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From the Desk of the Editor

It is my great pleasure to bring forth the 4th edition of the PS-I Chronicles. This edition features over 1336 articles from PS-I students sharing their experiences during summer 2022.

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 the 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 also would like to place my sincere thanks to Prof. Anil Gaikwad, who actually spearheaded this entire exercise since 2019 including the current edition. I would like to thank students & faculty for sharing their experiences during their stint at the organization. I would also like to thank Prof. Arun Maity, Prof. M. K. Hamirwasia, and Prof. S. Murugesan for reviewing the articles and providing us the feedback. I would also like to extend my thanks to Mr. Om Prakash Singh Shekhawat 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 associatedeanpsd@pilani.bits-pilani.ac.in.

Associate Dean

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Name: NAKKA YASHWANTH .(2020A4PS1082P) 222
Name: JITARTH BHAVESH PATEL .(2020AAPS1407G) 222
PS-I station: SAMIL (onsite) , Hyderabad 223
Student 223
Name: ABDULLAH ASHRAF .(2020A1PS2395H) 223
Name: VALIVERU SAI SRIKAR(2020B5PS0905P) 223
PS-I station: SAMIL (onsite) , New Delhi 224
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Name: ANNIKA GARG(2020A5PS2025P) 224
Name: ALI AYMAN MALIK .(2020B4A20737P) 224
PS-I station: Sampark Foundation , Noida 225
Student 225
Name: MITUL CHADHA .(2020A7PS1510P) 225

Name: NIRMAY KISHOR NAIK .(2020AAPS1425G) 226
PS-I station: SEWAGRAM CEMENT WORKS , Kutch 226
Faculty Name: Mithun Mondal 226
Student 227
Name: ANKRIT SETH .(2020A2PS0650P) 227
Name: Aryaman Dave(2020B3TS1269P) 227
PS-I station: Sidhi Cement Works-Electrical , Sidhi (MP) 228
Faculty Name: Jay Pandey 228
Student 229
Name: TANAY RANJAN .(2020A3PS0483H) 229
Name: VANSH PALIWAL .(2020A3PS1751G) 229
Name: URVASHI SHARMA .(2020A7PS0017P) 230
Name: ABHIRAM REDDY CHALLARAM .(2020A7PS1117H) 231
Name: GEETIKA BANSAL .(2020AAPS0303H) 231
PS-I station: Sidhi Cement Works-Mechanical , Sidhi (MP) 232
Student 232
Name: VURADI PRADHIK REDDY .(2020A4PS0779H) 232
Name: SANDESH KANTIMAHANTI .(2020A4PS1002G) 233
Name: ANANYA BHARATI PINAPATI .(2020A4PS1347H) 233
Name: SANKALP SINGH .(2020A4PS1974H) 234
Name: PRATYUSH GUPTA .(2020A4PS2228H) 235
Name: SOMANI RISHABH MANISH .(2020B1A42122G) 236
PS-I station: Sidhi Cements - Instrumentation , Sidhi (MP) 236
Student 236
Name: VAISHNAV PRASAD R K .(2020A8PS0728G) 236
Name: CHINMAYEE SOMESHWAR SELUKAR .(2020A8PS0735H) 237
Name: SATHVIK R SHETTY .(2020A8PS1492G) 238
Name: RAJDEEP DAS .(2020A8PS1609G) 238
Name: RAJDEEP DAS .(2020A8PS1609G) 239
PS-I station: Sidhi Cements - Process , Sidhi (MP) 240
Student 240
Name: YUGANSH SHARMA(2020A2PS1759P) 240

Name: SUDEEP PUSPA KUMAR .(2020A2PS1763P) 241
PS-I station: Starflex Sealing India Pvt. Ltd. , Goa 241
Student 241
Name: YASH PUROHIT .(2020B3A40946P) 241
Name: KOSURI GYAN SUMANYU .(2020B5A42176H) 243
PS-I station: Sud-Chemie India Pvt. Ltd - Chemistry , Vadodara 244
Faculty Name: Ashwin K P 244
Student 244
Name: K B S VASHIST .(2020B2A12379H) 244
Name: ADITI PRABHU .(2020B2A12454H) 245
Name: RITIK YADAV .(2020B2A21940P) 246
Name: BOLLAPRAGADA ADITYA SRIVARDHAN .(2020B2A42410H) 246
Name: BOLLAPRAGADA ADITYA SRIVARDHAN .(2020B2A42410H) 247
PS-I station: Sud-Chemie India Pvt. Ltd - Instrumentation , Vadodara 247
Student 247
Name: MANN JAGDISH SHAH .(2020A8PS1825P) 247
PS-I station: Sud-Chemie India Pvt. Ltd - Mechanical , Vadodara 248
Student 248
Name: KAUSHIK.M .(2020A4PS0661H) 248
Name: VINEET KUMAR .(2020A4PS1823G) 249
Name: KRISHAY NANGIA .(2020A4PS1873P) 250
PS-I station: Sud-Chemie India Pvt.Ltd - Electrical , Vadodara 250
Student 250
Name: KAUSHAL SAGAR KIRPEKAR .(2020A3PS0828P) 250
Name: NITANT TARANG KOTHARI .(2020A3PS1779P) 251
PS-I station: Survey of India - Geoid Modelling (Onsite) , Dehradun 252
Student 252
Name: ATHARVA NAMJOSHI .(2020A2PS1496P) 252
PS-I station: Survey of India - GNSS Survey using CORS Network (onsite) , Dehradun 252
Student 252
Name: ABHIVADHYA VATSA .(2020A2PS1738P) 252
Name: KUSHAGRA ROHELA(2020A2PS2532H) 253

