



**Birla Institute of Technology & Science, Pili**  
Pili | Dubai | Goa | Hyderabad  
Practice School Division

# CHRONICLES

Healthcare and Others



**PRACTICE SCHOOL - I**  
**SUMMER - 2021**

## **From the Desk of the Editor**

It is my great pleasure to bring forth the 3<sup>rd</sup> edition of the PS-I Chronicles. This edition features over 1800 articles from PS-I students sharing their experiences during summer 2021.

The basic premise behind the release of PS-I Chronicles is to document the PS-I learning experience of students keeping the below objectives in view.

- To provide more information on the learning experiences by immediate senior students and PS-I faculty about stations, and thereby enlightening the learning opportunity among the student community.
- To provide the faculty with enhanced information about the type and nature of work carried out at the organization.
- To transform the knowledge gained at the organization into class room teaching and also to identify the scope of deepening the collaborations with organization.

The articles have been classified into five categories based on the industry domain.

- Chronicle 1: Information Technology
- Chronicle 2: Electronics
- Chronicle 3: Chemical, Mechanical, Cement, Textile, Steel, Infrastructure
- Chronicle 4; Health Care and other
- Chronicle 5: Finance and Management

I would like to thank students for sharing their experiences during their stint at the organization. I would also like to thank Prof. Arun Maity and Prof. M. K. Hamirwasia for reviewing the articles and providing us the feedback. I would also like to extend my thanks to Mr. Om Prakash Singh Shekhawat, Prof. S Murugesan, Prof. G Muthukumar and Mr. Varun Singh of the Practice School Division, of BITS, Pilani – Pilani Campus for their help in bringing out this edition of PS-I Chronicles.

I would be happy to receive any feedback regarding the Chronicles. Please feel free to email me at [psd@pilani.bits-pilani.ac.in](mailto:psd@pilani.bits-pilani.ac.in) or at [anil.gaikwad@pilani.bits-pilani.ac.in](mailto:anil.gaikwad@pilani.bits-pilani.ac.in).

Anil Gaikwad

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## Domain: Health Care and Others

### PS-I station: Aizant Global Analytics- Software Development, Hyderabad

#### Student

Name: MOKSHA AGARWAL (2019A7PS0106P)

#### Student write-up

**Short summary of work done:** We were given the task of designing a recruitment management module that was going to be used by Aizant Global Analytics for the recruitment of talented employees at Aizant. This software was supposed to streamline the process of recruitment and was designed to be as efficient as possible therefore we coded our project with adding the suitable and relevant functionalities.

**PS-I experience:** My PS-1 experience was quite satisfactory and we had regular meetings with people at Aizant where we discussed our project updates and we received feedback from them and instructed on how to move further on our application so that we had a steady progress. Due to the regular feedback system and our hard work we were able to complete our project objectives sufficiently and adequately.

**Learning outcome:** I got to work on my communication and presentation skills. I learnt how to work as a team and how an organisation's personnel works. I of course learnt how to design and code a full fledged application which was really exciting for me.

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Name: PULKIT CHAUHAN (2019A7PS0500G)

#### Student write-up

**Short summary of work done:** In this project, we have worked on automating the process of chromatic acceptance criteria. This has involved the analysis of the numerical

data provided to build a linear regression model using Area Ratio as IV and Analyte Conc. as DV, as well as the automation of acceptance procedures of various peaks. As this whole process currently uses a considerable workforce doing the work manually, our project would save the company valuable time and money.

**PS-I experience:** The PS-I experience has been extremely fruitful. I've enjoyed working under my mentor, an industry expert in the field of Data Analytics and Machine Learning, and have gained tremendous experience from my first stint in the corporate world.

**Learning outcome:** Through the course of this project, my learning outcomes have been the following:

1. Basics of Python and Flask for Web Development
2. Knowledge of various regression models and their suitability to different datasets
3. Training and testing of a regression model with Python
4. Knowledge of the process of drug approval in the pharmaceutical industry

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## PS-I station: APS Lifetech, Pune

### Student

Name: **SAMBHAVÂ JAIN (2019B1A10192P)**

### Student write-up

**Short summary of work done:** Next-Generation analysis of Dengue, Malaria and Chikungunya.

Researching in the field of NGS and using it for developing Rapid Testing kits for Dengue, Malaria and Chikungunya.

**PS-I experience:** Work involved following the course content from textbooks to real world applications by developing a library of Genomic Targets in Rapid Test and PCR-based diagnostic kits.

This was followed by developing the workflow for using modern diagnostic tools like PCR for early identification of mutations in rapidly mutating species like *P. falciparum* from collaborating with hospitals. The work was research oriented and will help the organisation in developing newer diagnostic kits.

**Learning outcome:** Developing a library of Genomic Targets, primers and probes involved in Rapid Test and PCR-based diagnostic kits.

The exact configuration including the positive, negative controls, buffers and designing the Rapid Test kits.

Identification and cause of Mutations in *P. falciparum* and setting the framework for collaborative work towards identifying mutations between research labs and hospitals.

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**Name:** GAURAV MASAND (2019B1A40899P)

### **Student write-up**

**Short summary of work done:** I analysed the use of nanoparticles in biology and medicine. Looked at the gold nanoparticle's properties and characteristics that make gold nanoparticles useful and the use of gold nanoparticles in virus detection. Specifically looked at the preparation of gold nanoparticles for rapid kits for influenza virus. Synthesis, characterisation of gold nanoparticles and scFv7 antibodies and the binding procedure to make the nanoprobe.

**PS-I experience:** I got some experience of working in the industry and learnt a lot from my mentor and instructor.

**Learning Outcome:** I learnt how to do extensive research on a topic and finally present the work done in systematic manner.

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**Name:** NALLAMALLI NEHA (2019B1A41038P)

### **Student write-up**

**Short summary of work done:** Project domains were allotted in the first week and we reviewed the topic. The domain assigned to me was Herbal Nutraceuticals, and through the process, I learnt a lot about the industry.



Project title: Production of therapeutic plant metabolites through recombination. Five compounds of therapeutic value from plants were selected and their properties were studied so as to classify them as nutraceuticals. Then we went over the isolation of genes and genome from the plants. Isolation of the genome is a common process done through DNA extraction and sequencing. Identification of genes responsible for the product were researched and reviewed, the sequences already on gene databases like NCBI. We further reviewed the recombination process, how to choose suitable plasmid vectors and hosts for the production of the desired gene products. Finally, we learnt how to check for the production of products through analytical techniques.

