project:** Classify articles on basis of the topics using machine learning model

**Tool used:** Python node JS express JS Mongo DB machine learning models

**Details of Papers/patents:** NA

**Brief description of the working environment:** Over on the working environment was really good. They have really friendly people out there.

**Academic courses relevant to the project:** Artificial intelligence machine learning

**Learning Outcome:** Learned various new technologies such as artificial intelligence, machine, learning and development, Web development.

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## PS-I station: Verse Innovation Private Limited , Bengaluru

### Student

Name: ASEEM CHIB .(2021A7PS0466P)

## **Student Write-up:**

**PS-I Project Title:** Embedding and Clustering News Articles

**Short Summary of work done:** During my internship, I conducted a project focused on using BERT and T5 small models to embed news articles collected from the Varta dataset. This provided me with practical experience in natural language processing techniques and leveraging pre-trained models for text analysis. Afterwards, I implemented agglomerative clustering and k-means algorithms to effectively group similar articles, gaining insights into unsupervised learning and data clustering methodologies. To present the results, I created a user-friendly web-based interface utilizing MongoDB and JavaScript. This interface allowed users to explore the clustering outcomes in a dynamic 3D visualization and assess the coherence of the clusters. Throughout the internship, I developed valuable skills in NLP, data clustering, and web development, providing a strong foundation for my future career in machine learning and data analysis. The project not only deepened my understanding of advanced algorithms but also allowed me to create a practical solution with real-world applications.

**Objectives of the project:** To scrape, embed and clusterise VerSe news articles from the Varta Dataset using ML/DL models

**Tool used:** PyTorch, Python and its libraries , Google Colab,

**Details of Papers/patents:** None

**Brief description of the working environment:** During my PS-I , I had the opportunity to work in an online internship environment, which presented unique challenges and opportunities for learning and growth. The online setup allowed for flexible working hours, promoting a healthy work-life balance while ensuring I could efficiently manage my tasks and meet deadlines.

Throughout the internship, the company provided a structured and supportive work environment, offering regular virtual meetings and communication channels to keep me informed about project expectations and updates. The company's emphasis on clear communication and prompt feedback played a vital role in guiding me through my tasks effectively.

As an intern, I was expected to actively engage in the projects assigned to me and deliver high-quality results. The company encouraged independent thinking, problem-solving, and self-motivation, allowing me to take ownership of my work and contribute creatively to the projects.

**Academic courses relevant to the project:** OOP, DBS, CP

**Learning Outcome:** During my internship, I undertook a project where I leveraged BERT and T5 small models to embed news articles obtained from the Varta dataset. Through

this experience, I gained a comprehensive understanding of natural language processing (NLP) techniques and the effective utilization of pre-trained models for text analysis. Applying agglomerative clustering and k-means algorithms allowed me to clusterize the articles, leading to insights into grouping similar content effectively. This experience honed my skills in unsupervised learning and data clustering methodologies. Developing a web-based interface using MongoDB and JavaScript enabled me to showcase the clustering results, offering users a dynamic 3D visualization of the clusters and the opportunity to explore their coherence. Overall, this internship empowered me with valuable expertise in NLP, data clustering, and web development, providing a solid foundation for my future career in the field of machine learning and data analysis.

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## **PS-I station: Verse Innovation Private Limited , Bengaluru**

### **Student**

**Name: UJJWAL KUMAR(2021A7PS2736G)**

### **Student Write-up:**

**PS-I Project Title:** Sentiment Analyser for YouTube Channel and Reddit Posts

**Short Summary of work done:** Initially we were introduced to various fields with numerous sessions from different company mentors and their various domain experts, like Software Development Lifecycle, Product Management, ML for Content/Ad Recommendation, Python and its libraries like Numpy, Matplotlib, Seaborn, Plotly, Beutiful Soup etc, App Development and API development. Then we were asked to make a basic Contacts App (individually or small groups whatever we liked), to test our learning and to give hands-on experience. Then as final project, we were divided into two groups of 5 people each and given a project which mainly involved ML. My group was asked to make a Sentiment Analyser for YouTube Videos/Reddit Posts based on date range. We were allowed to use pre-trained models for the analysis and we had to figure out ways of scraping data using API calls and then cleaning them before giving to the model and then plotting the graphs and showing it all on a web-app that we developed using Streamlit. They were very supportive and helped us at every point we got stuck, by providing resources and even keeping sessions to debug. It has been truly great experience overall and they were very friendly, supportive and welcoming and took lot of efforts to provide

us with new learnings of various techstack by employing there experts of that domain to take lecture sessions, help with doubts and provide reading materials to supplement learning. Truly a great PS station and people there.

**Objectives of the project:** The user is asked to give the channel name of the YouTube/subreddit name in case of Reddit and the date range between which they want to analyse the sentiments of the videos/posts. The results are then returned as positive, neutral or negative based on the Analysis.

**Tool used:** S/W: Python basics and its libraries (Matplotlib, Pandas), Sentiment Analyser models, YouTube and Reddit API tools, Kotlin (for App Dev), Go (for API development), and POSTMAN (for API testing). H/W: A laptop and a good internet connectivity

**Details of Papers/patents:** NA

**Brief description of the working environment:** It was very pleasant and open environment there. They were open to our concerns and heard that and tried to help in all possible manner. They were open even to allowing us to collaborate together and work in groups if we wanted to, in the assignments/projects they gave. They also took lot of effort and took teaching and doubt sessions to make us aware about the various domains involved in a product like DailyHunt, their product on which we were onboarded to work on. They were also open to help along the way in our projects and assignments and were ready to take extra sessions to help with debugging and removing blockers we had in the assignments and for topics we were interested to learn more about. They were very friendly, supportive and welcoming and ready to put in extra efforts to make us learn new things.

**Academic courses relevant to the project:** M1 and M2 in the courses done as of now; SDPD, Software Development, and DS Courses in general;

**Learning Outcome:** Sentiment Analysis and ML, App and API Development.

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**PS-I station: Verse Innovation Private Limited , Bengaluru**

**Student**

**Name: PRATIK PATIL(2021A7PS3111H)**

## **Student Write-up:**

**PS-I Project Title:** Sentiment Analyzer for Social Content

**Short Summary of work done:** The main focus was on developing a sentiment analysis system using Python. Two approaches were implemented: a lexicon-based method using NLTK and a transformer-based approach using RoBERTa. The objective was to create a robust sentiment analyzer capable of extracting sentiments from user-generated content on social media platforms like YouTube and Reddit. A virtual environment was set up, and the necessary dependencies were installed to ensure smooth execution. The sentiment analyzer exhibited proficiency in Python programming and sentiment analysis techniques, providing valuable insights into the sentiments expressed in textual data. Additionally, the project aimed to build a user-friendly web-based interface for users to input YouTube channel URLs or Twitter handles for sentiment analysis, making it accessible and practical for users to understand the sentiment associated with the content from provided sources. There was also a project beside the main one where we had to make a contact app for android in Kotlin and use Golang for RESTful API implementation.

**Objectives of the project:** Develop a sentiment analyzer to analyze sentiments of YouTube videos and Reddit posts.

**Tool used:** Android Studio, Kotlin, Golang, Python, Streamlit, Machine Learning, Natural Language Processing

**Details of Papers/patents:** None

**Brief description of the working environment:** In this company, employees thrive in a positive work environment, as mentors are readily available to offer guidance and support. The collaborative culture fosters growth and development, empowering individuals to reach their full potential. The expectations I had were of a good environment and getting good project, both of which were fulfilled. By working in the corporate sector, I gained valuable experience in a professional setting, learning about organizational dynamics, teamwork, and project management. Simultaneously, engaging in NLP (Natural Language Processing) equips them with the skills to analyze and process human language, enabling them to build innovative language-based applications and solutions. Additionally, delving into Android App Development offered hands-on experience in creating mobile applications, enhancing my proficiency in software development.

**Academic courses relevant to the project:** ML, SE, OOPS

**Learning Outcome:** Gaining experience of corporate sector and learning NLP and Android App Development.

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## PS-I station: Verse Innovation Private Limited , Bengaluru

### Student

Name: STHITAPRAJNA .(2021B3A71082H)

#### Student Write-up:

**PS-I Project Title:** Sentiment Analyzer for Social Content (YouTube/Twitter etc.)

**Short Summary of work done:** We were attending various talks conducted by the employees in various domains of ML, Recommendation Systems, Product Management, Android Development, API development. We were then tasked to build a basic android contacts application, then we made a sentiment analyzer

**Objectives of the project:** To build a sentiment analyzer for social media based on the content and classify them into positive and negative

**Tool used:** Python, RoBERTa Model, APIs, Streamlit, Android Studio, GoLang

**Details of Papers/patents:** NA

**Brief description of the working environment:** It was a positive working environment with helpful people from the company, learnt a lot from them

**Academic courses relevant to the project:** None

**Learning Outcome:** I learnt to use pre trained models in python to analyze, learnt how to use api clients of youtube and reddit to fetch the text and analyze it to classify it based on its sentiment

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PS-I station: Verse Innovation Private Limited , Bengaluru



## Student

Name: AVYAKTH KRISHNA KUMAR .(2021B3A71111P)

### Student Write-up:

**PS-I Project Title:** Sentiment Analyzer for Social Media Content

**Short Summary of work done:** Provided valuable insights and practical knowledge in the field of sentiment analysis. Gained a deeper understanding of natural language processing techniques, machine learning algorithms, and the challenges involved in sentiment analysis. Explored various preprocessing techniques to clean and prepare the data. Evaluated different models ranging from rule-based approaches like Vader to advanced machine learning and deep learning models like RoBERTa. Honed programming skills in Python, and became familiar with popular NLP libraries like NLTK and Hugging Face's Transformers.

**Objectives of the project:** Analyze sentiments of YouTube videos of a specified channel and Posts of a specified Subreddit over a specified date range

**Tool used:** S/W - RoBERTa :- a transformer-based language model that uses self-attention to process input sequences and generate contextualized representations of words in a sentence. , NLTK library for analysis , Streamlit for Web App

**Details of Papers/patents:** None

**Brief description of the working environment:** The company provided for an organized and professional working environment even though the PS Station was online. Expected to learn only about ML and Data Science from the description of the projects that the company was offering. Instead the company delved into each domain of IT and provided multiple training sessions on other domains apart from ML, NLP and Data Science like Cybersecurity, Web Development etc. These were quite informative and helped me develop a solid base for any projects I undertake in the future.

**Academic courses relevant to the project:** None

**Learning Outcome:** Machine Learning, Natural Language Processing, Python Programming

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## PS-I station: Verse Innovation Private Limited , Bengaluru

### Student

Name: EKANSH NAYAK .(2021B3A72318P)

#### Student Write-up:

**PS-I Project Title:** Evaluation of Indic Language Embeddings for Content Enrichment

**Short Summary of work done:** First project was to create RESTful CRUD API for contact management as backend and an app to display the result. Second project involved creating embeddings of provided articles using pretrained ML models, creating clusters, and then checking the intracluster similarity score. Also, a fronted(web based) was developed to display the result.

**Objectives of the project:** Creating an app and a RESTful CRUD API for contact management ,Clustering articles available on Dailyhunt based on their category

**Tool used:** GoLang, Python, Kotlin, Postman API, HTML, CSS, MongoDB

**Details of Papers/patents:** N/A

**Brief description of the working environment:** Several sessions were arranged by the company to introduce us to various topics like product management, SDLC, API,App dev, Python, etc. All the mentors were very friendly and ready to help.

**Academic courses relevant to the project:** ML, CP

**Learning Outcome:** ML, NLP, API creation, App dev

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## PS-I station: Verse Innovation Private Limited , Bengaluru

### Student

Name: SAI ANIRUDH KOTA .(2021B4AA2287H)

## Student Write-up:

**PS-I Project Title:** Sentiment Analyzer for social media

**Short Summary of work done:** This project aims to develop a Sentiment Analyzer for Social Content, in which we are focusing on two popular applications – YouTube videos and Reddit Posts. The rubric for both procedures is quite similar, collect the data, process it and then analyze it. The collected data undergoes preprocessing techniques to clean and prepare it for sentiment analysis. ML and NLP techniques are employed to train a sentiment classifier model which is capable of classifying this content into positive, negative and neutral sentiment labels. The performance and accuracy of this model is evaluated using appropriate evaluation metrics. To top it all off, it is presented via a user-friendly web based interface. There is a lot that we have learned from this project. We have learnt to implement different data collection mechanisms like APIs and scraping, which will always help us in obtaining a diverse and representative dataset for our analysis. Proper handling of text data, including removing noise, normalizing text, and tokenizing, greatly influences the accuracy and performance of the sentiment analyzer. Evaluating this with the help of appropriate metrics has helped gauge the effectiveness of the model, and has also provided insights into its strengths, weaknesses and areas for improvement. The developed sentiment analyzer can be applied to various real-world scenarios. It can be used for brand monitoring, market research, social media analysis, and other places where analysis of social content is valuable.