PS-I station: Survey of India - Tidal Data Analysis (onsite) , Dehradun 254
Student 254
Name: ANGAD SINGH KWATRA .(2020A3PS0505P) 254
PS-I station: Suzlon Foundation - Documentation and Analysis , Pune 255
Student 255
Name: AIKAGRA AGARWAL .(2020A1PS0294P) 255
Name: PRASAST SINGH .(2020A2PS1740P) 255
PS-I station: Ultratech Cement Limited , Tadpathri 256
Student 256
Name: SAIEESH KAPIL SUKHRANI(2020A1PS1970G) 256
Name: NISHITH KUMAR GUPTA .(2020A4PS2336H) 257
Name: ARJUN NAG .(2020A8PS2085G) 258
Name: Avinash Singh(2020B3TS1268P) 259
Name: SARVAGYA GARG .(2020B5A41336P) 259
PS-I station: Ultratech Cement Ltd. , Kotputli 260
Student 260
Name: UTKAARSH BHAGAT .(2020A1PS1725P) 260
Name: SHIKHAR SRIVASTAVA .(2020A2PS0242P) 261
Name: PRAKHAR GUPTA .(2020A2PS1750P) 262
PS-I station: Vikram Cement Works , Neemuch 263
Student 263
Name: CHINMAY B MOTHE .(2020A1PS1720P) 263
Name: CHINMAY B MOTHE .(2020A1PS1720P) 263
Name: SRIKAR KAMBALADINNE .(2020A3PS2120H) 264
Name: DHANUSH SOMA .(2020A7PS0050P) 265
Name: SURYANSH SINGHAI .(2020A7PS0127G) 266
Name: MAANAV RAMESH(2020A7PS1007G) 266
Name: RAUNAK KUMAR .(2020A7PS1699G) 267
Name: SRESHT AYYAPPATH .(2020AAPS2102H) 267
Name: ADITYA RATLEY .(2020B2A42005G) 268
PS-I station: Viram Technologies Enterprises , Pune 268
Faculty Name: Kundan Kumar Singh 269

Student 269
Name: ANISH CHANDRASHEKHAR PARALIKAR .(2020A4PS1591G) 269
Name: AYUSH FIRODIYA .(2020A4PS1871P) 270
Name: NANDIRAJU VENKATA SAI KARTIK .(2020A4PS1998H) 270
Name: UTKARSH SINGHVI .(2020ABPS1848P) 271
Name: PAWAR ABHINAV MARUTI .(2020B4A41844G) 272
PS-I station: Wadia Institute Of Himalayan Geology , Dehradun 272
Student 273
Name: ANIKET SRIVASTAVA .(2020A2PS0293P) 273
Name: SACHIN SHANKAR .(2020A2PS1744P) 273
PS-I station: WeSwap Mobility Solutions Pvt. Ltd - Mechanical , Indore 274
Student 274
Name: VAIBHAV VIKAS .(2020A4PS0538P) 274
Name: BOTU ROHITH(2020A4PS1882P) 275
Name: B.ARVIND .(2020ABPS1837P) 275
PS-I station: Zecomy , Noida 276
Student 277
Name: SHREYAS BAJIRAO .(2020A2PS2434H) 277
Name: GARRE VATHSALYA .(2020A2PS2535H) 277
Name: RIYA ANANT UNDE .(2020A3PS1228P) 278
Name: POTTIGARI SREENIDHI .(2020A4PS1164H) 279
Name: ANSHUL KANODIA .(2020A7PS0174H) 279
Name: AKSHAT KOTHARI .(2020ABPS1861P) 280

Domain: Chemical, Mechanical, Cement, Infrastructure & Steel

PS-I station: 313 Army Base workshop (1) , Pitoragarh

Student

Name: SAMAYAM ARJUN .(2020A3PS1350H)

Student Write-up:

PS-I Project Title: Post Detection of object, it should be destroyed by Laser light

Short Summary of work done: My project was Post Detection an object; it should be destroyed by Laser light. The project aims to design an automated object detection and destruction system. This system can detect a moving target in multiple directions. The target destruction system moves in the direction of the object locks it, and fires it. When an object tracking system finds a target, it continuously monitors it. It detects the target location and sends it to a central control system, which moves and fires the firing mechanism in the direction of the target.

PS-I experience: PS-1 experience was a great experience. It was valuable and informative. Though being a work-from-home, it did not affect the learning process.

Learning Outcome: I learned about the anti-drone system and counter-UAVs systems. I Improved a few technical skills. PS-1 helped to enhance presentation and group discussion skills.

Name: SAMAYAM ARJIT .(2020A3PS1353H)

Student Write-up:

PS-I Project Title: Software to plot multiple modifiable points on a map display - giving 10-figure grid reference.

Short Summary of work done: I worked on a project on software to plot multiple points on a map. This project had us build an overlay of a map without even having to involve a

Wi-Fi network. For this purpose, we used the Folium library of Python, which at its back end, makes an HTML file with styling and scripting incorporated in it. Grid references are converted to their corresponding
latitude-longitude values using third-party software, and our program interprets these values and plots the corresponding output on the map.

PS-I experience: My PS-1 experience was good. It was an excellent experience to work on a project that was required from an industry point of view and develop the project within the given duration. The project mentor was helpful and gave us constant feedback on improving our project. We also had regular meetings with our faculty mentor, who kept giving us consistent advice regarding our PS work.

Learning Outcome: Learnt Python, Folium, and Java.

Name: ADITYA AGARWAL .(2020A3PS1758G)

Student Write-up:

PS-I Project Title: AI-based Inventory Detection and Management System for Miscellaneous Administrative Items

Short Summary of work done: My project involved image detection using AI and knowledge about python was required. I also learned to use TensorFlow and Jupyter Notebooks. I made a webapp using Gradio to demonstrate the final ML model. The model was a CNN made using ImaageNet.

PS-I experience: The 313 Army Base Workshop is one of the eight Army workshops located across India.
The workshop manufactures the Drona small range training simulator. The workshop also produces small weapons range training simulators and hand grenades for the Indian Army.
My experience was very good and I learned a lot. The mentors were very helpful and provided guidance wherever necessary.

Learning Outcome: Python, Deep learning, TensorFlow

Name: ANURAG ANAND .(2020A3PS1789P)

Student Write-up:

PS-I Project Title: AI-based Inventory Detection and Management System for Miscellaneous Administrative Items

Short Summary of work done: My project at the 313 Army Base Workshop is technical as well as research-oriented.
For developing AI-based Inventory Detection and Management System for Miscellaneous Administrative Items, we needed to create software that can accept an input of roughly 2000 photos in each category, representing the many goods used at any Army Camp, including the daily use as well as combat-size goods. Following that, we were required to create AI algorithms for detecting and classifying those items according to their current numbers, locations, and, if applicable relevant dates.
We as a group used transfer learning, which is a method that uses a pre-trained model as the foundation for a new model. The pre-trained models are trained on millions of images and have a very high accuracy. We used this model then to make a specialized model which is trained on a specific dataset for a specific task.