**PS-I experience:** The station was very flexible and supportive with regards to the domains that we wanted to work on, and it was my first exposure to the biotech industry. The mentor was supportive as well, it was great to learn so much about recombination techniques.

**Learning Outcome:** I learnt a lot about the nutrition and nutraceuticals industry as well as the real life details of what goes into the process of DNA recombination to produce desired gene products.

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**PS-I station: CSIR-Institute of Genomics & Integrative Biology (IGIB), New Delhi**

**Student**

**Name: ANIKET JAIN (2019A7PS0037P)**

**Student write-up**

**Short summary of work done:** The objective of this project was to predict the values of Average  $\Delta\Delta G$  values of a mutation given a certain set of features. This can help in detecting which mutations may become more prevalent in future strains. The model is based only on the position and change currently, and the results are in the expected range. It should be noted that this is just preliminary work, and the project is still ongoing.

**PS-I experience:** It was a great experience.

**Learning Outcome:** I learnt a little bit of everything.

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**Name:** SHIKHA GANAPATI BHAT (2019A7PS0063G)

### **Student write-up**

**Short summary of work done:** At CSIR IGIB, I worked on a manuscript with another student under the supervision of our mentor, Dr. Rajesh Pandey. We were given a dataset of COVID-19 affected hospital patients and were asked to perform clinical data analysis on the same. Using data visualization and data analysis techniques in Python, we found some patterns in the data and found features with a good predictive value for the outcome. After data preprocessing and identifying useful features, we implemented 5 machine learning models using nested cross-validation and compared their performances. We then worked on writing a good manuscript - methodology, results and visualizations.

**PS-I experience:** It was a great experience, as I got to learn a lot. I was a complete beginner in Machine Learning and chose this station expecting to learn more about it and use it for healthcare applications. In the initial stages, it was more about getting to know about the organization and understanding how clinical research works through studying other research papers. We were then given a project idea that aligned with our area of interest. We were given sufficient time to learn and come up with our own take on how to proceed with the project. I read articles online and took a few courses to understand how to go about doing the work. I applied what I had learned to the given dataset. We met with our industry mentor almost weekly and talked about our progress and presented our findings to him. After satisfactory progress with data analysis, we started with a draft of the manuscript and through this got to learn about how to write a research paper. There were regular meetings with our PS1 faculty mentor as well, where we updated him about our progress and reached out if we were facing any problems. We also had two group discussions in which we talked about relevant problems and opportunities in the healthcare and data science industry.

**Learning outcome:** Through PS1, I learnt about data analysis and visualization, machine learning, research and soft skills. I read articles online and took two courses on Coursera - Machine Learning by Andrew NG and Data Analysis using Python by IBM. For data analysis and visualization, I worked with Python libraries like Pandas, SciPy, NumPy, Seaborn, Matplotlib and Plotly. We learnt how to implement nested cross-validation with 5 machine learning models - Logistic Regression, Support Vector Machines, XGBoost, Multi-Layer Perception and Random Forest using Scikit-Learn

library in Python. We were introduced to how clinical research works through the manuscript. The group discussions and presentations enhanced our soft skills. A note here, it is completely up to you how much you learn and make of your experience, based on your willingness to work and show interest in the project given by your mentor.

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**Name: ANURADHA PANDEY (2019A7PS0265H)**

### **Student write-up**

**Short summary of work done:** I worked on a live project, which was to predict the severity of COVID-19 on hospital patients. There were more than 50 features that need to be analysed and some of them were to be selected to make the final prediction. The dataset consisted of patient details and these parameters, along with the outcome - "mild" and "severe".

**PS-I experience:** I had a productive time at IGIB. This was my first time working on a real dataset, and it was challenging to clean the data, analyse the data, with no certainty of achieving results. The major reason I chose this station is because the projects that they had listed involved applications of machine learning in Biology. There were also projects on genome sequencing and drug related projects, which were more biology oriented. Overall, the projects were centric to biology and depending on the end-goal, other tech-stack was involved.

**Learning outcome:** Since I was familiar with Machine Learning, it wasn't very challenging for me. I learnt a lot about biology though (it is easier and more fun than BIO-F111, and not complex Biology). It gave me good exposure to research, and it was a prestigious opportunity to work with scientists. Apart from our project, our mentor also taught us about challenges involved in executing any research and writing a manuscript. They're helpful and sweet, you can always approach them with problems in your project or further tips / advises.

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Name: CHITWAN AGARWAL (2019B1A30623P)

## Student write-up

**Short summary of work done:** My project was based on Machine Learning and to be specific NLP (Natural Language Processing) which was to develop a text analytics package in R programming language. In this project, we were supposed to develop a text analytics package which could analyze the research articles downloaded from a specific website (for example, medrxiv website) and then create a dataframe out of it, so that the user can extract specific elements like author name, doi link, journal title and abstract from the citations of that article as per the requirements of the user. Further, we pre-processed the data for using some of the amazing data visualization techniques due to which we were successfully able to create a wordcloud, bar plot, pie chart and dot line graph for our dataset. Moreover, we used some of the NLP techniques for analyzing the text further like topic modelling which creates vertical bar graphs showing the probability in the form of beta of each word being related to a specific type of topic, thus making it more comprehensible for the user to analyze which topic is related to which particular type of concept. In addition to this, we were also able to create text networks including some of the 3D text networks which depicted the word correlation among various type of words accurately and precisely in the form of graphical networks. At the end, I was able to create a text analyzer package which we even uploaded on Github, and made it open source, to make it publicly available for all.

**PS-I experience:** My PS-1 experience was great. The project was challenging and engaging enough to keep my interest till the end and even to add some of the new things to the project which we weren't asked, like including topic modelling concept and graphical networks as a part of NLP. Since, we were able to complete the project and upload it on Github also, it feels great and I feel happy as anyone can use our package now.

**Learning outcome:** I learnt R programming in a very great depth. I even learnt the basics of ML, NLP as well as data pre-processing, text cleaning and scraping to create a dataframe as well as word matrix, all from scratch. I even learnt and implemented some of the amazing data visualization techniques in NLP like creating different types of graphical text networks, making dendrograms and using topic modelling for better analysis of the data visually.