**Objectives of the project:** 1) Develop a data (content) collection mechanism to retrieve videos from YouTube channels and tweets associated with specific Twitter handles, that takes date range as input. Choose English as the supported language for fetched content. 2. Implement preprocessing techniques to clean and prepare the collected data (content) for sentiment analysis. 3. Apply ML and NLP techniques to train a sentiment classifier model. Classify data (content) into the following labels of - (a) positive sentiment (b) negative sentiment and (c) neutral sentiment. 4. Evaluate the performance and accuracy of the sentiment analyzer using appropriate evaluation metrics. 5. Create a user-interface (web based allowed) that allows its users to input YouTube channel URLs or Twitter handles for sentiment analysis.

**Tool used:** Matplotlib, Android Studio, Postman, GoLang, Numpys, Pandas, beautifulSoup, LangChain

**Details of Papers/patents:** none

**Brief description of the working environment:** Everyone from the company went above and beyond to help us whenever we asked, and made sure to present things in a way that was comfortable and appropriate for us. The first half of the practice school had multiple introductory sessions where complex concepts like the Software Development

Life Cycle and Product Management were broken down for us. Overall, it was quite a joy to interact with everyone throughout my PS-1 journey.

**Academic courses relevant to the project:** Machine Learning

**Learning Outcome:** API Retrieval, Natural Language Processing

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**PS-I station: Vidcentum R & D Pvt. Ltd. , Hyderabad**

**Student**

**Name:** VAGARTH DVIVEDI(2021A7PS2426G)

**Student Write-up:**

**PS-I Project Title:** Implementation of Conversational AI for Energy Utility Applications

**Short Summary of work done:** We were tasked with creating the infrastructure needed for a bot that would interface with clients through the Zulip platform. We had to use an ML model for mining the context out of the queries that were received by the bot so that they could be further processed in the back-end.

**Objectives of the project:** Implementation of Conversational AI for Energy Utility Applications

**Tool used:** Python, Prolog, HuggingFace, TensorFlow, SciKitLearn

**Details of Papers/patents:** N/A

**Brief description of the working environment:** We had regularly 2 meets a day on 6 days a week to discuss the progress until now and the setting goals for the next meet.

**Academic courses relevant to the project:** Computer Programming, Logic in Computer Science, Network Programming

**Learning Outcome:** Handling and creating APIs, creating a RESTful server in Prolog, creating a corpus of questions for training ML models.

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**PS-I station: Vidcentum R & D Pvt. Ltd. , Hyderabad**

## **Student**

**Name: RISHAB MALOO .(2021B2AA2767P)**

### **Student Write-up:**

**PS-I Project Title:** Implementation of Conversational AI for Energy Utility Applications

**Short Summary of work done:** So the work started by understanding the project details, setting up the development environment, working with Restful APIs, building a proper infrastructure for the project. The need of logger file in testing in debugging. Then we worked on creating a BOT and fetching the messages and passing it to the context miner to understand the user context which would then pass the message to AI and ML part which would try to understand the user query and try to answer the user query based on logic programming. Next we focused to develop the infrastructure and end to end pipeline of the project. We also created a corpus of Energy related questions for ML model training then we pre-processed the data and stored them in a .csv file by tagging the keywords and attaching Parts of Speech (POS) and Named Entity Recognition (NER) using NLP libraries

**Objectives of the project:** To create an expert system to answer energy related queries

**Tool used:** PyCham, Python, Prolog, Google Colab, ChatGPT, Orange, NLTK library, sckit learn, spaCy, Hugging Face, schema.org, gephi, ckan, melisearch and many more ML tools

**Details of Papers/patents:** Nil

**Brief description of the working environment:** We usually had around two meets in a day and Sunday was a holiday. We were explained the work and the tools we could look for, we were checked on the progress we made and the code on GitHub would be reviewed and we were explained the mistakes we made and the ways to correct it and make it a production grade code. We were expected to work on the given task and not deviate much, we were open to explore any tool which sir didn't mention and suggest

them if they were useful in our work for the project. We were expected to maintain the documentation properly and for the corpus we were building our mentor insisted to regularly add more questions in order we have a good number of questions helpful for model training and model deployment.

**Academic courses relevant to the project:** Computer Programming, Machine Learning

**Learning Outcome:** Working on creating Production grade code, which is easier to maintain. The need of pre-processing the DataSet as the primary stage of Model Training followed by Model Deployment. API testing and using open source code and libraries to leverage the quality of code and save time.

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**PS-I station: Vidcentum R & D Pvt. Ltd. , Hyderabad**

**Student**

**Name:** AIMAN .(2021B5A73177H)

**Student Write-up:**

**PS-I Project Title:** Implementation of Conversational AI for Energy and Utility Applications

**Short Summary of work done:** During my PS-I, I actively participated in the "Implementation of Conversational AI for Energy Utility Applications" project at Vidcentum Technologies. My primary focus was on bot development and advancing my NLP skills by working with powerful tools such as Hugging Face AI, NLTK, and spaCy. I contributed significantly to context mining and bot development, which played a crucial role in accurately comprehending user queries. I familiarised myself with Zulip interface and successfully implemented Zulip APIs. In addition to honing my NLP expertise, I also gained hands-on experience with data preprocessing for the energy corpus, refining my understanding of the overall project scope. I embraced good coding practices and effectively implemented threading and queuing, ensuring efficient handling of user requests and optimal system performance. Throughout the project, I actively collaborated with my team on GitHub, fostering effective teamwork and enhancing my version control skills. This project provided a comprehensive learning experience, equipping me with the necessary skills to excel in the fields of Conversational AI and software development. I

am excited about applying my knowledge and expertise to future projects, furthering my professional growth and contributing to innovative AI solutions.

**Objectives of the project:** The objective of the "Implementation of Conversational AI for Energy Utility Applications" project is to develop a robust Conversational AI system tailored for energy utility providers. The system aims to enhance customer experience, improve query resolution efficiency, and integrate with utility databases to provide real-time information. By implementing advanced NLP techniques, context mining, and efficient inference engines, the project seeks to revolutionize customer interactions and support in the energy sector.

**Tool used:** Python, Hugging Face Transformers, NLTK (Natural Language Toolkit), spaCy, Zulip APIs and REST APIs, PyTorch and TensorFlow, GitHub, PyCharm IDE

**Details of Papers/patents:** NIPS-2017-attention-is-all-you-need- (A paper to understand transformers and GPT)

**Brief description of the working environment:** During my PS-I, I had the opportunity to work from home as part of the "Implementation of Conversational AI for Energy Utility Applications" project at Vidcentum Technologies. Despite the remote working environment, the company maintained effective communication channels, enabling seamless collaboration with the team.

Throughout the internship, I had clear expectations from the company, which included actively participating in the project's development and gaining practical experience in Conversational AI technologies. My objective was to learn advanced NLP, context mining, inference engines, and AI integration while contributing to the project's success.

During PS-I, I achieved my learning objectives by working on various aspects of the project from home. I gained proficiency in using essential tools like Hugging Face AI, NLTK, and spaCy, advancing my knowledge in natural language understanding. Additionally, I actively contributed to context mining using NLTK and spaCy, extracting relevant information from user queries.

My work from home experience allowed me to adapt to remote collaboration tools and efficiently manage tasks, enhancing my overall productivity.

In conclusion, despite the remote work setting, the work from home arrangement during my PS-I at Vidcentum Technologies provided a conducive environment for learning and professional growth. The project's successful implementation and hands-on experience with cutting-edge technologies have equipped me with valuable skills, empowering me for future opportunities in Conversational AI and software development.

**Academic courses relevant to the project:** Machine Learning, AI, Data Mining and Text Analytics, Information Retrieval

**Learning Outcome:** Through this project, I gained advanced NLP expertise, leveraging powerful tools such as Hugging Face AI, NLTK, and spaCy. Context mining and inference engine development were essential components of the project, enabling accurate comprehension of user queries. Additionally, I successfully used Zulip and REST APIs to

design a user-friendly interface. Implementing data preprocessing for the energy corpus further enhanced my skills. Moreover, I acquired knowledge in threading, queuing, and good coding practices, while gaining familiarity with GitHub. This well-rounded learning experience prepares me for successful careers in Conversational AI and software development.

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## **PS-I station: VoiceQube - II , Bengaluru**

### **Student**

**Name:** ANEESH KABRA .(2021A7PS0442P)

#### **Student Write-up:**

**PS-I Project Title:** Digitalizing Offline Stores

**Short Summary of work done:** Developed a master inventory of products by using extensions like Octaparse to obtain data from e-commerce sites like BigBasket, Blinkit etc. Uploaded them to a MongoDB database.

**Objectives of the project:** To onboard stores onto the ONDC network

**Tool used:** Octaparse, MongoDB

**Details of Papers/patents:** NA

**Brief description of the working environment:** NA

**Academic courses relevant to the project:** None

**Learning Outcome:** NA

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## PS-I station: VoiceQube - II , Bengaluru

### Student

Name: ANISH TAORI .(2021A7PS0939P)

#### Student Write-up:

**PS-I Project Title:** Qr-shop-catalogue

**Short Summary of work done:** We first compiled a list of grocery stores in vities of Bangalore, Mumbai, Hyderabad, and Chennai using web scraping tools. We then imported this data to the MongoDB database.

**Objectives of the project:** To create a tool by which a shopkeeper can scan his inventory to an ONDC platform.

**Tool used:** NoDataNoBuisiness, MongoDB

**Details of Papers/patents:** -

**Brief description of the working environment:** The company environment was very friendly and non-bureaucratic. We had a slack channel with the the tech lead where we would directly communicate. The company didn't have a strict timing, instead they asked everyone their preferred time of the say to work. They focused on getting the work done instead of adherence to daily timings. It was an environment very conducive to learning.

**Academic courses relevant to the project:** DBMS

**Learning Outcome:** I learnt how a company functions and what company culture is. I got to MongoDB and web scraping tools that I had never used before. We also had to coordinate a lot with our team and our mentor, which helped to build team skills. As we were all working remotely, this was a very different experience that all the college projects.

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PS-I station: VoiceQube - II , Bengaluru

## Student

Name: NAVNEET SINGLA .(2021A7PS1450P)

### Student Write-up:

#### PS-I Project Title: API INTEGRATION

**Short Summary of work done:** During the Practice School (PS-I) at VoiceQube in Bengaluru, my learning experience revolved around API integrations and creating a web application based on real estate. The working environment was dynamic, with a focus on utilizing APIs and developing a user-friendly web platform. As an intern at VoiceQube, I had the opportunity to collaborate with experienced professionals in the company. I was provided with a dedicated workspace furnished with the necessary tools and resources to fulfill my tasks. My primary learning focus was on API integrations, where I gained practical knowledge about integrating various APIs into a web application. This involved understanding the documentation, making API requests, handling responses, and effectively utilizing the data retrieved from the APIs. Specifically, the application I worked on was centered around real estate, which required integrating APIs for property listings, geolocation services, and possibly other relevant data sources. Throughout the PS-I, I learned about web application development, including backend technologies. I gained proficiency in backend technologies such as Node.js and database management systems like MongoDB. The learning environment at VoiceQube fostered mentorship and collaboration. I received guidance from mentors and participated in training sessions to enhance my skills. Additionally, I had the opportunity to work on collaborative projects with fellow interns, which further deepened my understanding of web application development and API integrations. Overall, the PS-I at VoiceQube in Bengaluru provided me with valuable practical experience in API integrations and web application development, specifically focused on the real estate domain.