PS-I experience: My experience at the PS-1 station was a memorable one . I was assigned a project related to overhaul of inventory management using AI.
The PS station provide me with all necessary information and details about the project and thus helped me take away a great learning experience.
The Faculty as well industry experts for ensured the smooth conduct of Practice-School(PS1).

Learning Outcome: This opportunity has provided me with insight into the development of cutting-edge technology as well as the world of image classification.
We have employed the Python language along with libraries NumPy, and TensorFlow to help solve a real world problem faced by our army.
Additionally, the AI app that the instructor supplied with us has considerably aided in our understanding of the developments and practical uses of AI

Name: ARJUN AGARWAL .(2020A3PS2135H)

Student Write-up:

PS-I Project Title: AI assisted inventory detection and management system for radar and signal equipment

Short Summary of work done: The project I was assigned was "AI assisted inventory detection and management system of radars and signal equipment's." I had to build a image classifier which, when fed with the image of the equipment, predicts the equipment's identity such as model number, specifications, signals and radar systems in which it is used. The second stage was to predict any defects in the equipment. The next phase was to build a standalone app(i.e. a app that can be used without internet or any other dependencies) for the image classifier which had minimal UI.
The project was done in a group. I was grouped with three other students from other campuses. We had to apply technologies like TensorFlow and OpenCV. We learned about python and applications of AI.
We begun with building a image classifier using TensorFlow and OpenCV. We made a basic image classifier and trained a model using the image of cats and dogs. The model could predict if the image fed was of a cat or a dog with suitable accuracy. Later that model can be modified for radar and signal equipment.
Then I learned some other things like PyQt to build the GUI(Graphic Model Interface) and application for easy use of the model. I made the GUI of the app using various packages of PyQt.
In the end we made the app which had a minimal and effective GUI and the image classifier that we trained using TensorFlow.

PS-I experience: PS-1 was a wonderful experience. I got the industry experience in my area of interest i.e. AI. My industry as well as my faculty mentors helped me at every stage by giving me their valuable time and experience in the field. My industry mentor provided me with the necessary data and guided our team towards the structure and designing of the project.
Overall it was a great experience as I got to learn a lot about AI and got to work with some of the cutting edge technologies.

Learning Outcome: I got a lot to learn from my 2 months PS-1 at Army Base Workshop. My project domain was AI and its applications. I applied technologies like TensorFlow and OpenCV which are sub part of Machine Learning. During the two months I learned about AI, ML and about various other software like PyQt, Numpy and PyInstaller. I got to learn about facial recognition and how to build a application.
Overall, I would say that PS-1 gave me the opportunity to learn about one of my field of interest i.e. AI

Name: ANDREW ALEX DEVASIA .(2020A7PS1314H)

Student Write-up:

PS-I Project Title: Post Detection of object, it should be destroyed by Laser light

Short Summary of work done: The problem statement was to track the location of a rogue drone, and, using data from detection means, destroy it using laser light. We researched the different technologies and systems which may be implemented depending on safety, error tolerability, range etc.

PS-I experience: The experience helped me learn new technologies, how to work in a team, and improve my communication skills. Any data that would finally be used was confidential, so results from any system developed would use dummy data. Respecting such confidentiality was important learning as well. The Army officers have busy schedules but will help whenever you need them to. The experience made me aware of industry norms and practices, which have prepared me for such challenges if they arise in the future.

Learning Outcome: • Learned how to read, understand and apply the knowledge gained from research papers in real-time industrial applications.
• Also learned how to overcome industry-specific application issues.
• Gained knowledge in the field of UAV detection and anti-UAV systems.

Name: RISHIT THAKUR .(2020A8PS1783G)

Student Write-up:

PS-I Project Title: Making an app with a 'matching function'

Short Summary of work done: We created an app which filters the message sent by a user to see if any classified information is shared or not.

PS-I experience: It was a great experience.

Learning Outcome: I learnt Html , CSS and JS and on the top of that worked a bit with flutter and encryption.

Name: ARSH MOHAN .(2020A8PS1795P)

Student Write-up:

PS-I Project Title: Post Detection of object, it should be destroyed by jamming of GPS signal and RF Signal

Short Summary of work done: My project was to build an anti drone technology using the concept of GPS jamming and Radio frequency (RF) signal jammimg. In initial days of the PS,brief introduction of the organization and the project was given by the industry mentor.We were asked to research and learn on the topic of GPS and RF signal jamming. The next 2-3 week were spent on researching about the topic.In these days I read a couple of research paper and watched related videos on the given topic.Regular meets were held by the bits faculty to guage the progress and provide a helping hand.We also have to maintain a weekly diary.The next 3 week of the PS were spent on building a GPS and RF signal jammer using an Arduino uno board and required components.Remaining last weeks were spent on improving upon the design and testing it.During the entire PS continous evaluation was done by the bits faculty.

PS-I experience: Overall PS-1 experience was good.The industry mentor shared their valuable experience and was quite helpful.Regular progress and work done was insured by the faculty of bits.PS1 provided me an opportunity to gain industry exposure,how an organization works and how work is distributed among the members of the organization.Due to PS1 I was able to work as a team and also build a project which has a real life application.Also,it helped me in learning new skills.

Learning Outcome: I learned how to be proactive, be a good team player. It aslo helped me in how to readily accept challenges and grasp things faster.As a freshman I gained industrial exposure. Also, I become competent in working as a team and how to communicate with each other, which is a very important. I gained an understanding about how to work and complete the project within the stipulated time.