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Name: ANTARA ARVIND (2019B1PS0788H)

## Student write-up

**Short summary of work done:** The work involved the curation of variants of the JAG1 gene, for the investigation of Alagille syndrome, a hepatic (and largely multi-system) disorder). I collected variants from 3 sources- ClinVar and LOVD being variant databases; and the bulk of the work was extracting variant descriptions from literature in PubMed. After collection, validation of the variants was done according to the international standard nomenclature, along with gathering several parameters of the patients / patient cohorts in whom the variants were found. This was done using an online tool called Variant validator, along with some other tools to handle the difficult-to-resolve variants. The work I did was part of ongoing project at the institute, and the data gathered would be further analyzed as a part of that project.

**PS-I experience:** The experience of PS-1 was overall positive. The institution mentors were helpful. The work involved less research and experimentation, however this was due to the online nature of the program.

**Learning Outcome:** I learnt to use several important databases and tools, and got a look into the current research occurring at the lab.

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**Name:** [JYOTISHMAN KASHYAP \(2019B2A70911G\)](#)

## Student write-up

**Short summary of work done:** In my PS1, I worked on a group project where we developed a web-based platform for the treatment of a rare genetic skin disease known as Epidermolysis Bullosa. The web-based tool can take input from the user for 19 different clinical features and will provide the correct diagnosis of the disease. The website will generate a report for the diagnosis, which can be downloaded by user of the website. The front-end of the web-based tool was made by using ReactJs and the backend using Python Flask.

**PS-I experience:** The overall experience of PS-1 was good, I was able to learn various technologies related to web development, and at the end of 7 weeks of the internship successfully created and deployed a website. Our industry mentor, as well as BITS

faculty, were very helpful who guided us throughout the duration of our internship program.

**Learning outcome:** Learnt about various languages used for website, front-end, and back-end development. Improved my communication and time management skills. Learnt to work in a team, collaborating with everyone, and support each and every individual involved in the team.

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**Name:** ANIRUDDH BAKSHI (2019B2A70912P)

### **Student write-up**

**Short summary of work done:** My project involved extracting information from biological data of LIR containing proteins. This involved using variety of cancer databases to map mutations in the binding motifs of the LC3 proteins involved in autophagy and then calculating conservation scores to see which portions remained unchanged across species of organisms. Alongside this, I was also working on understanding the evolution of the binding motifs through humans by mapping mutations as a function of time.

**PS-I experience:** My industry mentor and PS instructor were both understanding and very helpful. I had reached out to one of the Ph. D students at IGIB to clear my doubts and understand the concepts clearly. As my project was individual, at times I found it difficult to stay motivated and meet deadlines. But I never felt a lack of support from my peers and mentors.

**Learning outcome:** I learnt how to use molecular visualisation softwares like Chimera and PyMol. I also learnt about various advancements in the fields of bioinformatics.

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**Name:** M. ASHWIN (2019B2A70957P)

## Student write-up

**Short summary of work done:** My work involved predicting interaction specificity of Autophagy adaptor and receptor proteins. To this end, a data driven approach was adopted, with the goal of training an end to end machine learning framework to make the predictions. The dataset for training the model was curated by extensive literature mining and auxiliary features were also extracted from databases such as BioGrid and STRING.

**PS-I experience:** Excellent, my mentor from IGIB was very supportive and gave me a great exposure to research.

**Learning outcome:** Coming into the project with no background was a challenge, but I enjoyed overcoming it. I learnt a lot about autophagy and computational biology by reading literature and interacting with my mentor.

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**Name:** APARAJITA GUHA (2019B2A70989G)

## Student write-up

**Short summary of work done:** My work was on sentiment analysis of COVID-19 vaccine-related information discussed on Twitter, mostly talks about the side-effects of vaccines (proved or unproved) and the resulting spread in vaccine hesitancy. The relevant fields are NLP and Machine Learning.

**PS-I experience:** I enjoyed the research-oriented nature of my work. I got to know the work of reputed scientists fighting at the frontline of this pandemic. The mentors are knowledgeable and provided ample scope for learning things on our own.

**Learning outcome:** The PS-I work helped me solidify my plans to study NLP / ML further in the future. My understanding of Python and R are better after working on the project.

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Name: HRITHIK RAJ GUPTA (2019B2A70995P)

### Student write-up

**Short summary of work done:** The project aimed to use Artificial Intelligence and Machine Learning to predict disease outbreaks based on various parameters such as temperature, rainfall, humidity. To train such a model, we needed data related to these parameters. So, I had to find and organize data using trusted data sources such as IDSP for disease outbreaks and OpenWeatherMap, visual crossing, NCMRWF RDF for historical weather data and organize it into a usable format.

**PS-I experience:** My PS experience was good, as good as it can be for an Online PS.

**Learning outcome:** I learnt about data analysis and different data formats such as NetCDF and learnt Python libraries such as NumPy, Pandas and Matplotlib.

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Name: ADITHA VENKATA SANTOSH ASHISH (2019B2A71435H)

### Student write-up

**Short summary of work done:** We were given an excel based tool and had to develop a website related to the same VBA tool. The tech stack of the website was totally upon us, we made a website using ReactJs as a front end, Flask as a backend and SQLite as a database. We had online meeting with our mentor where he gave feedback on our work and gave us further directions. We made two versions and the first website will be deployed on their server.

**PS-I experience:** It was a decent experience. Even though, our work was completely remote, we got a glimpse of how industry works, how do they communicate and work as a team to complete a given task.

**Learning Outcome:** Flask, Basics of Pandas, Basics of SQL.



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## PS-I station: Dr. Reddy-Chemical, Hyderabad

### Student

Name: RHEA RANJAN KOTIAN (2019A1PS0633G)

#### Student write-up

**Short summary of work done:** Did some research work regarding the errors in HPLC and GC.

**PS-I experience:** Pleasant, not very hectic.

**Learning Outcome:** Learnt a lot about my topic along with experiencing a work environment.

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Name: MANAN BHARDWAJ (2019A1PS0654G)

#### Student write-up

**Short summary of work done:** To apply and attempt to improvise the unit operation: Crystallization, involved in the manufacturing of an Active Pharmaceutical Ingredient (Dutasteride) to treat Benign Prostatic Hyperplasia.