**Objectives of the project:** Developing web app integrating APIs for real estate listings.

**Tool used:** Node.js, Express.js, PostGre Sql, php, axiom

**Details of Papers/patents:** NA

**Brief description of the working environment:** During my PS-I, the office atmosphere at VoiceQube was lively and productive. The station where I was stationed provided a well-equipped and organized workspace. The station had a collaborative atmosphere, with professionals from different teams working together and exchanging ideas. The company fostered a supportive and inclusive work culture where everyone's contributions were valued. Colleagues were approachable and willing to assist whenever needed. Regular team meetings and updates helped maintain transparency and alignment among team members. The station also provided access to relevant resources and training

materials to enhance our knowledge and skills. This enabled us to stay updated with the latest industry trends and technologies. Overall, the working environment at the station was engaging, collaborative, and conducive to personal and professional growth. It provided a platform for learning, collaboration, and innovation, ensuring a fulfilling experience during my PS-I at VoiceQube.

**Academic courses relevant to the project:** Object-Oriented Programming, Data Structure and Algorithms

**Learning Outcome:** Major learning outcomes from my PS-I at VoiceQube:

1. API Integrations
2. Backend Development (Node.js, MongoDB)
3. Real Estate Domain Knowledge
4. Collaborative Work
5. Problem Solving and Adaptability

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## PS-I station: VoiceQube - II , Bengaluru

### Student

**Name:** TRAYAMBAK SHRIVASTAVA .(2021A7PS1629P)

### Student Write-up:

**PS-I Project Title:** Tutor-Video Analysis

**Short Summary of work done:** We aim to develop a software application that harnesses the power of machine learning and natural language processing to analyze tutors' behavior in real time. By analyzing the transcript of their lectures, our solution will provide data-driven insights into various aspects of their performance, enabling timely feedback and improvement opportunities. The application will measure parameters such as clarity, engagement, and adherence to teaching guidelines, allowing educators to optimize their tutoring experiences and create an effective learning environment.

**Objectives of the project:** Application of Natural Language Processing to extract keywords and sentiments from transcripts(to be extracted from video file)

**Tool used:** S/w Only - Tensorflow , Rake , Nltk , Panda , Numpy etc.

**Details of Papers/patents:** Customer Problem Statement was directly provided.

**Brief description of the working environment:** The working environment is quite free. There are no regular meetings. You are expected to be responsible and complete your work on time. Meetings, assessments if any, are ad-hoc. Hence this PS Station provides adequate freedom and creativity.

**Academic courses relevant to the project:** From the ones I took - None  
Expected - Deep Learning

**Learning Outcome:** Natural Language Processing , ML , Neural Networks , RAKE

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## **PS-I station: VoiceQube - II , Bengaluru**

### **Student**

**Name:** AARYAN JAIN(2021A7PS2060G)

#### **Student Write-up:**

**PS-I Project Title:** API-AI

**Short Summary of work done:** 1. We built the UI and frontend design for RouteNavigator. We then built registration page and store info in the MongoDB database. We connected both of them using EJS server. Then we worked to parse the Gmap API on the website.

**Objectives of the project:** To design Route Navigator, a web based application to optimise routes using Gmaps API

**Tool used:** Bootstrap, react

**Details of Papers/patents:** No.

**Brief description of the working environment:** It was really a very healthy environment for learning. We got to learn and explore multiple skills as we proceeded further on the project.

**Academic courses relevant to the project:** No.

**Learning Outcome:** HTML, CSS, Frontend development etc.

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## PS-I station: VoiceQube - II , Bengaluru

### Student

**Name:** ARYAN SETH ,(2021A7PS2221P)

#### Student Write-up:

**PS-I Project Title:** Stock Market Price Prediction using Sentiment Scores

**Short Summary of work done:** Built autoML frameworks, sentiment analyzers, and collected stock price data

**Objectives of the project:** To build a software service to predict stock prices

**Tool used:** PyTorch, Python, Scikit-learn, pandas, numpy, huggingface

**Details of Papers/patents:** Paper in works to submit to ACM Conference for AI in Finance

**Brief description of the working environment:** Learnt how to work in teams, write good code, and collect data

**Academic courses relevant to the project:** -

**Learning Outcome:** AI research, data analysis, data collection, data cleaning

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## PS-I station: VoiceQube - II , Bengaluru

### Student

Name: SHREYAS KUMAR .(2021A7PS2432P)

#### Student Write-up:

**PS-I Project Title:** Hermes - A voice based appointment making chatbot

**Short Summary of work done:** Created a chatbot capable of booking appointments at a clinic by conversing with a user.

**Objectives of the project:** Utilizing RASA and Twilio to make a chatbot capable of booking appointments in a particular clinic

**Tool used:** Rasa, Twilio

**Details of Papers/patents:** NA

**Brief description of the working environment:** Working environment - decent but hands off

Expectations - a decent project in an unexplored domain (I had never done anything related to AI before)

Learnings - how to use Rasa to build a chatbot

**Academic courses relevant to the project:** NA

**Learning Outcome:** Rasa and Natural Language Understanding

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## PS-I station: VoiceQube - II , Bengaluru

## Student

Name: MIHIKA PARAG DESHPANDE .(2021A7PS2435P)

### Student Write-up:

**PS-I Project Title:** Stock Market Sentiment Analyser

**Short Summary of work done:** Designing a downstream prediction model, coming up with accurate sources of data with sentiment scores and/or a source of articles which can be fed to a sentiment analyzer in real time; for training as well as deployment. Combining the output from the sentiment analyzer with the fundamentals and technical parameters to make long term predictions of the range ~three months to a year. Use various downstream prediction models like MLPs(Multi-Layer Perceptrons), Decision Trees, Random Forest and SVMs to tackle the problem in both ways, regression as well as classification. Regression involving predicting the actual stock price and for Classification, predicting the stock's state (out of <20% increase, 20-40% increase 40-60% increase, 60-80% increase, >80% increase) after a stipulated amount of time and compare effectiveness. For sentiment scores, adopt EOD Historical Data

**Objectives of the project:** To produce a stock market prediction engine that can also provide investment advice based on consumer sentiment that it can analyse based on online reviews and tweets.

**Tool used:** Python, Numpy, Pandas, Scikit, EOD historical data API, TwelveData API

**Details of Papers/patents:** Future prospects: Paper on the process of stock market analysis and the impact of sentiment scores on the same

**Brief description of the working environment:** I had a great experience working remotely as a machine learning intern. The team was very supportive and always willing to help each other out. Here are some of the specific things that I liked about the working environment:

1. Regular meetings and standups: These helped to keep everyone on the same page and ensured that we were all working towards the same goals.
2. Discussions about machine learning concepts: These were a great way to learn new things and share ideas with my colleagues.
3. Great mentors: My mentor was always willing to help me and answer my questions.
4. Flexibility: I was able to work from anywhere, which gave me a lot of freedom.

My learnings: I learnt greatly about the different type of ML models and which one suited each type of dataset best.

**Academic courses relevant to the project:** Machine Learning, Deep Learning, DSA, DBMS

**Learning Outcome:** Learning about the NLP branch of Machine Learning

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## PS-I station: VoiceQube - II , Bengaluru

### Student

**Name:** ADITYA PRASAD DESHPANDE .(2021A7PS2681P)

### Student Write-up:

**PS-I Project Title:** Whatsapp Chatbot

**Short Summary of work done:** The report emphasizes the significance of team engagement, the role of experiential activities in fostering stronger bonds, and the effective utilization of managerial discretionary budgets. It concludes by emphasizing the value of memorable team experiences in creating lasting impressions and promoting a positive work environment.

**Objectives of the project:** Make a Whatsapp chatbot capable of interacting with user and also sending media.

**Tool used:** Flask, Twilio, PostgreSQL

**Details of Papers/patents:** No papers

**Brief description of the working environment:** Voice Qube offers a dynamic and vibrant working environment that fosters innovation, collaboration, and employee growth. As a cutting-edge tech company, Voice Qube thrives on a culture of creativity and passion for pushing the boundaries of voice and speech technologies.

**Academic courses relevant to the project:** OOP, DBMS

**Learning Outcome:**

1. How to use flask
2. How to use Twilio
3. How to effectively make the flow of a bot
4. API integration



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## PS-I station: VoiceQube - II , Bengaluru

### Student

Name: SHAH NIDHI DHARMENDRA .(2021A7PS2684P)

#### Student Write-up:

**PS-I Project Title:** RouteNavigator

**Short Summary of work done:** The RouteNavigator system is expected to address the challenges faced in transportation management by offering an efficient route planning and employee grouping solution. The advanced algorithms incorporated into the system will optimize routes based on factors such as employee shift timings, home locations, and real-time traffic information. The system will significantly reduce travel time, improve fuel efficiency, and minimize the number of cabs required, leading to cost savings for transportation companies. It also streamlines the process of assigning employees to cabs, ensuring timely pickups and drop-offs, thereby enhancing convenience for employees. Furthermore, the integration of real-time traffic updates has enabled the system to dynamically adjust routes, avoiding congested areas and road closures.

**Objectives of the project:** The primary objectives of the project are to streamline the process of assigning employees to appropriate cabs based on their shift timings, home locations, and the route to the office. RuteNavigator aims to address the challenges faced in transportation management by providing an efficient route planning and employee grouping system.

**Tool used:** Express.js server, mongoose and mongoDB, Node.js, MapBox API, GitHub

**Details of Papers/patents:** We made the RouteNavigator UI which is not yet deployed.

**Brief description of the working environment:** I learnt a lot about the complete web development process. Starting from the frontend, backend and ways to access the data from the database like mongoDB. Also learnt about integrating MapBox API into our web system. Overall, it was a great learning experience for me. There were no hard and fast deadlines so I never felt under pressure and could do work and learn as per my pace.

**Academic courses relevant to the project:** Database Management System, DSA

**Learning Outcome:** I learnt many hard skills like HTML, Express.js, node.js, EJS, integration and using MapBox API to fetch route data, Mongoose and MongoDB. This includes skills required for complete web development from frontend to backend to database design. I was also able to inculcate soft skills like teamwork, leadership, time management, learn ways how to handle different opinions of the team members, etc.

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**PS-I station: VoiceQube - II , Bengaluru**

**Student**

**Name: PRANAV DINESH SHARMA .(2021A7PS2818H)**

**Student Write-up:**

**PS-I Project Title:** Chotu: A WhatsApp bot that can purchase anything via ONDC

**Short Summary of work done:** We created a chatbot using the Python library Rasa. We created mock conversations which were entered in NLU format to train the conversational AI model. This was integrated with Twilio to be usable on WhatsApp

**Objectives of the project:** To create a WhatsApp chatbot that uses ONDC and conversational AI for e-commerce

**Tool used:** Python, Rasa, Twilio

**Details of Papers/patents:** N/A

**Brief description of the working environment:** The working environment was relaxed and comfortable. We were expected to and encouraged to learn the required skills on our own.

**Academic courses relevant to the project:** N/A

**Learning Outcome:** Natural Language Understanding, Conversational AI, Chatbot Development

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## PS-I station: VoiceQube - II , Bengaluru

### Student

Name: TEERTH DHAKAD .(2021A7PS2851H)

### Student Write-up:

#### PS-I Project Title: AI RESEARCH IN STOCK MARKET

**Short Summary of work done:** The project's learning outcomes were extensive and diverse. We gained valuable experience in data collection and preprocessing, learned how to handle financial market data from multiple sources and clean and normalise it for analysis. Feature engineering taught us the significance of selecting relevant parameters and transforming them to optimise predictive power. The implementation of sentiment analysis provided insights into market sentiment and its influence on stock prices, leading to a better understanding of the emotional aspect of financial markets. The project also exposed us to the challenges of dealing with stochastic outputs from AI frameworks and the need for alternative approaches, such as using historical data for sentiment analysis. In the project ,we had the opportunity to explore various machine learning models suitable for the task at hand, such as Decision Trees, Random Forest, Gradient Boosting, and MLPs. Evaluating these models using a range of metrics beyond accuracy taught us the importance of choosing appropriate evaluation criteria based on the specific problem and dataset. The project also provided a practical understanding of the challenges associated with financial predictions, such as overfitting due to market volatility, the need for regularization, and handling class imbalance in the data. We were encouraged to explore strategies for improving model generalization and robustness in real-world financial scenarios. In conclusion, this project equipped us with comprehensive knowledge and practical skills in utilizing AI for stock market prediction. By integrating data collection, preprocessing, sentiment analysis, and various machine learning models, we gained a holistic understanding of the intricacies and challenges of financial forecasting, enabling them to make informed decisions and contribute effectively in the domain of finance and prediction.