Name: MUPPALANENI VINAYAK SURYA TEJA .(2020A8PS1808G)

Student Write-up:

PS-I Project Title: Sharing of data without lan using wi-fi

Short Summary of work done: We have to find a way to share data end-to-end encrypted using wifi

PS-I experience: It was a fine experience,

Learning Outcome: I learnt how to extend wifi range and about different apps that can be used to encrypt data

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Name: KHUSHAAL CHABA .(2020A8PS1816P)

Student Write-up:

PS-I Project Title: Visual Detection of drones by integration of HHTI images using AI

Short Summary of work done: Our objective is to create a machine learning model that can visually detect drones with the help of Artificial Intelligence (AI) and Deep Learning (DL). The algorithm used for the project is Convolutional Neural Networks(CNN) which is designed especially for computer vision tasks such as visual recognition and detection. The algorithm aims to achieve its goal by detecting objects in the HHTI image or video feed provided, classifying them as a drone or not, and making a detection box around the object if it is a drone. It will also be able to classify multiple drones occurring in the same frame of the video irrespective of the quantity
These algorithms require training of hyperparameters which takes a large amount of time, so we used transfer learning concept. We take an open source CNN model that has already been pre-trained, and all the weights and hyperparameters have been pre-trained on another dataset. Depending on the amount of dataset available, freeze all the layers of the network except the last layer or the last few layers if there is a more extensive dataset. Changes in the output and dataset are made for the desired the object and trained the model again on this new dataset.
After testing the model, it will be able detect objects with much higher accuracy.

PS-I experience: The industry is looking for students who know Python and Deep Learning. As I am new to this field, I had to first learn these things in detail before working toward building the algorithms. The instructors were helpful and provided us with guidance whenever required. After learning and understanding these concepts, along with the guidance of instructors, I can build a visual detection algorithm for drones.

Learning Outcome: I learnt about new domains of Data Science which include python programming, data science, artificial intelligence, machine learning and deep learning. I also got a hold on to github and its uses. I learnt about transfer learning and computer vision and its applications. I also got corporate exposure which will help me in summer internships and placements. Working under a mentor and building my first project in this field has helped me boost my confidence and develop my full interest in this field.

Name: AYUSH PAL .(2020B1A41933G)

Student Write-up:

PS-I Project Title: Software for Preventive Maintenance Reminder of 'A' vehicles and 'B' vehicles

Short Summary of work done: We started the project by understanding the client requirements of the maintenance reminder application we have been tasked with. We have created a standalone application which does not require internet connectivity to generate reminders for preventative maintenance. We have finished the designing and building an application for the preventative maintenance reminders of 'A' vehicles and 'B' vehicles.

PS-I experience: Overall experience for PS-1 was a great learning opportunity for me. It directly gave the glimpse of how it feels like working in an industry working towards common goal. Our faculty and industry mentor were quite helpful and guided us throughout the PS-1 session.

Learning Outcome: We as a group learned application development and implemented it in our project. We learned Android development and got familiar with coding in programming languages like Kotlin and XML on Android Studio IDE. We also understood the importance of communication when we work as group to complete a project with certain requirements.

Name: Harshit Sharma(2020A3PS0343P)

Student Write-up:

PS-I Project Title: Detection of Drones using Doppler's effect

Short Summary of work done: Tried to learn various aspects of radars and drone detection and the mathematics involved behind that.

PS-I experience: It was fine overall.

Learning Outcome: It greatly improved my presentation and communication skills.

Name: RAKSHITH V SHETTY .(2020A4PS0519P)

Student Write-up:

PS-I Project Title: Automatic cutoff of self starter system of TATRA 8*8

Short Summary of work done: Internal combustion engines require external energy to start operation. A self starter or starter motor is used to rotate the crank and provide that energy. Hence in the process of employing a cutoff for the starter system , I ended up learning a lot on drive trains and how engine transmission works including the electronics behind them.

PS-I experience: it was completely online so mainly included work surrounding documentation and research on various types of engine starter systems across a range of vehicles.

Learning Outcome: Designing this system helped me understand many working parts of a car and made us appreciate the engineering involved in creating these small systems.

Name: SUBHRANGAM BHARALI .(2020A4PS1811G)

Student Write-up:

PS-I Project Title: Equipment mapping and tracking

Short Summary of work done: We worked on an app to detect army LSVs and implement mapping and tracking of equipments using Google Maps APIs.We used Flutter and Firebase for making the basic app

PS-I experience: It was a great learning curve . Learned to work in a team as well as learned about new tech stacks like Flutter

Learning Outcome: Flutter, Team coordination ,

Name: DEV BAJAJ .(2020A4PS1866G)

Student Write-up:

PS-I Project Title: Equipment mapping and tracking system

Short Summary of work done: The project aimed to make an application that helps track equipment and army vehicles like LSVs. We tried to develop a mobile application, which uses the GPS to get the location coordinates, and then using a real-time database, it can send the data to the other devices, hence trackable on the map. We primarily used Google Maps API for the project.

PS-I experience: PS gave me a great experience in learning about how an organization works. The mentors were quite helpful throughout the project. Also, it gave an understanding of how the Indian Army works, the technical problems they face, and how they approach those problems. The other students in our group were also helpful, and it was interesting to interact and learn with them.

Learning Outcome: Throughout the project, I was pretty open to learning new technologies. The project helped me learn about Mobile app development using Flutter

and Android Studio, APIs, and their integration with the app, UI/UX, and Google Firebase. Non-technical skills like communication, writing formal content and coordinating in an organization improved while working in the PS.

Name: S UMASHANKAR .(2020A4PS2078G)

Student Write-up:

PS-I Project Title: Warning sound for low coolant transmission oil and hydraulic oil in 'A' vehicles

Short Summary of work done: We identified three solutions to our current problem and narrowed down to the best viable option. We took help from a student who specializes in Arduino and then we used various resources to learn about it. We identified a need to design a software for ultrasonic liquid level meter which was written in Arduino programming language and compiled using Arduino IDE. The folder contains software code for the transmitter, receiver, and the required library file. Me and my team mates are also learnt GitHub.
We developed and implemented the Arduino program and researched on the ultrasound background noise present in a tank engine which might interfere with the sensors.

PS-I experience: It was a very enriching experience which helped me to analyse problems and find their solution and narrow it down to the best technically plausible and viable method. It also helped me in my co-ordinating skills and presentation skills. The evaluatives consisted of interesting tasks. This project has helped induce a research-oriented approach to tackle the problems.

Learning Outcome: I learned about aurdino programming, github, powerpoint, coding and applying practical electrical and mechanical skills.