**PS-I experience:** A spectacular opportunity to apply the concepts of unit operations (crystallization in my case) in a large scale pharmaceutical industrial process.

**Learning outcome:** Foundational understanding of Pharmacokinetics of orally administered drugs and experiential as well as applicative learning involved in the manufacturing of Dutasteride.

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**Name: AYESHA AHMAD (2019A1PS0836P)**

### **Student write-up**

**Short summary of work done:** Developed learning modules on 'Fundamentals of OSDs and Functional Variants', 'Functional Role of key Excipients used in OSDs' and 'In-Process Testing at various stages of tablet manufacturing' for the shop floor workers.

**PS-I experience:** Good

**Learning outcome:** Improvement in communication and presentation skills, knowledge of the global and Indian Pharmaceutical Industry.

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**Name: AADARSH DHOOT (2019A1PS0900P)**

### **Student write-up**

**Short summary of work done:** Part1: I organized a full week induction program of the organization by blocking the calendars of the speaker and setting the context of each session. After attending the whole program, I suggested ways of improving the induction program and added some new design elements to it.

Part2: I did a research on product portfolio of Dr.Reddy's and gave an overview of two of its brands on the following aspects:-

1. Brief history of the product
2. Manufacturing process overview (from powder to pill)
3. Current and future therapeutic uses of products
4. Revenue earnings and forecasts

**PS-I experience:** Though my project was not relevant to chemical engineering but overall it was quite a good experience. I talked with several people of the organization and learnt how the business works. My mentor was quite supporting and helped me with all the problems in which I was stuck. This was also my 1st time working in a flat hierarchy system where we have to address everyone with their first name irrespective of position or age.

**Learning outcome:** Improved my communication skills, learnt how to do product portfolio analysis and got an overall overview of pharmaceutical industry.

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## **PS-I station: Dr. Reddy-Pharmaceutical, Hyderabad**

### **Student**

**Name:** SHREEYA PAWAN SHAH (2019A5PS1061P)

### **Student write-up**

**Short summary of work done:** The project allotted was sterile manufacturing process and the role of steriliser, it gave me a broad view and clarity on exactly how an injectable is manufactured and how an industry works for the same. The importance of maintaining the manufacturing environment sterile, the importance of cleanrooms and the importance of having trained personnel for each step. The process of steam sterilisation, the equipment used in steam sterilisation is steriliser (Autoclave). The mechanism of working of a steriliser, its structure, the risks and hazards involved along with safety measures that need to be undertaken for its proper working. I got to know about the importance of steam sterilisation, which is used very frequently used in a variety of fields from tattoo parlours to pharmaceutical industries and hospitals.

**PS-I experience:** Overall, it was good experience, apart from the project we were allowed to attend other webinars as well which included topics like resume building and other pharmacy related topics. Being in contact with mentor and faculty mentor through out the project, helped me to improve my soft skills.

**Learning outcome:** I understood the importance of teamwork and coordination. I gained communication and presentation skills.

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**Name: MUGDHA MITTAL (2019A5PS1177H)**

### **Student write-up**

**Short summary of work done:** Our project area focused on comprehensive study on pharmacy manufacturing units, fundamentals of OSD formulation, tablet defects: Causes & remedies, selection of excipients and their functional properties, in-process testing at different stages of pharmaceutical drugs manufacturing. We learnt about organization policies, FDA guidelines, GMP (Good manufacturing practices) regulations.

**PS-I experience:** It was highly informative and fruitful learning experience. We got overview of industry and how it would feel to work at a pharmaceutical company.

**Learning Outcome:**

1. Learnt about Dr. Reddy's working across the globe as a Pharmaceutical Industry
2. Appreciating and understanding the role of company in its domain
3. Developed taste for reading, understanding research articles and sorting useful information, documenting on MS word and developed soft skills.

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**Name: SHAIKH INJILA SHAKEEL AHMED (2019A5PS1179H)**

### **Student write-up**

**Short summary of work done:** The project is about sterile manufacturing of injectables and the role of isolators. It helps in understanding the flow of sterile manufacturing process starting with raw material and how it is furnished into a sterile injectable. Importance of sterility at each step and maintaining aseptic condition to avoid any possible contamination. Cleanrooms provide a sterile environment which is extremely necessary for parenteral preparation, application of isolator technology in manufacturing which provides a containment system. They are designed to meet two main requirements, containment and product transfer. This project includes the role of isolators in detail along

with its validation and precautions to be taken for an effective sterile manufacturing of injectables.

**PS-I experience:** It was great working closely with Dr. Reddy's, I learnt how to present ideas, how sophisticated work flow are sterilized and importance of isolators with the help of PS mentor and industry mentor it was made easy.

**Learning outcome:** I learnt WFI (water for injection) in detail, cleanroom classification according to schedule M, and process for sterile manufacturing of injectables.

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## **PS-I station: Praveen Laboratories Pvt. Ltd., Surat**

### **Student**

**Name:** K. STHAPATYA SAKETH (2018B2A20796P)

### **Student write-up**

**Short summary of work done:** It is basically a literature review of five molecules Tiagabine, Ebastine, Melatonin, Acrivastine and Betaxolol on the basis of their analytical testing methods, preparation of their intermediates and starting materials, process of preparation of the molecules, polymorphic and crystalline forms and the stereochemistry of the molecules given to us and studying the related journals and reference papers along with patents in connection to the above molecules and summarizing the crux points of the literature collected and storing this information in an excel sheet along with its journal number or patent number, title of the paper or journal, its route of synthesis and the summary of those papers in the format provided by Praveen Laboratories.

**PS-I experience:** Enjoyed the work I did in Praveen Laboratories under the guidance of Murugesan sir who was very helpful and encouraging and learnt a lot about the way the processes take place in the industry level and how they operate the machines and work environment. Though what we did was a literature review of the molecules but it helped a lot to create an opinion and perspective on industrial work and knowledge of the process and APIs that take place. Station mentors Rahul sir and PS1 faculty Murugesan sir helped a lot to attain such knowledge on the topic and made possible for me to complete the work with ease.

**Learning outcome:** Learnt about APIs and the process used to prepare and detect those intermediates.

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**Name:** ANIKET RAVINDRA KULKARNI (2019A5PS1092P)

### **Student write-up**

**Short summary of work done:** The assigned project involved search for various basic parameters of drugs: Analytical methods for the analysis of drugs, synthetic process of starting materials of the drugs, synthesis of intermediates of the drugs, process of manufacturing the drug, polymorphs of the drug, patents filed via references available in different journals / articles and references found from Sci-finder software, other research papers and sources; for five antidiabetic drugs.