**Objectives of the project:** The stock market is highly influenced by investor sentiment, making sentiment analysis an essential tool for traders and investors. This project explores the working of a stock sentiment analyzer that leverages APIs for information sourcing, utilizes a Random Forest Classifier for sentiment classification, and employs GPT (Generative Pre-trained Transformer) for the calculation of sentiment scores. By combining these techniques, the analyzer aims to provide valuable insights into market sentiment and assist in making informed investment decisions.

**Tool used:** The project utilised EOD Historical Data API for data collection and Python with libraries like scikit-learn, TensorFlow, pandas, and Matplotlib for machine learning, data analysis, and visualisation.

**Details of Papers/patents:** [1] Wikipedia article titled “GameStop short squeeze”  
[2] Multilayer Perceptron and Neural Networks, Marius-Constanti, Popescu, Valentina E. Balas, Liliana Perescu-Popescu, Nikos Mastorakis, WSEAS 2009  
[3] M. A. Hearst, S. T. Dumais, E. Osuna, J. Platt an

**Brief description of the working environment:** As a college student interning at VOICEQUBE, a forward-thinking AI technology company, you will have the opportunity to work in a dynamic and collaborative environment. As part of the team assigned to the stock market prediction project, you will gain invaluable real-world experience in the field of data science and machine learning.

During your internship, you will be exposed to various aspects of the project, starting with data collection and preprocessing. You will learn how to acquire financial market data from different sources, clean and normalize it to ensure coherence, and prepare it for analysis. This process will enhance your skills in handling real-world datasets and understanding data quality and integrity.

Sentiment analysis will be a key focus of the project, allowing you to delve into the complexities of understanding market sentiment from textual data. You will explore different techniques to computationally identify and categorize opinions expressed in financial news and social media, gaining insights into the emotional aspect of stock market dynamics.

Moreover, you will have the chance to work with a diverse set of machine learning models, such as Decision Trees, Random Forest, Gradient Boosting, and MLPs. Implementing and evaluating these models will sharpen your understanding of their strengths and limitations, as well as how to optimize their performance for stock market prediction.

Throughout the internship, you will be encouraged to explore time series analysis techniques, which are fundamental in capturing patterns and trends in stock market data. Understanding how to analyze and interpret temporal data will be invaluable for predicting market behavior accurately.

The project also emphasizes ethical considerations, ensuring that the AI models are transparent, fair, and responsibly used. You will have the opportunity to discuss the potential impact of AI-driven predictions on financial decisions and how to address ethical challenges in the finance domain.

In conclusion, your internship at VOICEQUBE will be an immersive learning experience, providing you with practical skills in data science and AI applications in finance. You will contribute to a real-world project, working with a team of experts in the field, and gaining insights into the latest advancements in AI technology. This opportunity will prepare you for future challenges in the industry and provide a solid foundation for your career in data science and machine learning.

**Academic courses relevant to the project:** Machine Learning  
Artificial Intelligence

**Learning Outcome:** Using AI for stock market prediction can lead to several major learning outcomes:

**Data Collection and Pre-processing:** We learned how to collect and handle financial market data, which often comes from various sources and requires pre-processing to ensure it is coherent and suitable for analysis. I gained experience in working with APIs to obtain data and techniques for data cleaning and normalisation.

**Feature Engineering:** Extracting meaningful features from financial data is crucial for building effective predictive models.

**Sentiment Analysis:** Implementing sentiment analysis on financial news and social media data can provide valuable insights into market sentiment and its impact on stock prices.

**Time Series Analysis:** Stock market data is inherently time-dependent, and analyzing it requires understanding time series techniques such as autoregression, moving averages, and seasonal decomposition. We gained knowledge of time series analysis and its application in financial forecasting.

**Machine Learning Models:** We experimented with various machine learning algorithms such as Decision Trees, Random Forest, Gradient Boosting, and MLPs and also learned on how to train, validate, and tune these models to achieve the best predictive performance.

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**PS-I station: VoiceQube - II , Bengaluru**

**Student**

**Name: SHASHANK S T .(2021A7PS2855H)**

**Student Write-up:**

**PS-I Project Title:** DEVELOPING EDUCATIONAL GAMES FOR EFFECTIVE LEARNING OF CODING CONCEPTS TO FACILITATE PLACEMENT SUCCESS

**Short Summary of work done:** During my PS-I , I had the opportunity to work on developing educational games aimed at helping students learn coding skills required for placement. The project began with an introductory meeting where we brainstormed ideas and conducted research to come up with innovative game concepts. Although some of my initial ideas were deemed too complex, we eventually settled on a set of seven games: "Let's Reach 1000," "Flashing Grids," "Guess the Word," "4=10," "Colour-Colour," "Tricky Cups," and "The Snake Game." Using HTML, CSS, and JavaScript, we brought these games to life. Throughout the development process, we collaborated with a skilled graphic designer who provided us with visually appealing design elements. We incorporated modifications and our own logic to enhance the learning experience. Important JavaScript functions like `setTimeout` and `setInterval` were extensively utilized, giving us a deeper understanding of their applications. During the project, we received valuable guidance from our mentor, Mr. Vishnu Krishnathu. Regular communication with him allowed us to seek feedback and clarifications, benefiting from his expertise and insights. This mentorship played a crucial role in refining our games and ensuring their educational effectiveness. Upon completion, we submitted the games through a GitHub repository, including source code, design assets, and documentation for assessment. The project provided us with several learning outcomes, such as gaining proficiency in frontend web development, understanding the importance of visual design and user experience, and grasping game development principles. Additionally, we honed our critical thinking, decision-making, and collaboration skills. Overall, the PS-I experience was highly rewarding as it allowed us to apply our coding knowledge, learn new skills, and contribute to the creation of educational games with real-world applications.

**Objectives of the project:** To help the student to learn and revise the concepts and skills required to crack placements.

**Tool used:** HTML, CSS, JavaScript

**Details of Papers/patents:** none

**Brief description of the working environment:** During my PS-I, I had the opportunity to work in a supportive and collaborative working environment. The company fostered an atmosphere of learning and growth, providing us with the necessary resources and guidance to excel in our project. The team members were friendly and approachable, encouraging open communication and idea sharing.

From the company's perspective, they had clear expectations of our deliverables and the overall objective of the project. They sought educational games that would effectively teach coding skills to students preparing for placement exams. The company valued creativity, innovation, and the ability to create engaging learning experiences. They expected us to utilize HTML, CSS, and JavaScript to develop interactive and visually appealing games while also adhering to the learning objectives.

During PS-I, I had significant learning experiences. I enhanced my skills in frontend web development, gaining a deeper understanding of HTML, CSS, and JavaScript. The project provided hands-on experience using these technologies to create functional and interactive web applications. I also learned about game development principles, including gameplay mechanics, difficulty progression, and the use of timers and scoring systems to enhance user engagement.

Collaborating with a skilled graphic designer taught me the importance of visual design and user experience in creating effective educational games. I learned how to integrate design elements seamlessly into the project, enhancing the overall aesthetics and usability.

Furthermore, the mentorship provided by Mr. Vishnu Krishnathu was invaluable. Regular feedback and guidance from him helped refine our games and ensure they met their educational objectives. His expertise and insights improved my understanding of game development and front-end web development practices.

Overall, the working environment, expectations from the company, and learning opportunities during the PS-I were instrumental in developing my skills, knowledge, and understanding of creating educational games and front-end web development.

**Academic courses relevant to the project:** Object Oriented Programming, Data Structures and Algorithms

**Learning Outcome:** Frontend web development, mainly Javascript (Javascript objects, manipulation of DOM elements, functions and methods related to random numbers, timing functions, etc.) and CSS (hovering, transitions and animations, etc.).

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**PS-I station: VoiceQube - II , Bengaluru**

**Student**

**Name:** SANCHIT BOLINJKAR .(2021A7PS2997H)

**Student Write-up:**

**PS-I Project Title:** Building a WA chatbot using Google Dialogflow CX and AISensy, Invoice Scanner using GPT and OCR

**Short Summary of work done:** 1. WhatsApp bot: It's a customer care bot developed using AI tools like Google Dialogflow CX and AISensy. It provides excellent customer service and user experience. 2. Invoice Scanner: This scanner uses OCR and GPT corrections to simplify and speed up inventory uploading to the platform.

**Objectives of the project:** Do develop software services for an ONDC platform DailyBee

**Tool used:** Python, GPT, OCR, Documetn AI, Github, Dialogflow CX, AISensy, MongoDB

**Details of Papers/patents:** N/A

**Brief description of the working environment:** The founder and the mentor both being bitsians was a plus point. They could relate to our situations and help us out when and wherever needed.

**Academic courses relevant to the project:** OOP, DBMS

**Learning Outcome:** This was my first real project and I enjoyed it thoroughly and learned a lot from it. I realized the importance of team work and progressing as a team as I was the group lead for the WA bot project.

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**PS-I station: VoiceQube - II , Bengaluru**

**Student**

**Name: VRIHEN ARORA .(2021A7PS3206H)**

**Student Write-up:**

**PS-I Project Title: DailyBee**

**Short Summary of work done:** As an intern working on the WhatsApp bot for Customer Care in the ONDC ecosystem, my responsibilities will encompass various aspects of the project. This will include understanding user requirements and collaborating with the development team to design the bot's architecture. To implement chatbot functionalities, I will use programming languages like Python or JavaScript. My main focus will be on



integrating Natural Language Processing (NLP) capabilities to improve the bot's conversational abilities. This involves utilizing existing NLP libraries or APIs and fine-tuning the bot's responses for accuracy and relevance. Additionally, I will contribute to error handling, data validation, and enhancing the overall user experience. Throughout my internship, I will have the valuable opportunity to work closely with experienced mentors who will guide me through real-world challenges and help me acquire new skills. My contributions will be pivotal in developing an efficient and user-friendly WhatsApp bot that enhances customer support and engagement within the ONDC platform. Additionally, I will work on the Invoice Reading Using OCR and Filtering the invoice readings through GPT components, where I will research and integrate suitable OCR and GPT technologies, test and optimize them for accurate invoice extraction and filtering. My collaboration with the development, data science, and customer support teams will be crucial in ensuring the successful integration of OCR and GPT functionalities, leading to an enhanced WhatsApp bot experience for users within the ONDC ecosystem.

**Objectives of the project:** WhatsApp Bot for Customer Care in ONDC, Invoice Reading Using OCR and Filtering the invoice readings through GPT

**Tool used:** Google DialogFlow CX, AiSensy , GCP , Python

**Details of Papers/patents:** NA

**Brief description of the working environment:** First and foremost the PS1 taught me about the huge difference between theoretical and practical knowledge and I majorly learnt that things take time and while resolving Real World problems even the smallest of things we don't even bother while drafting initially can take up a lot of time while resolving the. Therefore the most important thing is that things take time. It give me insights about the real corporate world and how things are done and it was really a completely new experience for me and seriously boosted my learning curve a lot.

**Academic courses relevant to the project:** DBMS, C programming , DSA

**Learning Outcome:** Communication skills, Better real world problem solver

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**PS-I station: VoiceQube - II , Bengaluru**

**Student**

Name: UJJWAL MISHRA(2021B1A72479H)

## Student Write-up:

**PS-I Project Title:** A social network of digital personas

**Short Summary of work done:** I was allotted a project on topic a social network of digital personas and we were allotted to different groups based on our interests. We learned about AI, ML and chatbots also we learned about python language. The project aims to create a social network centered around digital personas, requiring various tasks to be completed. The first phase involves platform development, including designing and implementing a user-friendly web-based interface. This interface should allow users to create and customize their digital personas with options for appearance, personality traits, interests, and backgrounds. The next step focuses on interaction and communication features. Users should be able to connect with others, share content, engage in discussions, and build relationships within the network. Privacy and security measures must be implemented to protect users' digital personas and personal information, giving users control over profile visibility and accessibility. Artificial intelligence integration is another crucial aspect of the project. This includes leveraging AI algorithms for realistic interactions, persona evolution, and personalized content recommendations. Ethical considerations are essential, encouraging responsible use of digital personas, discouraging harmful behaviors, and implementing measures to prevent misuse.