Name: PRANAV RAGAVAN MOUDGALYA .(2020A4PS2344H)

Student Write-up:

PS-I Project Title: All Gear assist by hydraulic force in BMP-II

Short Summary of work done: We started with researching the working mechanism of tanks to understand the different functions. Also read about the different parts of gearbox and analyzed how the different gears are meshed together in the gearbox and finally listed out the advantages and disadvantages of Servo Hydraulic Mechanism over Mechanical process.
This is a research oriented approach to tackle the problem and the next step would be to find a method or design to replace the mechanical mechanism with servo hydraulics and analyze the situation to get the most efficient result.
With the above points in mind ,we observed that when reversing the tank, the tank must be brought to complete rest before engaging the reverse gear ,whereas in servo hydraulic mechanism we can shift the gear to reverse even when the vehicle is moving forward which can be beneficial in combat situations. And as for the first gear we don't see any major changes in converting it to hydraulic.
The reverse gear is different from other gears as there is one idler gear also involved which helps in reversing the direction, so we can use a synchronized motor drive to engage the driven gear and idler gear.

PS-I experience: It was an educating experience. I got to know about how organisations work and learnt how to do presentations, research and coordinate with others.

Learning Outcome: I learnt about multiple transmission systems and how gears work in tanks and how to go about a research based project and find solutions.

Name: VASHU .(2020A8PS1792P)

Student Write-up:

PS-I Project Title: Software for accounting important inventory items.

Short Summary of work done: We made a software from scratch, for the inventory of the workshop. The software supported adding, issuing, receiving and other such similar functions.

PS-I experience: It was a great learning experience for me, developed a website for the first time, got to learn about both frontend and backend develpement.

Learning Outcome: I already knew HTML/CSS so I guess that was a plus point for me and that is why I chose this project among many others. Other technologies that I used for the first time were Django as the Web Framework and MySQL for the database management. I also learnt to work with Git and GitHub.

Name: SUYASH IYENGAR .(2020A8PS1795G)

Student Write-up:

PS-I Project Title: VISUAL DETECTION OF DRONES BY INTEGRATION OF LOW LIGHT TIME IMAGE WITH AI

Short Summary of work done: By the end of the project, we were able to develop a program which has the ability to detect different objects even in low light conditions. It comprehensively includes a variety of important techniques, such as image processing, pattern recognition, artificial intelligence and machine learning and convolutional neural networks.

PS-I experience: It was a fun experience.

Learning Outcome: Artificial Intelligence and Machine Learning at a moderate level.

Name: CHIRAG AGARWAL .(2020A8PS1808P)

Student Write-up:

PS-I Project Title: Mobile Signal/ Network Enhancer

Short Summary of work done: Military personnel as well as the civilians residing in remote areas like high altitude mountain terrains almost always experience low mobile signal/network reception. Consequently, the communication is drastically affected. Relaying of ordinary messages among the army or civilians either consumes a lot of time

or is possible only between certain specific locations. The project aims to achieve its goals by installing receiver antenna at the required low signal strength area to capture the low strength signal, positioning a signal amplifier of required power at an optimum distance from the antenna and finally positioning a re-transmitter antenna at a certain distance from the amplifier for the re-transmission of the amplified signal.

PS-I experience: It was an immense learning experience while preparing the project. We got the opportunity to explore different disciplines involved in the project. The experience was great in that there was remote coordination among group members, discussions on advantages and flaws in the ideas and methods proposed by members, assessment of technical issues of the device etc.

Learning Outcome: Learning outcomes included basic theory of digital signal processing, working of antenna and amplification of signals. I also learnt professional skills of presenting an idea to a group, discussing and working in a team to achieve a final goal. We studied the different types of antennas and their radiation pattern characteristics involved in determining their feasibility in doing various tasks and operations. We observed the radiation pattern of omnidirectional antenna and directional antenna in more detail through HFSS simulation.

Name: APOORV RASTOGI .(2020A8PS1810P)

Student Write-up:

PS-I Project Title: Retromodification of K1M box of Tank T-90

Short Summary of work done: K1M Box of Tank T-90 has a lot of electronic components in it which get worn out over time. We need to identify the faulty components so that they can be substituted, for this purpose, we were required to study the K1M box, its working in detail and propose a design for a Testing jig for the power supply card. The test jig had to show the voltages at various output pins of the power supply card. If the readings deviate from the required output, it implies that there is a fault in the power supply card which can be rectified by changing the faulty components after further inspection. We used Arduino Uno R3 board for fabrication of the testing jig.

PS-I experience: The learning experience was quite good, better than I expected. My mentor was really helpful and involved in my project. Lieutenant Col. sir were really supportive and used to look after the progress in project.

Learning Outcome: I got to learn about the working of army tanks and their internal parts. I also got to work with arduino and build a project based on it.

Name: NAGAVELLY SAI SHARAVAN REDDY .(2020AAPS0393H)

Student Write-up:

PS-I Project Title: Visual detection of drones by integration of night time image with AI

Short Summary of work done: learnt about machine learning and AI being from electronics background

PS-I experience: It's a nice opportunity to learn

Learning Outcome: I now know a lot about machine learning.

Name: PATIL SOURABH GANESH .(2020B1A41673G)

Student Write-up:

PS-I Project Title: Visual detection of drones by integration of low light images with AI

Short Summary of work done: We had to make Deep Learning models for classifying the given images as drones/not drones. They did not provide the dataset due to confidentiality issues so we were told to use a 'similar to drone' dataset. So we chose the planes images dataset and developed models using that. We also had to make a website/app that would link this code in it's backend and thus take an image as input from the user and return the predicted label (i.e plane/not a plane).

PS-I experience: Good, just had to learn a lot of things in a really short amount of time

Learning Outcome: Skills aquired: Python, Tensorflow, Keras, Deep Learning, Convolutional Neural Networks, Streamlit

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Name: PATIL SOURABH GANESH .(2020B1A41673G)

Student Write-up:

PS-I Project Title: Visual detection of drones in low light conditions using AI

Short Summary of work done: We were asked to code up a computer vision task i.e object detection. Moreover we had to create a website/app that has this code in its backend. So the final task was that the website/app should be able to take input as an image from the user and provide output as the predicted label.

PS-I experience: Good, had to learn a lot of things in less amount of time.

Learning Outcome: Skills: Python, Computer vision, Deep learning, Tensorflow, Keras, Gradio

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Name: ISHANK GIRI .(2020B2A82051G)

Student Write-up:

PS-I Project Title: Object detection of drones through images and recordings.

Short Summary of work done: My PS1 project was designing an object detection model capable of detecting drones from images and live recordings and optimizing the already used conventional models for drone detection. The project was based on Deep Learning and the implementation of YOLOv5 Object detection model.