**PS-I experience:** I had very good experience with Praveen Laboratories. It was very engaging to work in a research oriented manner, to find out references and read lots of research papers, and finally summarize the information. I have always been inclined towards research, and PS-1 provided me the perfect experience to tune my skills even more. The organization mentor was extremely approachable and helped me with lot of things.

**Learning outcome:** I learnt quite a lot about synthetic and analytical chemistry of various antidiabetic drugs, and also learnt to use scifinder and chemdraw. Overall, I learnt to develop my research skills further.

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**Name:** ANANYA BOSE (2019A5PS1199H)

### **Student write-up**

**Short summary of work done:** The project aimed to search for the references found in patents / journals based on the monograph parameters like analytical methods, synthetic

methods, etc. for the five allotted drug molecules. Further, these were summarized and compiled for easy comprehension.

**PS-I experience:** It was new learning experience. Both the faculty and the industry mentor guided us throughout the PS-1 program.

**Learning outcome:** Learnt to search and read through patents / journals, to understand the chemistry involved and their pharmacological effects. Also, got improved upon the technical skills used in this project.

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**Name:** [YOEVANSH SINGH \(2019B2A11016P\)](#)

#### **Student write-up**

**Short summary of work done:** We had to collect information about 5 drugs provided to us by the officials.

**PS-I experience:** It was a nice experience overall and lot of support and doubt clearing was provided by the mentors.

**Learning outcome:** Got to know a lot about industry experience.

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**Name:** [DAMLE YASH RAJENDRA \(2019B2A40897G\)](#)

#### **Student write-up**

**Short summary of work done:** This was an interesting project which involved research on APIs.

**PS-I experience:** Excellent

**Learning outcome:** Presentations and GDs sharpened my soft skills. Got introduced to the world of APIs.

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**Name:** ASHWIN V. VENKATESH (2019B2A40912G)

### **Student write-up**

**Short summary of work done:** In the project given to us, we were assigned certain drug molecules and had to do a thorough literature review on them regarding certain parameters and properties. We had to look up information, published research and patents regarding their synthesis, the structure and polymorphs of the molecules, their analysis, different materials and intermediates associated with the synthesis.

**PS-I experience:** This experience was very new to me and helped improve my knowledge and skills in various aspects. We were to keep in touch with our PS faculty as well as our Industry mentor regarding the progress of our project, any doubts and queries which we had and also on what improvements could be made on the same. Although, our projects were individual, we were able to learn a lot from our peers through the Group Discussions, presentation sessions, and were able to improve upon our own reports and presentations through the same. We were able to analyze and associate drug molecules with each other, due to similar structures, functional groups and intended usage. Cross references was enabled by such analysis, thus improving our knowledge on the subject holistically. Our presentations and submissions were conducted in a timely manner, thus giving us enough time in between to not compromise on the quality of any of our submissions, and also to maintain promptness and punctuality.

**Learning outcome:** Communication skills, teamwork in group discussions, presentation skills and the ability to listen were some simple yet highly important skills that I obtained. The skill to be able to extract valuable information from highly complex and advanced research articles and patents is another skill which I am very thankful for learning, as they will be very much useful in the future.

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## PS-I station: Yashoda Hospitals - Medical Inclusion in Pain Department, Hyderabad

### Student

Name: SNIGDHA MISHRA (2019A5PS1086P)

#### Student write-up

**Short summary of work done:** My project was related to field of orthopedics. To design a device (a biplanar scale) to be used intra op in a hip replacement surgery to determine vertical offset (limb lengthening) and horizontal offset intra op.

**PS-I experience:** I gained knowledge about anatomy of hip joint, basic scales and different bio implants used to make the device. With the help of my team and my mentor, it was very easy to understand all the medical terms and about various basic design of scale.

**Learning outcome:** Team work, first time experience of professional world, brushed up my critical thinking skills, punctuality and professionalism. I improved my communication skills.

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Name: PALLIKA KHOSLA (2019A5PS1093P)

#### Student write-up

**Short summary of work done:** My project was related to field of orthopedics. To design a device, (a biplanar scale) to be used Intra op in a hip replacement surgery to determine vertical offset (limb lengthening) and horizontal offset Intra op.

**PS-I experience:** I gained knowledge about anatomy of hip joint, basic scales and different bio implants used to make the device. With the help of my team and my mentor,

it was very easy to understand all the medical terms and about various the basic design of the scale.

**Learning outcome:** Team work, first time experience of professional world, brushed up my critical thinking skills, punctuality and professionalism. I improved my communication skills.

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**Name:** CHANDNI RATHORE (2019A5PS1095P)

### **Student write-up**

**Short summary of work done:** My PS1 project was under Dr. Nithin of the Orthopaedic and sports medicine department of Yashoda Hospitals. My team members and I mainly analysed the sports nutrition awareness among amateur and professional sportspeople in India by conducting a survey. The survey gauged the respondents knowledge in various aspects of sports nutrition like the relation between hydration and performance, nutrition required for specific sports, meal timing and food intake, and the need to use dietary supplements. From the 300 responses obtained, we concluded that there needs to be increasing awareness among both amateur and professional sportspeople about appropriate sports nutrition. We then proposed solutions like app development to increase awareness regarding the same.

**PS-I experience:** The learning curve in PS-I was huge. It taught me to set suitable achievable plans on a regular basis and achieved it. On the first day of orientation, I was given an overview of each expertise offered by Yashoda hospitals, as well as opportunities to interact with doctors and gain a basic understanding of how an organisation works and is managed. Yashoda Hospital is attempting to bridge the gap between medicine and technology, which necessitates collaboration in order to develop technical solutions that aid in the development of one's health, particularly in light of the ongoing pandemic. My mentor was excellent, and she kept an eye on us virtually every day, during our assignment, as well as assisting my group and me as needed. Also, I met a lot of great people developing healthy contacts with them. There were numerous learning outcomes, and it aided in the development of my presentation and communication abilities. PS-I also assisted in the development of leadership qualities by making some wonderful acquaintances from all three campuses. I learnt a lot of in-depth thoughts about my project and was given time and tools to put it into action. It presented an understanding of the workplace settings that one might face once hired.