**Objectives of the project:** Platform Development: Design and develop a user-friendly social networking platform that allows users to create and manage their digital personas effectively. Persona Creation and Customization: Enable users to create and customize their digital personas by providing a range of options for appearance, personality traits, interests, and backgrounds. Interaction and Communication: Facilitate seamless interaction and communication between digital personas, allowing users to connect, share content, engage in discussions, and build relationships within the network. Privacy and Security: Implement robust privacy and security measures to protect users' digital personas and personal information, ensuring that users have control over the visibility and accessibility of their profiles and activities. AI Integration: Incorporate artificial intelligence algorithms to enhance the digital personas' capabilities, such as natural language processing for realistic interactions, machine learning for persona evolution, and personalized content recommendations.

**Tool used:** Programming Languages: Depending on your project's requirements, you may need proficiency in languages such as HTML, CSS, JavaScript, Python, PHP, or Ruby for web development. Integrated Development Environment (IDE): An IDE helps streamline the coding p

**Details of Papers/patents:** N/A

**Brief description of the working environment:** The company providing a descent and good working environment with a focus on work-life balance creates an atmosphere conducive to productivity and employee well-being. The work environment emphasizes collaboration, open communication, and a positive team dynamic, fostering a sense of support and camaraderie among colleagues.

Expectations from the company include providing necessary resources and support for the project, including access to required tools, software, and guidance from experienced professionals. They prioritize a healthy work-life balance, ensuring reasonable work hours and encouraging employees to maintain a sustainable work routine.

Within the span of two months, working on the project would provide valuable learning opportunities. It would involve gaining technical skills in web development, user interface design, and database management. The project also offers insights into AI integration, privacy, and security considerations, community management, and data analytics. Working within a well-structured company fosters professional growth and collaboration, enabling you to understand project management processes, improve communication skills, and adapt to an agile development environment.

Overall, the combination of a supportive work environment, access to resources, and diverse learning experiences in two months contributes to personal and professional growth, equipping you with valuable skills and experiences in developing a social network centered around digital personas.

**Academic courses relevant to the project:** OOPS, DISCO, Logic in CS, PnS, Maths 1, Maths 2, Maths 3

**Learning Outcome:** Technical Skills: Gain proficiency in software development, including web development, database management, and user interface design. This project can provide hands-on experience in building a complex platform and implementing various features and functionalities.

User Experience Design: Understand the principles of user-centered design and user experience (UX) to create an intuitive and engaging social networking platform. Learn how to conduct user research, create user personas, and iterate on designs based on user feedback.

Artificial Intelligence Integration: Explore the integration of artificial intelligence (AI) technologies, such as natural language processing and machine learning, to enhance the capabilities of digital personas. Gain insights into the practical applications of AI in social networking contexts.

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**PS-I station: VoiceQube - II , Bengaluru**

## Student

Name: HARSH BAVISHI .(2021B2A73137H)

### Student Write-up:

**PS-I Project Title:** Designing a travel bot

**Short Summary of work done:** A Travel planning bot that does end to end recommendations as well as trip planning based on budget for all the locations in the world. This leverages APIs from leading service providers and uses a proprietary NLU model.

**Objectives of the project:** To create a chatbot that helps user plan an efficient trip.

**Tool used:** S/w

**Details of Papers/patents:** -

**Brief description of the working environment:** We received little guidance and mostly self learning.

**Academic courses relevant to the project:** OOPs

**Learning Outcome:** Working with team,

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**PS-I station: VoiceQube - II , Bengaluru**

## Student

Name: VIVEK RONAK MEHTA(2021B3A71903G)

### Student Write-up:

**PS-I Project Title:** Digitizing Offline Stores

**Short Summary of work done:** We designed a super Catalog system for the website DailyBee which had an integration of a catalog / product collections and integrated them to make it easier for the store to digitise

**Objectives of the project:** The objective of this project was to digitise offline stores by making their digital store setup time very short , which includes fast onloading through a super Catalog

**Tool used:** MongoDB , Octoparse

**Details of Papers/patents:** none

**Brief description of the working environment:** The working environment was okay. We were first formed into teams and then gradually given tasks accordingly ,then we had to show our progress or any difficulty faced to our mentor and that's how we proceeded.

**Academic courses relevant to the project:** DBMS

**Learning Outcome:** We learned about various web scraping techniques, We learned about retail industry dynamics, also learned about creating systems with database management for efficient catalog management

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**PS-I station: VoiceQube - II , Bengaluru**

**Student**

**Name:** AYUSH SRIVASTAVA(2021B3A72462G)

**Student Write-up:**

**PS-I Project Title:** Evaluation of tutors using video analysis

**Short Summary of work done:** Our team created a model that evaluates tutors based on their lecture transcripts. First, we convert the tutor's lecture videos to text, as we only look for the lecture transcripts. We then clean the data and perform data preprocessing so that we can perform NLP techniques on it to extract information. An elementary

sentiment analysis feature helps us review their politeness and language. A keyphrase extractor allows us to extract the essential topics and concepts discussed in the lectures. And finally, a text summarizer helps us understand the lecture transcript more concisely and determine whether the tutor is on the right track.

**Objectives of the project:** Lot of edutech companies struggle to analyse the tutors in real time. The use of video analysis will measure the tutor across 14-15 parameters to understand if the tutor is on track, is polite etc.

**Tool used:** H/w: None S/w: ChatGPT, GitHub, Google, YouTube, VSCode, Linux, Shell

**Details of Papers/patents:** None

**Brief description of the working environment:** The PS station was an online one, so work-from-home.

Expectations from the company were mostly met.

Personally, I learnt a lot about NLP and a few concepts in ML. I also learnt my way around audio-video metadata extraction.

**Academic courses relevant to the project:** Good level programming, strong ML base, and knowledge about OOPS

**Learning Outcome:** Understanding of ML and NLP concepts

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**PS-I station: VoiceQube - II , Bengaluru**

**Student**

**Name:** PARTH VAISH(2021B3A72867G)

**Student Write-up:**

**PS-I Project Title:** Digitizing Offline Stores

**Short Summary of work done:** In conclusion, the project "Digitizing Offline Stores" has been a significant endeavor that has contributed to the advancement of the organization

and provided valuable solutions in the retail industry. The "Digitizing Offline Stores" project aimed to simplify the onboarding process and management of product catalogs for offline stores. By leveraging data gathering, web scraping, and mobile application testing, the project successfully streamlined the onboarding process, provided valuable resources for store owners, and improved the overall experience. The focus on key store categories ensured a comprehensive approach to digitizing inventory. Overall, the "Digitizing Offline Stores" project has made significant contributions to the organization and provided you with practical experience and skills that will positively influence future endeavors in the retail and conversational AI domains.

**Objectives of the project:** Digitizing Offline Stores

**Tool used:** Mongo DB, Web scraping, Octoparse

**Details of Papers/patents:** None

**Brief description of the working environment:** Good professional environment.

**Academic courses relevant to the project:** DBMS

**Learning Outcome:** Developing proficiency in database management systems for efficient catalog organization and retrieval.

Sharpening critical thinking, problem solving abilities and analytical skills

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**PS-I station: VoiceQube - III , Bengaluru**

**Student**

**Name:** KESHAV SHARMA .(2021A7PS2170H)

**Student Write-up:**

**PS-I Project Title:** Maeve

**Short Summary of work done:** Created a VoiceBot using Rasa and React.js to train the employees of company on important policies.

**Objectives of the project:** 1) Develop a VoiceBot to train the employees of the organization on the organization's policies. 2) Reduce costs associated with external trainers by automating the training process. 3) Maintain an accurate record of policy training completion for each employee.

**Tool used:** Rasa , VSCode , React.js , Anaconda , Python

**Details of Papers/patents:** NULL

**Brief description of the working environment:** 1) The PS faculty had regular evaluatives.  
2) Regular meetings with our mentor to discuss the progress.  
3) Deadlines were given to finish the assigned work.

**Academic courses relevant to the project:** Machine Learning

**Learning Outcome:** 1) Natural Language Processing 2) React.js 2) Rasa framework

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**PS-I station: VoiceQube - III , Bengaluru**

**Student**

**Name:** SHAURYA PRATAP SINGH .(2021A7PS2588H)

**Student Write-up:**

**PS-I Project Title:** KnowledgeQube

**Short Summary of work done:** During this project, our primary objective was to develop a Generative AI that formulates questions in the areas of Data Structures, Algorithms, and foundational Computer Science concepts. This AI system ensures automatic vetting of questions for complexity and relevance and generates corresponding solutions and test cases. This contributes to an ever-expanding knowledge pool, providing tailored learning experiences to users. My key responsibilities involved the development of the user-friendly front-end and integrating it with the back-end and the database. Using technologies such as HTML, CSS, JavaScript, and ReactJS, I helped create an intuitive web interface consisting of login, signup, and landing pages. This allowed users to easily



generate their desired type of questions by providing specific input parameters like subtopic, difficulty level, number of questions, and question type. Simultaneously, I played a significant role in integrating the back-end with our MongoDB database, ensuring seamless data management. I assisted in designing four distinct schemas - Coding Type, MCQ, Subjective, and User Schema. These schemas serve distinct purposes, facilitating question generation, storage, and user authentication effectively. Furthermore, we implemented JSON Web Tokens for secure user authentication, and I contributed to storing user login credentials and managing individual user question banks in the User Schema. In essence, my work focused on creating a user-friendly interface and ensuring efficient data flow between the front-end, back-end, and the database, contributing to the overall success of this project.

**Objectives of the project:** This project concentrates on the development of a generative artificial intelligence model, accompanied by a comprehensive web interface, tasked with producing questions on three principal areas: Data Structures, Algorithms, and foundational Computer Science concepts. Leveraging the AI's capabilities, the generated questions will undergo an automated vetting process to ensure their quality and relevance. Subsequently, they will be classified into distinct categories based on their degree of difficulty. This structured approach ensures a thorough and systematic provision of academic material for various learning levels.

**Tool used:** HTML5, CSS3, Javascript, Express.js and MongoDB

**Details of Papers/patents:** nil

**Brief description of the working environment:** During my Professional Sequence I (PS-I) at VoiceQube I found the working environment to be both challenging and nurturing. The company's expectations were high, emphasizing clear communication, timely delivery, innovative thinking, and a strong commitment to team collaboration. We used Git as our primary platform for collaborative work, which allowed us to seamlessly share, discuss, and improve our contributions to the project.

Our mentor played an instrumental role in shaping our experience. Regular meetings were held, providing us an opportunity to discuss project challenges, seek advice, and gain valuable insights into professional practices. This nurturing guidance greatly accelerated my learning and enhanced the overall project outcome.

Throughout this journey, I honed my skills in various technologies, from AI APIs to MongoDB and web development tools like HTML, CSS, JavaScript, and ReactJS. I also developed a deeper understanding of the crucial role of data structures and algorithms in software development.

Moreover, the project allowed me to appreciate the importance of team spirit, effective communication, and planning in the professional world. Working in a real-world project setting, managing intricate tasks, and collaborating with my peers to achieve our project goals was an enlightening experience that greatly supplemented my academic learnings. Overall, the PS-I provided me with a robust foundation, equipping me with essential skills and experiences that I will carry forward into my future professional endeavors.

**Academic courses relevant to the project:** OOPS , DBMS , DSA

**Learning Outcome:** I get to know about web development specifically backend development and learnt to collaborate with my team members which enhanced my team spirit.

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**PS-I station: VoiceQube - III , Bengaluru**

**Student**

**Name:** AYUSH NAUTIYAL .(2021A7PS2607H)

**Student Write-up:**

**PS-I Project Title:** MAEVE

**Short Summary of work done:** This development project focuses on developing an advanced voice bot, merging artificial intelligence and natural language processing. The primary aim is to create a context-aware voice bot capable of engaging in human-like conversations. By employing machine learning techniques, including deep neural networks and sophisticated speech recognition systems, the voice bot will provide personalised and intuitive responses as a virtual assistant.

**Objectives of the project:** Building a voicebot

**Tool used:** S/w: RASA, Python API and Libraries, ML

**Details of Papers/patents:** none

**Brief description of the working environment:** Working environment was nice. Regular checks were taken from their side. There were regular evaluative components

**Academic courses relevant to the project:** Machine Learning

**Learning Outcome:** We learnt how to build a voice Bot from scratch using RASA framework

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**PS-I station: VoiceQube - III , Bengaluru**

**Student**

**Name:** KRISH GOYAL .(2021A7PS2646H)

**Student Write-up:**

**PS-I Project Title:** Game development

**Short Summary of work done:** Good experience

**Objectives of the project:** To make web browser games

**Tool used:** Html css javascript

**Details of Papers/patents:** No

**Brief description of the working environment:** Learnt html css javascript teamwork and communication. Had industrial experience.