PS-I experience: We began the PS1 by becoming familiar with all the fundamental Deep Learning ideas and learning how to design and use a Neural Network. We had three weeks left for our assignment while getting used to everything took about four weeks. We initially began out by developing the YOLOv3 and YOLOv4 models, however we were unable to proceed because of runtime difficulties in Google Colab. We went ahead and

used the YOLOv5 model, and it was successful. We used methods like Freezing Layers and Hyperparameter tweaking, which involved adjusting the learning rate, epoch number, and image resolution, to increase the model's accuracy.

Learning Outcome: We learned about a completely new area of deep learning. implemented the cutting-edge object detection model YOLOv5 and gained a thorough understanding of how neural networks work and how to improve them for various datasets.

Name: RAGVENDRA PARTAP SINGH .(2020B4A41850H)

Student Write-up:

PS-I Project Title: Software for inventory management

Short Summary of work done: Developed a Software that aids in the inventory management for a company. It helps allows storing the count and location of each and every item that is stored in the inventory via a simple manual entry system. Since the main item that we are focusing on is the PCBs, the software is specifically designed to classify and store the PCBs, according to their specifications which are provided by the organization. Our software is important and essential because we are developing software for the Indian Army and therefore confidentiality is very important thus it is a wise decision to develop indigenous software rather than relying on third-party apps/software that may use the confidential inventory data in the wrong way.
The software has a clean UI and is very simple to use. It supports adding to the inventory, issuing and deleting from the inventory, and also editing the details for the stock

PS-I experience: The whole experience was full of learning new skills which I didn't have and it also gave me an experience of how one should work in a team.

Learning Outcome: During this internship I learned about application development

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Name: ANAND KIRAN THACKER .(2020B4A42366H)

Student Write-up:

PS-I Project Title: Fabrication of Tethered Drones

Short Summary of work done: I first learnt how to make a fully functional quadcopter and secondly learnt about tethering systems for the same .

PS-I experience: It was good as I got to learn about a new thing called tethering system for drones .

Learning Outcome: I learnt to make quadcopter using ardupilot and mission planner . I also learnt about working of a tethering system.

Name: GURUPAM DIXIT .(2020B5A40627P)

Student Write-up:

PS-I Project Title: Equipment Mapping & Tracking System

Short Summary of work done: We were assigned to work on an equipment mapping and tracking system for the Indian Army. We designed the app from scratch, following all the necessary steps of design thinking using Figma. Different versions of the app were created in the ideate phase, and we went ahead with the solution, which was easy to maintain and navigate. In the development phase of our project, we implemented geocoding as well as reverse geocoding in our app. The UI of the app was developed using Flutter, and for handling the backend and data storage of the app, Firebase and Google Cloud were preferred. We also implemented Google Maps API Kit in our project.

PS-I experience: Working for the Indian Army was indeed a unique experience for me. It has a whole different feeling from the startup culture as well as the usual industry experience. This project helped me to step out of my comfort zone and develop an app for the first time. It was a great experience overall.

Learning Outcome: Technical Skills like Designing an app using Figma, App Development Using Flutter, and Backend Development Using Google Cloud and Firebase. I also gained soft skills like project planning, teamwork, communication, presentation, and decision making.

PS-I station: 314 Army Base workshop (2) , Pitoragarh

Student

Name: NAKUL KHANDELWAL .(2020A3PS0450P)

Student Write-up:

PS-I Project Title: Software to plot multiple modifiable points on a Map Display- Giving 10-figure Grid Reference

Short Summary of work done: We built a software that was capable of plotting multiple (around a 100) modifiable points on a map display within the accuracy of 40m, without the use of WiFi, or any other internet connection.

PS-I experience: It was a great learning experience, we learnt and created on our own.

Learning Outcome: We learnt how to solve the real world problems, from scratch, even in conditions where no internet was available

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Name: NIKHIL BIYANI .(2020A3PS0776P)

Student Write-up:

PS-I Project Title: Map display (Google map) on desktop of every movement of flight of Detected Drone, giving 10 figure grid reference

Short Summary of work done: The work allotted to us was to display the location of a drone on a map with the coordinates given to us by another team working on a different project. So we used softwares like Mission Planner, Arduino IDE to go through the simulation.

PS-I experience: The PS station was interactive and checked on our progress regularly. We were given facilities and guidance to complete the project. The overall experience was good.

Learning Outcome: I learned how to use the new software, and the group discussions were helpful in knowing different point of views and having a healthy discussion with my batchmates.

Name: MOHAMMAD ALI .(2020A3PS2206H)

Student Write-up:

PS-I Project Title: DefenseChat - A "Matching Function" Software- A real time Chatting App which blocks sender from sending message containing words related to military

Short Summary of work done: The objective of the project allotted was to make a software that primarily has a "matching function" i.e it matches a lot of words, phrases, ranks, appointments etc that are related to military word/life.
Then, the so called program/app must be able to either, carryout comparison or matching of messages passed using other apps such as sms/whatsapp or, to design our own chat service that to be exclusively used as messaging service by users.
To create the web-application (front-end) , we needed the help of three languages : Html, CSS, JavaScript and a developed a database containing the words related to military life. We used HTML here to generate the general outline of the software.CSS was used to describe the presentation of Web pages, including colors, layout, and fonts.

PS-I experience: The project and the station were great, and the officers used to help us in making decisions while comparison. They guided our studies in software/app development. The mentors were easily approachable and cleared our doubts at every stage of our project. They allowed us to explore and learn everything in our own pace.

Learning Outcome: I learned a lot from this Practice School. The learning was both technical and non-technical. Technical things I learned include HTML,CSS and JavaScript. Along with these I enhanced my Presentation and Communication skills. In the Army Base Workshop I got to know the right work culture and discipline involved to build a successful organisation.

Name: PREM SHANKAR .(2020A4PS0557P)

Student Write-up:

PS-I Project Title: AI for Inventory Management of B vehicles

Short Summary of work done: The problem statement for our project was to create an app/website such that when an image of a part is uploaded on it, be it through system or through camera it predicts which vehicle it belongs to and whether it is defective or not . Due to confidentiality of the original data we worked on toy datasets and built a website which used pretrained models to predict whether the image of a car uploaded through system/camera is defective or not. However we shared the required documents like Jupyter notebook to create their own models with the datasets and the program to create a website which with some minor tweaks from their end can be used as a solution to the initial problem.