**Learning outcome:** I gained knowledge on different types of diet and learnt how to approach different amateur sports people at different levels politely and understood their awareness about sports nutrition by the survey. PS-I gave me a taste of research and its industrial applications. We got experience and learnt practical concepts to improve our studied theoretical concepts. I was able to correlate a lot of concepts we learnt in college to the processes carried out here and learnt how to approach different amateur sports people at different levels politely and understood their awareness about sports nutrition by the survey. I also technically got to know different ways to conduct the survey like zoom calls, google forms, creating polls, etc. along with strengthening interaction with the doctors and got engaged working with teammates with cooperation.

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**Name: DEEKSHITULA S. S. V. K. BHARADWAJ (2019A5PS1096P)**

### **Student write-up**

**Short summary of work done:** The project allotted to us during PS was to design a device that can be used to measure vertical and horizontal offsets intra OP during hip replacement surgery. During the course of the project, I learnt about various things. I read and understood the anatomy of the hip joint and the pelvis. I also read many articles that gave great insight regarding the developments in the field of hip bio-implants. I also understood the method of hip replacement surgery.

**PS-I experience:** PS-1 was a great experience. It gave me an exposure to the work atmosphere and how to approach professionals. I got a chance to interact with experienced doctors which helped me improve my communication skills. The group discussions held for evaluations improved my confidence to present myself in a group.

**Learning outcome:** 1) I learnt how to interact with professionals.  
2) I learnt how to present myself in a group and how to present the work done.

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**Name: SANDRA MARIA SAJAN (2019A5PS1160H)**

## **Student write-up**

**Short summary of work done:** My PS1 project was under Dr. Nithin of the Orthopaedic and sports medicine department of Yashoda Hospitals. My team members and I mainly analysed the sports nutrition awareness among amateur and professional sportspeople in India by conducting a survey. The survey gauged the respondents knowledge in various aspects of sports nutrition like the relation between hydration and performance, nutrition required for specific sports, meal timing and food intake, and the need to use dietary supplements. From the 300 responses obtained, we concluded that there needs to be increasing awareness among both amateur and professional sportspeople about appropriate sports nutrition. We then proposed solutions like app development to increase awareness regarding the same.

**PS-I experience:** The learning curve in PS-I was huge. It taught me to set suitable achievable plans regularly and achieve them. On the first day of orientation, I was given an overview of each expertise offered by Yashoda hospitals and opportunities to interact with doctors and gained basic understanding of how an organisation works and is managed. Yashoda Hospital is attempting to bridge the gap between medicine and technology, which necessitates collaboration to develop technical solutions that aid in developing one's health, particularly in light of the ongoing pandemic. My mentor was excellent, and she kept an eye on us virtually every day during our assignment and assisted my group and me as needed. Also, I met a lot of great people developing healthy contacts with them. There were numerous learning outcomes, and it aided in the development of my presentation and communication abilities. PS-I also assisted in the development of leadership qualities by making some wonderful acquaintances from all three campuses. I learnt a lot of in-depth thoughts about my project and was given time and tools to put it into action. It presented an understanding of the workplace settings that one might face once hired.

**Learning outcome:** I gained knowledge on different types of diet and learnt how to approach different amateur sportspeople at different levels politely, and understood their awareness about sports nutrition by the survey. PS-I gave me a taste of research and its industrial applications. We got experience and learnt practical concepts to improve our studied theoretical concepts. I was able to correlate many of the concepts we learnt in college to the processes carried out here and learnt how to approach different amateur sportspeople at different levels politely and understood their awareness about sports nutrition by the survey. I also technically got to know different ways to conduct the survey like zoom calls, google forms, creating polls, and strengthening interaction with the doctors and got engaged working with teammates with cooperation.

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Name: BAXI SHARADA ANIRUDH (2019A5PS1171H)

## Student write-up

**Short summary of work done:** My PS1 project was under Dr. Nithin of the Orthopedics and sports medicine department of Yashoda Hospitals. My team members and I mainly analyzed the sports nutrition awareness among amateur and professional sportspeople in India by conducting a survey. The survey gauged the respondents knowledge in various aspects of sports nutrition like the relation between hydration and performance, nutrition required for specific sports, meal timing and food intake, and the need to use dietary supplements. From the 300 responses obtained, we concluded that there needs to be increasing awareness among both amateur and professional sportspeople about appropriate sports nutrition. We then proposed solutions like app development to increase awareness regarding the same.

**PS-I experience:** The learning curve in PS-I was huge. It taught me to set suitable achievable plans on a regular basis and achieved it. On the first day of orientation, I was given an overview of each expertise offered by Yashoda hospitals, as well as opportunities to interact with doctors and gain a basic understanding of how an organization works and is managed. Yashoda Hospital is attempting to bridge the gap between medicine and technology, which necessitates collaboration in order to develop technical solutions that aid in the development of one's health, particularly in light of the ongoing pandemic. My mentor was excellent, and she kept an eye on us virtually every day, during our assignment, as well as assisting my group and me as needed. Also, I met a lot of great people developing healthy contacts with them. There were numerous learning outcomes, and it aided in the development of my presentation and communication abilities. PS-I also assisted in the development of leadership qualities by making some wonderful acquaintances from all three campuses. I learnt a lot of in-depth thoughts about my project and was given time and tools to put it into action. It presented an understanding of the workplace settings that one might face once hired.

**Learning outcome:** I gained knowledge on different types of diet and learnt how to approach different amateur sports people at different levels politely and understood their awareness about sports nutrition by the survey. PS-I gave me a taste of research and its industrial applications. We got experience and learnt practical concepts to improve our studied theoretical concepts. I was able to correlate lot of the concepts we learnt in college to the processes carried out here and learnt how to approach different amateur sports people at different levels politely and understood their awareness about sports nutrition by the survey. I also technically got to know different ways to conduct the survey like zoom calls, google forms, creating polls, etc. along with strengthening interaction with the doctors and got engaged working with teammates with cooperation.

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**Name: ESHA C. P. (2019A5PS1190H)**

### **Student write-up**

**Short summary of work done:** Prepared a software for the automation of in-patient pharmacy indent processing. It is meant for making it easier for the ward sister to issue an indent for medicines so that the turnaround time for the medication can be reduced.