**Academic courses relevant to the project:** None

**Learning Outcome:** Html css javascript teamwork

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**PS-I station: VoiceQube - III , Bengaluru**

## Student

Name: DEEPAK(2021A7PS2733G)

### Student Write-up:

**PS-I Project Title:** Whatsapp bot that can purchase anything via ONDC and we can keep adding plugins and APIs for this. Total conversational AI

**Short Summary of work done:** Through the development of this project, I learnt a lot about NLU and conversational AI in general and RASA framework in particular. I also learnt about Twilio and Ngrok software and API integration in general. Working as a team to overcome challenges in development.

**Objectives of the project:** Develop a versatile conversational AI WhatsApp bot integrated with ONDC and customizable plugins and APIs to enable seamless and automated purchasing of various products and services, ensuring a user-friendly and efficient shopping experience.

**Tool used:** VS code, rasa model, ONDC, Ngrok software, Twilio WhatsApp API

**Details of Papers/patents:** N.A.

**Brief description of the working environment:** During PS-I at VoiceQube, the working environment was collaborative. Expectations included developing a WhatsApp bot using ONDC for purchases and incorporating plugins and APIs for conversational AI. Learning involved extensive research, integration of Twilio's WhatsApp API, and RASA for conversational AI. Practical insights came from Ngrok deployment. The project's focus on a succinct e-commerce transaction enhanced user-friendly experiences. It improved technical, communication, and presentation skills, fostering a passion for AI-driven applications. Overall, PS-I prepared me for future challenges in the dynamic tech industry.

**Academic courses relevant to the project:** computer programming, oops

**Learning Outcome:** Firstly, basic python skills and overall good experience of what actually is working of an engineer. Improved communication, presentation, and problem-solving abilities. Understanding and implementation of conversational AI techniques for natural and intuitive interactions with users. Ability to design and develop scalable and adaptable AI systems to accommodate future growth and expansion.

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## PS-I station: VoiceQube - III , Bengaluru

### Student

Name: VAIBHAV KHANNA .(2021A7PS2819H)

#### Student Write-up:

**PS-I Project Title:** A Travel Planning Bot

**Short Summary of work done:** We worked on building a voice bot that would be taking budget as input from the user and will be providing suggestions where he can spend his vacation. We worked on gaining knowledge about RASA,NLU and Python Libraries

**Objectives of the project:** A Travel planning bot that does end to end recommendations as well as trip planning based on budget for all the locations in the world. This leverages APIs from leading service providers and uses a proprietary NLU model.

**Tool used:** We used RASA ,Python and APIs

**Details of Papers/patents:** None

**Brief description of the working environment:** The working environment was quite good. We were given regular updates regarding the project and the evaluatives by both the Mentor and our PS Faculty. We got to learn a lot about team and project management and also gained a lot of technical skills.

**Academic courses relevant to the project:** Python and RASA .

**Learning Outcome:** I learned about Artificial Intelligence, specially Voice Bots.

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## PS-I station: VoiceQube - III , Bengaluru

### Student

Name: NISARG AGARWAL .(2021A7PS2994H)

### Student Write-up:

**PS-I Project Title:** Video Analysis

**Short Summary of work done:** We were allotted projects by Vishnu sir. We were allotted the project 'Video Analysis'. We had to build a software that analysed video lectures and judged it based on various parameters. We spent the first half of the PS learning various softwares and tools required to make the project. In the second half we made the project.

**Objectives of the project:** Make a software to analyse video lectures and judge them

**Tool used:** Python, Pandas, NLTK

**Details of Papers/patents:** None

**Brief description of the working environment:** Our PS was in online mode so we could do work from the comfort of our home. However, this posed no setback since all interested parties kept in touch regularly and tracked the progress of the project. The company was very liberal and flexible. There was no pressure to report to Vishnu sir on a daily basis. We just had to finish work before a certain deadline. We had to maintain a PS Diary where we had to write daily accounts of the work we did relevant to PS and send it to our fic Mr Aneesh A M. We had regular evaluatives in various forms(like quizzes, gds, report submissions) throughout the PS.

**Academic courses relevant to the project:** Machine Learning, OOPS

**Learning Outcome:** Python, Machine Learning, Soft Skills

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**PS-I station: VoiceQube - III , Bengaluru**

### Student

Name: ADWAIT KULKARNI .(2021A7PS2995H)

## **Student Write-up:**

**PS-I Project Title:** Game development

**Short Summary of work done:** The overall experience of PS-1 was a good one, I was exposed to real life work applications as well as real life working environment. Voiceqube assigned projects based on interests of the students which was quite helpful. Since I had interest in web development I was assigned a project for a company named Cantilever Labs which made us work on games using web development skills

**Objectives of the project:** Building games to improve user's skillset like aptitude

**Tool used:** HTML CSS Javascript Emscripton

**Details of Papers/patents:** Work done for Cantilever Labs

**Brief description of the working environment:** The overall working environment was quite good. We used to have regular meets to update our progress to our mentors, other than these we had meets with the CEO as well which motivated us. Teamwork, working under pressure, making use of the correct tools is one thing I learned from this internship.

**Academic courses relevant to the project:** OOPS

**Learning Outcome:** Web development

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**PS-I station: VoiceQube - III , Bengaluru**

## **Student**

**Name:** ANUSHKA AGNIHOTRI .(2021A7PS3114H)

## **Student Write-up:**

**PS-I Project Title:** Immortals

**Short Summary of work done:** We've created a model using fine tuning that replicates the way a user can respond by creating a digital persona of the same.

**Objectives of the project:** To create a digital persona that replicates the way a real life human would respond

**Tool used:** Python,Flask

**Details of Papers/patents:** None

**Brief description of the working environment:** Project given was good.You need to figure out everything by yourselves and there is no space for silly doubts.Mentor has not been very responsive throughout.

**Academic courses relevant to the project:** OOPS,DBMS,ML

**Learning Outcome:** Got to learn about fine tuning and working with large language models.

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## PS-I station: VoiceQube - IV , Bengaluru

### Student

**Name:** ANMOL AGARWAL .(2021A7PS0136H)

### Student Write-up:

**PS-I Project Title:** Social Network of Virtual Personas

**Short Summary of work done:** Creating a innovative and engaging interface using flask, worked on Large Language models like gpt-3, worked on ways of training them with user data.

**Objectives of the project:** Learning to train a model using Fine Tuning API

**Tool used:** Flask ,Html, Transfer Learning.

**Details of Papers/patents:** No



**Brief description of the working environment:** The company provided a conducive work environment with an optimum number of members per project for easy coordination and work distribution. Timely inputs by organization mentors helped in smooth functioning throughout PS-1.

**Academic courses relevant to the project:** DBMS, DSA

**Learning Outcome:** Proficiency in python, handling gpt models , Transfer learning.

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## **PS-I station: VoiceQube - IV , Bengaluru**

### **Student**

**Name:** KSHITIZ AGARWAL .(2021A7PS1818H)

#### **Student Write-up:**

**PS-I Project Title:** Appointment booking voice bot

**Short Summary of work done:** We made a doctors appointment booking voice bot using RASA and used twilio api to voice enable it.

**Objectives of the project:** To learn how to make chatbots and integrate API

**Tool used:** RASA, Twilio

**Details of Papers/patents:** none

**Brief description of the working environment:** I learned a lot from this PS. The work environment encouraged learning and we were always told to learn by ourselves and given work as it would be in a professional work place.

**Academic courses relevant to the project:** DBMS

**Learning Outcome:** Learned how to make custom chatbots using RASA.

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## PS-I station: VoiceQube - IV , Bengaluru

### Student

Name: KRISHANG SHUKLA .(2021A7PS2168H)

#### Student Write-up:

**PS-I Project Title:** Maeve

**Short Summary of work done:** Our custom-built voicebot represents a cutting-edge advancement in employee training, enabling comprehensive instruction on the company's policies. Designed from the ground up, our voicebot incorporates state-of-the-art natural language processing (NLP) algorithms, empowering it to engage in dynamic and interactive conversations with employees. By harnessing the power of machine learning, it continuously enhances its understanding and response capabilities, providing personalized learning experiences. This innovative voicebot streamlines the onboarding process, ensuring new hires grasp the company's policies thoroughly. It offers a user-friendly interface, allowing employees to access training material at their convenience. The voicebot can handle queries, clarify doubts, and simulate real-life scenarios, enhancing employees' comprehension and decision-making skills.

**Objectives of the project:** Building VoiceBot

**Tool used:** React Js, CSS, HTML, APIs

**Details of Papers/patents:** NA

**Brief description of the working environment:** It was good, we learnt a lot.

**Academic courses relevant to the project:** OOPS,

**Learning Outcome:** Learnt ML, neural networks, React, css, HTML, Rasa

## PS-I station: VoiceQube - IV , Bengaluru

### Student

Name: PATEL DHRUV YOGESH(2021A7PS2672G)

#### Student Write-up:

**PS-I Project Title:** RouteNavigator (To find optimised route using Maps API)

**Short Summary of work done:** I created an authentication page with Passport.js, a Session Based Authentication framework then I created an Ejs template with an HTML form element to collect data and store to MongoDB Database. Later, we worked on Geocoding APIs to get coordinates from the response in the format of GeoJSON. This Coordinate worked as the Source, Pickup points in between and Destination. We then passed these coordinates in a custom callback function that makes a best route API call to get waypoints on the Map Layer. After a single Algorithm works we made a provision to log it in our Database for Data Analysis.

**Objectives of the project:** Develop a Web Application for Taxi Management Client to efficiently group employees and find optimal routes for fuel and cost savings.

**Tool used:** Software tools used are Node.js, Express Server, E.js, Map Box API service and MongoDB

**Details of Papers/patents: -**

**Brief description of the working environment:** Work time at the company is flexible, but your doubts are not cleared regularly. Sometimes the mentor responds after a week. If you know precisely what is to be done, you are fine with it. Learning ultimately depends on the student as there was no training session or seminar for the students.

**Academic courses relevant to the project:** CS F211 Data Structure and Algorithm and CS F212 Database System

**Learning Outcome:** I improve my communication skills and working as a team along with learning technical skills of Website Development using Node.js, Express Server, E.js and Authentication framework of Passport.js. I also learned to connect to MongoDB using Mongoose and I learned to deploy website with Heroku.

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## PS-I station: VoiceQube - IV , Bengaluru

### Student

Name: JOYDEEP SAHA(2021A7PS2718G)

#### Student Write-up:

**PS-I Project Title:** Knowledge-Pool

**Short Summary of work done:** Using express js as backend and react js as fronted we developed a website that has a different profile for a user and also generates questions based on filters mentioned by the user.

**Objectives of the project:** Creating an AI model that generates and auto vets DSA questions.

**Tool used:** Nods js React js

**Details of Papers/patents:** \_

**Brief description of the working environment:** Amazing work environment. They really value our work and have also motivated us to learn a lot.

**Academic courses relevant to the project:** DBMS DSA

**Learning Outcome:** Web development.(Express js and React js)

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## PS-I station: VoiceQube - IV , Bengaluru

### Student

Name: MOHIT TIWARI(2021A7PS2719G)

**Student Write-up:**

**PS-I Project Title:** Integration AI

**Short Summary of work done:** We researched and implemented various APIs of Customer Relationship Management tools such as Shopify, Salesforce, etc.

**Objectives of the project:** Explore multiple research projects on how to build plug in modules to interfaces like Salesforce, PowerBI, etc

**Tool used:** Majorly Software tools such as Visual Studio Code and many tools mainly used for Web Development Purposes

**Details of Papers/patents:** None

**Brief description of the working environment:** The work was fairly challenging and we learnt a lot during the PS. Each team was given a project mentor(in our case, Vishnu Saran, CEO of VoiceQube) who worked as a POC between the students and the company and helped in making some essential decisions about the project.