PS-I experience: When we first started working on the project we had little to no experience in the domain of Computer vision but as we continued to read materials on the subject we became more comfortable and finally along with the help from the organizational mentors we were able to bring our project to a logical end.

Learning Outcome: Deep learning for Image Classification ,HTML and Javascript

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Name: PREM SHANKAR .(2020A4PS0557P)

Student Write-up:

PS-I Project Title: AI based Inventory management and detection of B vehicles

Short Summary of work done: The problem statement for our project was to create an app/website such that when an image of a part is uploaded on it, be it through system or through camera it predicts which vehicle it belongs to and whether it is defective or not.Due to confidentiality of the original data we worked on toy datasets and built a website which used pretrained models to predict whether the image of a car uploaded

through system/camera is defective or not.However we shared the required documents like Jupyter notebook to create their own models with the datasets and the program to create a website which with some minor tweaks from their end can be used as a solution to the initial problem.

PS-I experience: At first the problem statement seemed intimidating considering that we had no experience in the domain of Computer vision but as time progressed we read more material from internet and were finally able to bring our project to a logical end. However this could not have been possible without the guidance from the organization mentors.

Learning Outcome: I learnt about Deep Learning ,Transfer Learning and about the basics of web development(HTML+Javascript) and also learnt about flask

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Name: VIPUL SINGH .(2020A4PS2241H)

Student Write-up:

PS-I Project Title: Automatic cut-off of self-starter system in TATRA 8 x 8

Short Summary of work done: A vehicle start-stop system or stop-start system automatically shuts down and restarts the internal combustion engine to reduce the amount of time the engine spends idling, thereby reducing fuel consumption and emissions. This is most advantageous for vehicles which spend significant amounts of time waiting at traffic lights or frequently come to a stop in traffic jams. Designing even a small thing like a self-starter system requires understanding the different parts of the internal combustion engine like the crankshaft, piston, flywheel and many others. The main area of concern is disengaging from the ring gear once the engine is started which is done by the solenoid opening. Designing this system helped us understand many working parts of a car and made us appreciate the engineering involved in creating these small systems.

PS-I experience: The PS-1 experience was an enriching one. We worked on our project for close to two months interacting with our mentors and teammates throughout. We also had several quizzes and group discussions along the way. We also got to know about the discipline and determination required to work for the army and the challenges faced.

Learning Outcome: In our PS-1, we learnt about the working of a combustion engine and how a self-starter is connected to the main crankshaft. We gained in-depth

knowledge about the engine and figured out ways to solve many problems associated with it. Through various group discussions we also developed communication skills required in a professional environment . We gained first-hand experience of working in a professional environment.

Name: VAIBHAV VERMA .(2020A4PS2274H)

Student Write-up:

PS-I Project Title: ALL GEAR ASSIST BY HYDRAULIC FORCE IN BMP II

Short Summary of work done: Our project is centralized around the infantry fighting vehicle BMP II tank. The main objective is to convert the mechanically shifting gears of a tank to hydraulically shifting gears. We started with researching the working mechanism of tanks to understand the different functions. Also read about the different parts of gearbox and analyzed how the different gears are meshed together in the gearbox and finally listed out the advantages and disadvantages of Servo Hydraulic Mechanism over Mechanical process.

PS-I experience: It was good. I learnt about gear mechanisms and tanks.

Learning Outcome: Developing an understanding about gear box and servo hydraulic system.

Name: RUDRANIL DAS GUPTA .(2020A8PS1494G)

Student Write-up:

PS-I Project Title: AI FOR INVENTORY MANAGEMENT FOR B VEHICLES

Short Summary of work done: An army base has many items in its inventory ranging from weapons to vehicles and along with that many spare parts like spark plugs or tires

etc.As the no. of items in the inventory increases it becomes difficult to keep track of the number of parts of a particular vehicle in inventory manually.It also happens that sometimes the items kept in the inventory gets damaged due to unforeseen circumstances and hence such parts must be immediately replaced , for that the extent of damage must be measured to make sure defective parts are replaced ,here also the AI model will prove to be efective in accurately predicting whether the part is defective or not .

An AI-based solution will denitely be better as the model will be able to correctly label the parts in lesser time and with much higher accuracy.However the most important aim that this model will achieve is act as the rst step towards automation of inventory management and in the future this process could be made purely automatic with robots scanning the inventory and classifying the parts to vehicles and at the same time predicting whether the part is defective or not.

This project aims to solve the problem of classication . The aims of this project are to classify the parts to different B vehicles and predicting if the part is safe for use.

The aim of the project was to create an app or website to classify the image of parts to 5 different B vehicles and further classify whether the part is defective or not.

Approach for the project

The approach was to create a program which will work in 3 parts

1. Part 1 was to classify images to 200 unique parts i.e is the image of a spark plug ,tire or

engine . Since these are parts which can be easily distinguished or at least that was our assumption so we used a model which was trained on lower resolution images and as a result it will be able to give accurate results even if data is less.

2. Part 2 was to classify which vehicle this part belonged to . Since there could be some parts which are not that distinguishable hence they require ner image classication for example engine for maruti will not very much dier from that of bolero (Assumption) hence the model is trained on higher resolution images.

3. Part 3, was to classify whether the part is defective or not.Again following from the same logic as point 2 we have used a model which is trained on higher resolution images.

PS-I experience: The entire duration of Practice School 1 had been an enriching experience for me starting with the problem statement which was based on a domain on which I had no practical experience but with the help from our PS1 mentors/group members along with the faculty we have tried our best to bring our project to a logical conclusion to some extent.

The major obstacle faced while working on the project was ‘data’ .Due to the condentiality of the data we were asked to work on a toy dataset and while choosing the dataset we have tried to simulate the actual data that will be used as far as possible.

Learning Outcome: learned about web development using Flask and javascript,and machine learning models using tensor flow & keras library.Learned how to use pre trained image recognition models like Resnet

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Name: ANIKET VERMA .(2020A8PS1909H)

Student Write-up:

PS-I Project Title: AI based Inventory management of B vehicles

Short Summary of work done: Created an AI software which classifies the different parts of vehicles to the vehicles it belongs to and predict whether the part is defective or not using the Binary Image Classification software.