**PS-I experience:** It was interesting.

**Learning outcome:** We had to learn MERN stack and GitHub for completing the work. Got a better understanding about the IP pharmacies in hospitals.

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**Name: J. HARISH (2019A5PS1197H)**

### **Student write-up**

**Short summary of work done:** The scope of work was explained to us at the commencement of the session. Dr. Vishnu Reddy, the Industry mentor explained the project profile which in our case related to the CSSD department. The requirement was to help PS1 station to develop software that would provide data of inventory position of various CSSD equipment and their physical location within the hospital. Our team consisted of 5 pharma students and 2 from CS and 2 from E & I background. We pharma students developed flow chart model that would enable CS students to code and develop required software. The required input relating to types of CS equipment's, the usage pattern, physical movements and the methods of sterilization process was explained in detail by the PS-1 industry mentor and his department heads in IT and sterilization. Various queries raised by us were promptly clarified by them. We pharma students drew various system and activity flow charts to adequately represent data flow as well as activity flow after discussion with IT Manager of PS 1 station. After completion, the same was reviewed by industry mentor. Thereafter, CS students took upon the work of software development and with the guidance of IT head of the PS 1 same was developed and presented before the industry mentor and faculty mentors which was found satisfactory by the PS-1 station.

**PS-I experience:** The subject matter of PS 1 since not directly related to pharmacy domain, we had to learn about the sterilization of equipment's, sterilization validation process and inventory management by way of discussion, reference to internet. Also, we learnt about the functioning of CSSD department and its crucial role within the hospital. We also learnt the flowchart techniques.

**Learning outcome:** Understanding the physical movement of surgical instruments through various stages and corresponding data movement among the various computer systems. Also, we understood systems involved in CSSD and information flow in CSSD. We got familiarized with program logic for coding and understanding webpage development techniques.

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**Name:** VEMURI SAI PHANINDRA (2019A5PS1198H)

### **Student write-up**

**Short summary of work done:** Reading through articles and collecting information. Designing a device using the information collected and with the help of mentor.

**PS-I experience:** I learnt various medical terminologies. Got to learn about Yashoda Hospital. Interaction with doctors improved my knowledge.

**Learning outcome:** Learnt how to design an instrument to be used intra OP.

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**PS-I station: Yashoda Hospitals - Surgery Rostering in Anaesthesia Department, Hyderabad**

**Student**

Name: DESHPANDE MRUNMAYEE VENKATESH (2019A5PS1094P)

### Student write-up

**Short summary of work done:** Pelvic floor dysfunction affects both males and females and is a relatively underdiagnosed problem in the country. While there are many treatment options and devices available, these are considerably expensive. It is seen that there is no single measurement tool that gives us full picture of PFM strength or function. Technological developments may provide the possibility of measuring PFM function during different forms of physical exertion. So we got to know about all types of devices available in market for measuring pelvic floor strength and treating different pelvic floor conditions. Also we learnt about their working and gave idea for new cost effective device development ideas.

Second project was polycystic ovarian syndrome. PCOS is one of the leading causes of menstrual dysfunction in women and is becoming a common hormonal problem for women between the ages 18 to 45 years. We studied causes, symptoms, treatment, complication and prevalence of PCOS.

**PS-I experience:** It was interesting to learn about these underdiagnosed problems and know about its treatments. Also got to know the importance of exercise for pelvic floor and its dysfunctions.

**Learning outcome:** I gained soft skills like teamwork, coordination, public speaking and presentation skills. I also learnt about very common but underdiagnosed pelvic floor related problems.

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Name: R. SRINIDHI (2019A5PS1161H)

### Student write-up

**Short summary of work done:** We were developing an app that could store the medical reports or files of organ transplanted patients and that could be accessed by the doctor from the backend. The journey of organ transplant patients starts way before the surgery and continues till after and they have to be monitored constantly by various doctors. Hence, a platform where the patients can share their reports online is of utmost importance.



**PS-I experience:** My PS experience was unique and different. I learnt a lot about app development, post-surgery care for organ transplants and about the station, Yashoda Hospitals and how they manage their patients data. I never expected to build a fully functional app by the end of these 2 months and also develop my communication skills in the process. I am happy to have played some role in improvement of patient care at Yashoda Hospitals through our app.

**Learning outcome:** I learnt so much about app development and the process that goes behind making an app that we use daily. I have gained a little insight into the working of Yashoda hospitals data storage system and the investigations needed for monitoring organ transplant patients. In addition to the industry exposure, I also learnt to communicate, interact and improve my confidence for the better. Overall, it was an all round learning.

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**Name: E. SRIPRIYA (2019A5PS1173H)**

### **Student write-up**

**Short summary of work done:** My project revolved around the anatomy and biomechanics of the foot and ankle and to find out if sports enthusiast have adequate knowledge regarding the same. The goal was to develop a prototype model fueled by GAIT analysis which is cost effective and has VO<sub>2</sub> max as an additional feature.

**PS-I experience:** An enriching learning experience. It helped me in understanding the functioning of a professional workplace.

**Learning outcome:** I got deep insight into the department of Kinesiology in the world of the Medicine. The assigned work demanded patience, dedication and meticulous effort.

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**Name: PARIKH ASMITA MANISH (2019A5PS1178H)**

## Student write-up

**Short summary of work done:** The project allotted to me was app development. Our work was to create an app where the organ transplant patients can upload their medical reports and files and the doctor can access it on the other side so that the patient does not have to carry many reports with him.

**PS-I experience:** Initially, we weren't very happy with the project since it doesn't lie in our pharma domain, but when we started working and learning coding and other skills required for the project, we started enjoying the work. Making an app from scratch till uploading it on playstore was an amazing journey. We explored something we didn't know we would ever do.

**Learning outcome:** I learnt how to communicate with peers, the mentors and the professors, how to be professional at a workplace, teamwork, division of labour, etc.

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**Name:** SAUMITRA PANDIT (2019A5PS1247H)

## Student write-up

**Short summary of work done:** The project involved the development of certain department in the hospital called "CSSD". (Central Sterile Supply Department). We had to develop a web page for the hospitals so that the human error could be reduced. The idea was to create an integrated system to reduce the amount of work done manually. It basically was for the sterile equipment's that are used in the surgery process. We learnt lot of things such as inventory management, sterilization processes, etc.