**Academic courses relevant to the project:** Object Oriented Programming, Database Management Systems, Computer Programmin

**Learning Outcome:** Understanding APIs, User facing interface plugins, Web Application Development, System Design and Basic Research

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**PS-I station: VoiceQube - IV , Bengaluru**

**Student**

Name: TANISHQ SURESH GHOLAP(2021A7PS2728G)

**Student Write-up:**

## **PS-I Project Title:** Efficient Route Planning

**Short Summary of work done:** The project aimed to develop a fuel and time-efficient route planning system for a cab service company. The solution was implemented as a web application, enabling drivers to input their starting location while dynamically selecting three passenger pickup points and the final destination, based on proximity and route optimization. The application used Mapbox GL JS to render interactive maps with customized markers representing the origin, stops, and destination. The core functionality involved calculating the most efficient route using an adjacency matrix and the Traveling Salesman Algorithm. The backend server, built with Node.js and MongoDB, stored location data for passengers and drivers. Passengers' locations were retrieved from the database and used to populate the pickup points on the map. The project employed the Geolocation API to access the live location of the driver, allowing real-time movement of the driver marker on the map as they progressed along the route. Through this project, I gained experience in web development using HTML, CSS, and JavaScript, along with proficiency in Mapbox GL JS for interactive map rendering. Additionally, I learned how to integrate backend services using Node.js and MongoDB for data storage and retrieval. The project provided hands-on experience in route optimization algorithms, enhancing my problem-solving skills. Overall, the project achieved its objective of creating an efficient route planning system for the cab service company, enabling cost-effective operations and enhanced user experience for both drivers and passengers.

**Objectives of the project:** The objective of the project is to develop a web or mobile application for a cab service company, aiming to optimize route planning for fuel and time efficiency. It will use the Mapbox API to calculate the most efficient route, considering the driver's location as the origin, three passenger stops, and the company's destination.

**Tool used:** Javascript, HTML, CSS, MongoDB, Mapbox GL JS, Mapbox API

**Details of Papers/patents:** -

**Brief description of the working environment:** During the online internship, the working environment presented some unique challenges that required adaptability and self-reliance. We encountered occasional difficulties in maintaining consistent communication with the company representative, which impacted the progress of our projects.

As interns, we were eager to receive regular feedback and guidance to ensure the successful completion of our assignments. However, due to certain circumstances, there were delays in responses, and we had to navigate some ambiguous situations independently.

Despite these challenges, the internship provided us with valuable opportunities for learning and growth. We developed our problem-solving skills and learned to manage our projects efficiently without strict deadlines.

While the experience may have differed from our initial expectations, we appreciate the chance to enhance our ability to work in less structured environments and cultivate self-motivation.

We hope that future interns will benefit from improved communication and more consistent mentorship, allowing them to have an even more enriching internship experience.

**Academic courses relevant to the project: -**

**Learning Outcome:** Using APIs and team work.

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## **PS-I station: VoiceQube - IV , Bengaluru**

### **Student**

**Name:** MD SHADAB KALIM(2021A7PS3058G)

### **Student Write-up:**

**PS-I Project Title:** DailyBee - Empowering Local Stores By Getting Them Into ONDC

**Short Summary of work done:** During our tenure with the company, we successfully undertook two impactful projects: the OCR and GPT-API integration for automated data analysis and the development of a WhatsApp Chatbot. In the OCR project, we utilized Google Cloud Vision AI to extract valuable information from images, including text recognition and object detection. While we initially explored using Document AI for structured data extraction, we ultimately settled on Vision AI due to challenges with reading taxes. We manually fed the OCR data into the GPT-API for sanity checks, aiming to validate and refine the extracted text. For the WhatsApp Chatbot, we designed and implemented an interactive system to enhance customer engagement and streamline user interactions. Our chatbot supported multiple languages, real-time issue resolution, and regular updates based on user feedback and performance metrics. Additionally, we integrated CRM and analytics tools for data-driven insights into user behavior and preferences. We kept a keen eye on advancements in conversational AI and potential voice-enabled interactions. Moving forward, we have conveyed our suggestions to our mentor, emphasizing the need for continuous monitoring, language support expansion, CRM integration, and exploration of cutting-edge AI models. As our tenure concludes, we are confident that our projects will contribute significantly to the company's goals, enabling efficient data analysis and seamless customer interactions, while keeping a strong focus on future innovation and user satisfaction.

**Objectives of the project:** Help local stores develop chatbot applications to answer customer queries, and making an application for local stores by which they can quickly digitize their inventory after scanning bills

**Tool used:** Python, DialogFlow, Google's Cloud Vision API

**Details of Papers/patents:** NA

**Brief description of the working environment:** The working environment during PS-I was dynamic and collaborative, fostering a culture of innovation and continuous learning. As interns, we were warmly welcomed into the team and provided with the necessary resources and guidance to succeed in our projects. Regular team meetings, brainstorming sessions, and one-on-one mentorship allowed us to stay aligned with project goals and seek assistance when needed. The company's emphasis on open communication and knowledge-sharing encouraged us to freely exchange ideas and contribute to various discussions.

Expectations from the company were clear, with an emphasis on delivering high-quality results and meeting project deadlines. We were encouraged to take ownership of our tasks, demonstrate creativity in problem-solving, and present regular progress updates. The company's supportive and motivating approach helped us build confidence and contribute effectively to the projects' success.

During PS-I, we experienced tremendous personal and professional growth. Working on real-world projects exposed us to cutting-edge technologies and industry practices. We honed our technical skills, learned to work collaboratively in a team, and gained insights into project management and client communication. Additionally, the opportunity to explore diverse projects broadened our horizons and expanded our knowledge across various domains.

Overall, PS-I provided a valuable learning experience, equipping us with the tools to tackle real-world challenges and thrive in a professional setting. We are grateful for the enriching opportunities and the knowledge gained, which will undoubtedly serve as a solid foundation for our future careers.

**Academic courses relevant to the project:** Data structures and algorithms, object oriented programming, database management system

**Learning Outcome:** Learnt python, learnt how to work with DialogFlow to make chatbot intents, learnt how computer vision works, learnt how APIs work, learnt how to go through documentation and produce code as per needs

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## PS-I station: VoiceQube , Bengaluru

### Student

Name: ARYAN BAKSHI .(2021A7PS0532P)

### Student Write-up:

**PS-I Project Title:** Integration - AI

**Short Summary of work done:** We researched on the various APIs and plugins available in the market for platforms like Salesforce, PowerBI, Shopify etc. and came up with our own idea of a new plugin that we could build. We then proceeded to build the plugin using NodeJS, and various REST APIs and the frontend using ReactJS and Bootstrap.

**Objectives of the project:** The project entails developing plugin modules that extend Salesforce's functionality and integrate additional features or external services. The project team collaborates with stakeholders, Salesforce administrators, and end-users to ensure that the plugin modules align with business needs and provide a seamless integration experience. The project seeks to address specific business requirements and enhance overall system efficiency.

**Tool used:** PostgreSQL, Javascript, NodeJS, Salesforce APIs

**Details of Papers/patents:** NA

**Brief description of the working environment:** The company provided a decent working environment and were helpful along the way. Although we were not able to build a functional plugin by the end of PS, we learnt a lot. The company did not have rigid expectations from us and were fine at the pace at which we were learning. It was a really good experience about working in a team based setting and having a look at industry level projects.

**Academic courses relevant to the project:** NA

**Learning Outcome:** Proficiency in Git Version Control:  
Understanding GitHub for Code Collaboration  
Mastery of Node.js  
Expertise in Express.js Framework  
API Handling and Integration  
PostgreSQL Database Management  
Collaboration and Teamwork

Problem-solving and Troubleshooting

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## PS-I station: VoiceQube , Bengaluru

### Student

Name: VIBHA PATIL(2021A7PS1465G)

#### Student Write-up:

**PS-I Project Title:** DailyBee

**Short Summary of work done:** DailyBee is an application which is part of the ONDC Network. For the project, Digitalisation of Invoices, I first familiarised myself with Google Cloud Document AI, BigQuery and Cloud Functions. I made a python script which takes an invoice input , sends it to Document AI using Cloud API and returns a JSON file. The JSON file is processed to extract relevant details and converted to a tabular format which is merged with a database created in Google Cloud BigQuery. The entire process is automated through a pipeline using Google Cloud Functions. For the project, WhatsApp Chatbot, I used Google Dialogflow which is a low-code development framework used to create and test chatbots by designing conversation flows relevant to the needs of retail store customers.

**Objectives of the project:** Digitalisation of Invoices using OCR using Python and Google Cloud tools, WhatsApp Chatbot using Google Cloud

**Tool used:** Python, Google Cloud API, DocumentAI, BigQuery, Dialogflow CX, Cloud Functions, GPT

**Details of Papers/patents:** none

**Brief description of the working environment:** It was an overall great experience, as I got an insight into the working of startups. We were given a task timeline and reference resources about the project at the beginning and worked as a team. The Mentor was helpful and motivating. He kept progress checks and provided tips when we needed assistance. I learned to use Cloud Computing tools like Google Cloud, which is widely used in today's IT industry.

**Academic courses relevant to the project:** DSA, Computer Programming, OOP

**Learning Outcome:** 1) Learned to use Google Cloud tools' API like Document AI, Dialogflow, Cloud Functions, BigQuery in Python code

2) Made a data pipeline using Google Cloud, which takes a scanned invoice as input, performs OCR, processes product details into a table and updates the inventory database.

3) Made a WhatsApp Chatbot using Google Cloud Dialogflow.

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**PS-I station: VoiceQube , Bengaluru**

**Student**

**Name: SOHUM DATTA(2021A7PS1758G)**

**Student Write-up:**

**PS-I Project Title:** DailyBee

**Short Summary of work done:** DailyBee is an application for Indian Retail stores on the ONDC network. The App seeks to assist store owners in better managing their business operations and gaining access to a large client base. Two features are being created for DailyBee. Using optical character recognition to find and comprehend text in the invoice, analyze it, and integrate it with the store's inventory database using Google Cloud's AI tools and data pipeline technologies, we are developing a service that automates invoice processing and updating store inventory. Using Google Cloud's Dialogflow tool and AiSensy, we are also developing a WhatsApp chatbot for establishing a devoted consumer base.

**Objectives of the project:** Digitising invoices and creating a chatbot

**Tool used:** document ai, gpt 3.0, dialogflow cx, python

**Details of Papers/patents:** none

**Brief description of the working environment:** Both projects showcased the immense potential of AI technologies in revolutionizing business processes and customer interactions. The OCR project highlighted the advantages of OCR technology in digitizing invoices, enhancing data accessibility, and improving operational efficiency. Led by a skilled Pipeline Lead, the project successfully navigated the complexities of OCR algorithms, data validation, and quality control processes, resulting in accurate and reliable digitized invoice records. On the other hand, the WhatsApp chatbot project exemplified the capabilities of conversational AI in recreating personal connections between local store owners and customers on an online platform. By integrating a business chatbot with WhatsApp, the project enabled personalized interactions, real-time information delivery, and streamlined customer support. Aisensy's expertise in chatbot integration and AI-powered solutions was pivotal in ensuring seamless integration, personalized recommendations, and efficient customer engagement. Both projects demonstrated the transformative impact of AI technologies in driving operational excellence, enhancing customer experiences, and fostering business growth. By leveraging OCR and chatbot technologies, businesses can optimize processes, unlock valuable insights, and deliver exceptional customer service in today's digital age. The success of these projects highlights the significance of embracing AI-driven solutions to stay competitive, adapt to evolving customer expectations, and drive innovation in the digital era.

**Academic courses relevant to the project:** CS

**Learning Outcome:** OCR, conversational ai, nlp

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**PS-I station: VoiceQube , Bengaluru**

**Student**

**Name:** NIMITT ARORA(2021A7PS1764G)

**Student Write-up:**

**PS-I Project Title:** Tutor Video Analysis

**Short Summary of work done:** During PS-I, I worked on a real-time video analysis system for edutech tutors. The project involved assessing tutor performance using sentiment analysis and RNNs for video data processing. Besides, I learned how to improve my presentation and report-making skills, effectively communicating project findings. The experience has been valuable, enhancing my abilities and knowledge in the field.

**Objectives of the project:** Lot of edutech companies struggle to analyse the tutors in real time. The use of video analysis will measure the tutor across 14-15 parameters to understand if the tutor is on track, is polite etc.

**Tool used:** Programming Languages: Depending on the project, programming languages like Python, C++, Java, or others were used for implementation. Integrated Development Environments (IDEs): Software tools like Visual Studio Code, PyCharm, Eclipse, or others were emp

**Details of Papers/patents: -**

**Brief description of the working environment:** During PS-I, the working environment was entirely online, providing a stress-free and flexible experience for interns to work remotely on projects.

**Academic courses relevant to the project:** OOPS , DSA , CP , DBMS

**Learning Outcome:** During the project, we leveraged video analysis to measure tutors' performance across 14-15 parameters, including tracking their progress and assessing their politeness. Key techniques involved sentiment analysis and Recurrent Neural Networks (RNNs) to process video data in real-time. Working collaboratively in a team, we gained valuable experience and knowledge in data analysis, edutech, and its potential to enhance tutoring practices.

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**PS-I station: VoiceQube , Bengaluru**

**Student**

**Name: PRANAV BAJPAI(2021A7PS2062G)**

## **Student Write-up:**

**PS-I Project Title:** CHOTU - ONDC integrated WhatsApp Chatbot

**Short Summary of work done:** We created a WhatsApp chatbot using rasa software. Chatbot would help users search for retailers and goods on the Mystore website.

**Objectives of the project:** Create a WhatsApp Chatbot that can purchase anything from ONDC and we can keep adding plugins and APIs for this. Total conversational AI

**Tool used:** Rasa open source, Twilio, Ngrok, Google cloud API, python.

**Details of Papers/patents:** NA

**Brief description of the working environment:** We weren't asked to give daily update on the work, just getting it done within the deadline was important. We did not have much support from the company supervisor, and had to learn everything ourselves. Sometimes query resolution would also take a lot of time. Overall I think good PS if you want free time as well as a good project done by the end of PS 1.

**Academic courses relevant to the project:** DSA, ML, AI

**Learning Outcome:** RASA open source, Twilio, python, web scraping, oauth.

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## **PS-I station: VoiceQube , Bengaluru**

### **Student**

**Name:** BANIA KARAN CHANDRESH(2021A7PS2582G)

## **Student Write-up:**

**PS-I Project Title:** Accurate Stock Prediction incorporating sentiment analysis

**Short Summary of work done:** I was involved a lot on the data collection side and tried out various APIs for compatibility and extendibility. I also tried to find downstream models for actual prediction including LSTMs, Decision Trees, MLPs, and such. We were unable

to form a personalized sentiment Analyzer and so I had to find data for Sentiment parameters as well.

**Objectives of the project:** Make/Develop ML model(s) which takes in as input, Fundamental, Technical and Sentiment parameters for long term stock prediction; as well as find sources for live deployment

**Tool used:** S/w - Anaconda, Spyder, Git

**Details of Papers/patents:** -

**Brief description of the working environment:** The environment was very accepting but much too lenient, our supervisor from the company provided us with small tasks over a week's period. My expectation was to have some piece of work/software, which were partly met. I was although able to learn something about efficient presentation and report making.

**Academic courses relevant to the project:** Machine Learning, Data Structures and Algorithms.

**Learning Outcome:** Machine Learning, Data Collection

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**PS-I station: VoiceQube , Bengaluru**

**Student**

**Name:** SHIVAM MUNDADA(2021A7PS2605G)

**Student Write-up:**

**PS-I Project Title:** Immortals

**Short Summary of work done:** We were tasked with creating a chatbot with a personality. We researched on the topic and decided to use gpt-3 as a base model and then fine tune it to our needs. We were given the initial task of making a chatbot with the personality of Dr. A. P. J. Abdul Kalam. To do this, we needed to create a dataset to fine tune our model on. We utilized interviews given by him and his wikipedia page and

created a fine tuned model. This model responded to any prompts/questions given by the user on the topics Abdul Kalam was knowledgeable about.

**Objectives of the project:** Project Description: This is a new age social network where every user can create their digital persona. Imagine it like having a personal LLM that can answer all questions just like the user. This can be helpful in unimaginable ways

**Tool used:** OpenAI API, Jupyter Notebook, Python

**Details of Papers/patents:** -

**Brief description of the working environment:** After been given the project, we were mostly on our own to figure out how to go about making the project. There was little support from the company whereas I was expecting us to be provided learning material on the project domain and guidance on the same.

**Academic courses relevant to the project:** Computer Programming(CS F111), Machine Learning

**Learning Outcome:** Learnt team work, coordination. Learnt how to use OpenAI API and ML tools

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**PS-I station: VoiceQube , Bengaluru**

**Student**

**Name: DEVANSH SADHANANDHAN(2021A7PS2655G)**

**Student Write-up:**

**PS-I Project Title:** Game Development: Cantilever Labs

**Short Summary of work done:** Developed fun and interactive web-based games using front-end development languages such HTML, CSS and vanilla Javascript. These games were aimed at assisting students in their preparation for placements by testing them on the appropriate skills. Learnt to convert Figma designs into code and use it in our web pages.



**Objectives of the project:** To develop fun and interactive web-based games that will help students gain and enhance placement-related skills.

**Tool used:** VS code, Figma

**Details of Papers/patents:** NA

**Brief description of the working environment:** Remote, online internship. Expected an NLP/CV project but got assigned to a client company to satisfy their needs. Learnt use of version control systems(Git), front-end web development (HTML, CSS, Javascript) and using Figma for design.

**Academic courses relevant to the project:** Computer Programming

**Learning Outcome:** Front-end web development - HTML, CSS & Javascript

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**PS-I station: VoiceQube , Bengaluru**

**Student**

**Name:** SHREYAS GHOSH .(2021B4A72502P)

**Student Write-up:**

**PS-I Project Title:** Integration Ai

**Short Summary of work done:** First a research was done on the various API provided by Salesforce to create plugins for the interface. Based on the information gathered a web app was created that would be used in the real estate sector where user can enter their preferences and the system captures the prospective lead into the Salesforce system.

**Objectives of the project:** Creating a web-app for real estate sector integrated with Salesforce

**Tool used:** GitHub, React, Visual Studio Code

**Details of Papers/patents:** None

**Brief description of the working environment:** Due to PS-I I got exposed to the working environment in the industry and learned how to work as a team. I also developed many skills through working on the project assigned to me like understanding GitHub and back-end architecture of a web application.

**Academic courses relevant to the project:** None as I am a student of MSc Mathematics and my BE degree has not started yet.

**Learning Outcome:**

- 1 Proficiency in Git Version Control
- 2 Understanding GitHub for Code Collaboration
- 3 Mastery of Node.js
- 4 Expertise in Express.js framework
- 5 API handling and Integration
- 6 PostgreSQL and Database Management
- 7 Collaboration and Teamwork
- 8 Problem-solving and Troubleshooting

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**PS-I station: VoiceQube , Bengaluru**

**Student**

**Name:** ABHIJEET PRATAP SINGH .(2021B5A72573P)

**Student Write-up:**

**PS-I Project Title:** Dailybee: Super Catalog + QR Shop and WhatsApp Bot for Stores

**Short Summary of work done:** During my internship, I had the opportunity to work on two exciting projects: "Super Catalog" and "WhatsApp Bots." In the "Super Catalog" project, my main focus was to simplify the process of onboarding stores and managing their product catalogs. I conducted data gathering and utilized web scraping techniques to collect store information from sources like Google Maps and popular listing platforms. Next, I meticulously created a comprehensive product catalog structure, ensuring a flat category hierarchy for easy navigation and organization. To validate and manage the

store and product data efficiently, I loaded the master catalog into MongoDB. The integration of the digitized store inventory with the DailyBee SOA mobile application was a crucial step in optimizing the overall customer experience. In the "WhatsApp Bots" project, my objective was to develop conversational bots on the WhatsApp platform to enhance customer engagement. I familiarized myself with AI-Sensy and Dialogflow to leverage their capabilities in natural language understanding and chatbot development. Brainstorming sessions allowed us to identify key conversation topics that store owners and customers would find valuable. Using this input, I designed meaningful conversations and implemented various functionalities, including product availability, store status updates, order retrieval, complaint handling, and exploring offers and discounts.

**Objectives of the project:** The objective of the projects was to transform the retail industry through technology. "Super Catalog" aimed to simplify onboarding and manage product catalogs effectively. "WhatsApp Bots" sought to enhance customer engagement by developing personalized conversational bots on the WhatsApp platform.

**Tool used:** Throughout the projects, I utilized a range of development tools, including software, Python served as the primary programming language for web scraping and chatbot development. Dialogflow and AI-Sensy were instrumental in designing and implementing the c

**Details of Papers/patents:** NA

**Brief description of the working environment:** During my PS-I internship, I had the opportunity to work in a dynamic and collaborative working environment. The company provided a supportive atmosphere, encouraging innovation and creativity. As an intern, I was welcomed into a team of experienced professionals who mentored and guided me throughout the projects.

The company had clear expectations from interns, focusing on delivering impactful solutions while fostering a culture of continuous learning. I was entrusted with responsibilities that challenged me to apply my skills and learn new technologies, contributing to real-world projects. Deadlines were emphasized, instilling a sense of time management and professionalism.

During PS-I, I acquired valuable technical skills and hands-on experience. I learned to gather data through web scraping, utilized Python for various tasks, and worked with MongoDB for efficient data management. Developing chatbots using Dialogflow and AI-Sensy honed my understanding of natural language processing and user interactions.

Moreover, I enhanced my collaboration and communication skills by working closely with the team and project manager. Weekly progress meetings allowed for constructive feedback and kept everyone aligned with project goals. The company's emphasis on adaptability and problem-solving enabled me to overcome challenges confidently.

Overall, PS-I provided an enriching learning experience, combining technical proficiency with professional growth. The company's supportive environment, challenging projects, and continuous learning opportunities allowed me to gain a well-rounded skill set, preparing me for future endeavors in the field of technology and beyond.

**Academic courses relevant to the project:** Database Management Systems, Mobile Application Development, Natural Language Processing, Artificial Intelligence, Web Development.

**Learning Outcome:** The major learning outcomes included mastering web scraping, mobile application testing, and chatbot development. Additionally, I acquired valuable skills in project management, collaboration, problem-solving, and customer focus. These projects provided insights into the transformative power of technology in retail and strengthened my technical and professional competencies.

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**PS-I station: YK Innosoft Technologies Pvt. Ltd. , Hyderabad**

## **Student**

**Name:** SHAH PREET JIGNESH(2021A7PS2727G)

### **Student Write-up:**

**PS-I Project Title:** Rest API's using springboot framework

**Short Summary of work done:** I started with learning on basics of Springboot, Applied Springboot framework and used Spring Security to make a login page where different authentication is provided to different type of user roles and connected it to MySQL database where the login id and password of the user and user roles is present

**Objectives of the project:** Making a rest API

**Tool used:** Springboot, MySQL, REST API

**Details of Papers/patents:** None

**Brief description of the working environment:** The company management was a little bit of unprofessional as the meet from the mentor side was very irregular, the project description of the company kept changing , the learning from the company was okaish, overall the learning from my PS-1 was very less than what you would expect

**Academic courses relevant to the project:** OOPS

**Learning Outcome:** Learnt how to use springboot, implement spring security, connect MySQL database to

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**PS-I station: YK Innosoft Technologies Pvt. Ltd. , Hyderabad**

**Student**

**Name:** ARYAN SALUJA .(2021A7PS2947H)

**Student Write-up:**

**PS-I Project Title:** Microservices based application using Java Spring Boot

**Short Summary of work done: -**

**Objectives of the project:** To microservices based applications with rest api integration and database support.

**Tool used:** Java , Spring Tool Suite , MariaDB , PostgreSQL , Oracle SQL , Spring Boot

**Details of Papers/patents: -**

**Brief description of the working environment: -**

**Academic courses relevant to the project:** Database systems , Object Oriented Programming

**Learning Outcome: -**

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## PS-I station: YK Innosoft Technologies Pvt. Ltd. , Hyderabad

### Student

Name: SRIYA GUDIPATI .(2021B4A73151H)

#### Student Write-up:

**PS-I Project Title:** Fraud Detection and Enhanced Monitoring using Kafka and Spark streams

**Short Summary of work done:** We first understood how to use Kafka, then built a complete flow with Java API for fraud detection. We also implemented some ML algorithms on sample data.

**Objectives of the project:** To implement a complete flow for fraud detection in a banking application using Kafka Streams and AI/ML modules.

**Tool used:** Kafka, Java, Python

**Details of Papers/patents: -**

**Brief description of the working environment:** Ours was an online PS, with a g-meet once a week. We were given the topics to learn about and the tasks to finish by next week in each meeting. Expected more guidance , but it was overall an OK experience

**Academic courses relevant to the project:** BITS F464 Machine Learning

**Learning Outcome:** How to build an API for an application.

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