**PS-I experience:** The PS-1 was really good. It was good to connect with the industry experts who are actually working in their respective field. We understood the functionality of the Hospital, how and what all goes into working in the hospital behind the scenes while the patient is going for a surgery.

**Learning outcome:** Met lot of new people during the PS, few of them were from my batch. It was really good to know few people from other campuses as well. If the people were from different branches they had different ideas, approaches that could really be

helpful if you're doing a group project like we did at Yashoda Hospitals. It improves the coordination and we learnt how a team works on the bigger level i.e in the industry.

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**Name: RANJANI BALAKRISHNAN (2019A5PS1249H)**

### **Student write-up**

**Short summary of work done:** The aim of the project is to analyze and design a device which can help patients with pelvic floor dysfunctions at an affordable cost. The already existing methods are expensive and cost up to 3 lakhs and do not serve the dual purpose of relaxation and tightening of the pelvic floor muscles. We looked at existing strategies and had brain storming sessions to bring about practical ideas to help the patients.

**PS-I experience:** It was an enriching experience where there was a beautiful nexus between the doctors, instructors and the interns. The project definitely made us understand that awareness was required in the general population to facilitate better understanding of the issue. I personally found this project to help me gain knowledge and understand the importance of pelvic dysfunction.

**Learning outcome:** Pelvic dysfunction is an understated issue commonly seen in both men and women. I learnt how pelvic dyssynergy is diagnosed and treated at Yashoda Hospitals. The PS-1 experience enabled me to learn soft skills like time management, presentation skills and team work.

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**Name: ANSHUL GARG (2019A7PS0010P)**

### **Student write-up**

**Short summary of work done:** We were assigned to a project where we created an application for Yashoda Hospitals. This app has several features like appointment booking and geotagging. It will help to patients as well as hospital staff. Hospital staff can

schedule their appointments over the app and patients can use it for locating nearby pharmacies and ambulances.

**PS-I experience:** It was quiet good. The PS faculty and hospital staff all were very helpful. PS1 gave me a wonderful opportunity to interact and learn a lot.

**Learning Outcome:** Soft Skills- Teamwork, Public Speaking, Time Management  
Hard Skills- HTML, CSS, NodeJS, JavaScript, ReactJS, React Native, Figma.

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**Name:** MAYANK VISHNOI (2019A7PS0098P)

### **Student write-up**

**Short summary of work done:** Had a meeting with the IT head. Formed a new group. Divided the project work and assigned tasks to all members, and made sure that each of us got the tasks related to their field of interest. Making an SRS document, designing the database, designing UI templates using figma, using VS code as IDE, building clusters in MongoDB, posting and retrieving data through MongoDB, GitHub for team collaboration. Created frontend for several browser pages and components using React.js and learnt about its packages such as react-bootstrap, material design, sweetalerts etc. Backend using Node.js and Express.js. Exploring Flutter for prospects of faster development.

**PS-I experience:** The experience has been good overall. There were times when we wished more cooperation from the industry mentor but we managed to overcome it and made something worthwhile. Grateful that a opportunity was given to do software development work as a team.

**Learning outcome:** Researching about client requirements. Making relational tables and ER diagram for a real project. Using figma for templates. Learning the basics of MERN, mostly explored React and building clusters in MongoDB. Using GitHub for collaboration as a team. Backend development using Node.js. Made a functional web application.

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Name: SUGHOSH MANIPUSHP KUNJ (2019A8PS0679G)

### Student write-up

**Short summary of work done:** Our team did the web development as required by the doctors at the hospital in order to help them with the surveillance and monitoring of the equipments used in surgeries. Our team's job was to create an additional webpage for the current website, that can be logged in only by the hospital staff, and that can live-track the equipments.

**PS-I experience:** It was thrilling to make something like a whole new web portal from scratch for an actual commercial firm like Yashoda Hospitals, Hyderabad. I experienced a great learning curve at my PS-I, crediting to my supportive team members and remarkable guidance provided by our PS faculty.

**Learning outcome:** I finished my PS-I learning newer skills like full stack web development including front end and back end development. It was also exciting to work in a team despite the challenges of an online scenario, which was again, something new to me, but I ended up cherishing it.

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Name: LILY PANDEY (2019A8PS0823G)

### Student write-up

**Short summary of work done:** I was involved in webpage development. My project topic was CSSD management system, for that I along with my group members created a login / request webpage which facilitates the scheduling of operations based on equipment availability.

**PS-I experience:** It was a great learning experience.

**Learning Outcome:** Proficiency in web development, Improved communications skills.

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**Name: SIDDHESH KUMAR (2019B1A11043P)**

### **Student write-up**

**Short summary of work done:** My team was able to create a protocol and machine learning working model for Oral Cancer screening. We divided the project according to our areas of interest. I was mostly involved in the machine learning and coding part of the project. In the first week, we spent the time structuring the project given the diversity in our disciplines required it. After 2 weeks, we came with a rough blueprint of the project. Starting from scratch, I learnt about Machine learning and its application in computer vision, further I studied about role of computer vision in medical imaging. After going through the theory, I went through various documentation on tensorflow, pandas, keras, kaggle to name a few. These resources helped me structure the final project which we ran on a open source dataset consisting 100+ images.

**PS-I experience:** The PS mentors assigned to me were really responsive and supportive. They always kept regular meets, help mitigate our issues and even helped the students negotiate a more appropriate project work flow. I got a chance to connect with my team mates and batch mates sharing the same station. Some times we would come together on a google meet to do our work because it gave us a real experience of working together. There were sometimes conflict but the deadlines made us stay on track. Small things like attendance reminders became a starting point for conversations which some how gave the joy of college. I got an opportunity to learn something new and even created a project to show for it.

**Learning outcome:** I learnt about Machine Learning and its application in various fields. GD, presentation skills were definitely polished.

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**Name: VEDANT DIWAKAR (2019B1A21037P)**

### **Student write-up**

**Short summary of work done:** We developed a software for in-patient indent processing, the software stores details of the patient and the prescription given by doctor

and then after verifying the details of ward member, it raises a notification at the pharmacy end to issue the needed medicines.

**PS-I experience:** The project options were great. If you can self learn a bit, this could be one of the best PS experience.

**Learning outcome:** Learnt full stack development by building a web application as well as MERN stack.

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