PS-I experience: The PS-1 was great learning experience. The project coordinator introduced us to the various projects which were available to us. I was assigned my project along with 3 other students from Pilani and Goa campuses. We were assigned project mentors and PS faculty for clearing our queries by maintaining a healthy interaction with them.
The entire project was categorized in three phases. The first phase was to develop an ML model to classify different parts of vehicles like suspensions, chassis, etc. to the vehicles it belonged to. This phase was handled by Prem. The next phase was to classify whether a given part of vehicle is defective or not. This phase was handled by myself. And the last phase was to develop a website which integrates these models and predicts whether a given part is defective or not. This phase was handled by Rudranil and Jatin.
My project coordinator was super helpful and friendly. He also gave us the option to do two projects but since our project was still due during the midsem, we skipped it. Also, there were lots of seminars held throughout the PS-1 duration which really helped in strengthening my concepts. There were quizzes and group discussions held from time to time, which made the learning experience more interactive. Overall the PS-1 was a great experience in honing our skills and having hands-on learning experience.

Learning Outcome: The PS-1 was great learning experience. I familiarized myself with the work culture of corporate companies. I had the experience of working on projects with tentative deadlines and other PS related formalities. I developed skills like Python, JS and HTML coding, developing and implementing machine learning models, learnt different algorithms and developed interactive skills. I also got to know about different devices and technologies used in R&D centers.

Name: ATHARV SRIVASTAVA .(2020ABPS1850P)

Student Write-up:

PS-I Project Title: Visual Detection of Drones by Integration of Day time image with AI

Short Summary of work done: First, we went through dozens of datasets to find the most appropriate one. We found one with around 1300 images of drones. We then uploaded the dataset on roboflow to check the labeling and divide the model into three parts that are 70% for training, 20% for validations, and 10% for training. We imported this to our yolov5 model and ran different combinations of batch size and epochs to prevent overfitting and underfitting. Finally, we imported an image from the net and ran our model to check the final result. this project would help anyone quickly detect drones in a captured image with the help of machine learning

PS-I experience: The overall experience was okay. We had a lot of time to learn and implement the project.

Learning Outcome: I learned and implemented the basics of machine learning, deep learning, and convolutional neural networks.

Name: SHIVANG RAI .(2020B2A41947P)

Student Write-up:

PS-I Project Title: AI assisted inventory detection and management

Short Summary of work done: Created a model to detect vehicle parts and find them in the inventory.

PS-I experience: Learned a lot of new things and it was exciting to work closely with army personnel.

Learning Outcome: Learned object detection using OpenCV and SSD-MobileNet.

Name: NEHIL SINGH .(2020B5A41671P)

Student Write-up:

PS-I Project Title: ANTI DRONE SYSTEM BASED ON BALL ROUNDS AND PELLETS

Short Summary of work done: In our project we were objected to create an Anti Drone System using a gun which used ball round or pellets as projectiles. The expected range was 200 meters. The coordinates of the drone were provided to us by another group.
Since the PS was online, our work was focused more on software side. On the hardware side we had to identify the tools that would be needed to make the system.
In the project we made a code using Tinkercad to operate the motors to change the direction and elevation of the Anti-drone system.

PS-I experience: Overall the experience was good.
The project was fairly challenging and helped us learn new things and implement them in real life. The faculty from both the institute and station were supportive and helped us with doubts and queries regarding the project.

Learning Outcome: We made an anti drone system that can knock down drones using BB/pellet guns.
We learned some softwares like Pixhawk, Arduino and Tinkercad . Our project needed us to do some research on various topics such as guns, drones, automation which helped us to learn researching.

Name: ANANT NARAYAN ACHARYA .(2020B5A42351H)

Student Write-up:

PS-I Project Title: Post Detection of Objects - It should be Destroyed by Integrated Anti-Aircraft Gun

Short Summary of work done: Basically our work involved concepts of mechanical engineering as well as of computer science. Through our work we knew about the mechanisms of gun and tank and went through a number of articles mentioning the automatized artillery systems possessed by various nations . We got a fair share of idea from there and then we tried to developed using the basic projectile motion laws which helped us to get to the parameters which are to be controlled to integrate the gun with the tank and to automate its trigger mechanism . Then we took these parameters and wrote

the code and then by an Arduino board we intend to control the motors which will physically control the trigger of the gun .

PS-I experience: Overall it was a good experience where the faculty members and the mentors from PS but a bit more interaction from PS station mentors is always welcome . Since it was online , so could not visit the station . The work assigned was good , all the evaluative were conducted in time and were apt.

Learning Outcome: Through PS-1 , I got a good starting point to how machines work and we can control them and automate them . My coding skills got brushed up and I got to work on Arduino too.

Name: KULKARNI SOHAM GIRISH .(2020B5A81887G)

Student Write-up:

PS-I Project Title: Post detection of objects- it should be destroyed by an integrated anti-aircraft gun

Short Summary of work done: We were told to automate the anti-aircraft gun. We used arduino to control 3 servo motors that controlled the firing and direction of the gun.

PS-I experience: We had good learning experience and exposure to unique engineering applications

Learning Outcome: We learned coding for automating systems and using it on arduino. We also learned how physical systems can be related to electronics.

Name: KARAN CHETAN CONTRACTOR .(2020B5A82260H)

Student Write-up:

PS-I Project Title: Post detection of objects - it should be destroyed by an anti aircraft gun

Short Summary of work done: The project allotted to us was firstly a research-based project. So we went through a number of articles on the internet but could find a few related to ours so we contacted col Antriksh sir and he also helped us further. We then came to know our project was physics-based projectile motion.We had to select our gun and tank compatibility. So we went with the Kord 12.7mm automatic gun and The Bhisma T 90 tank. We started coding according to the usage of Arduino using servo motors. We solved the quartic equation.

PS-I experience: It was a good experience to get to know about drone technology and had fun making the project.

Learning Outcome: 1) Research capability increased
2) learned advanced coding a bit c++ and bit of python
3) Learned the working of arduino

PS-I station: 315 Army Base workshop (3) , Pitoragarh

Student

Name: SHAH JAINIL DHARMIL .(2020A4PS0504P)

Student Write-up:

PS-I Project Title: Fabrication of Tethered Drones

Short Summary of work done: Read around 15 research papers including 2 theses to get a detailed idea about the importance and methodology of making a tethering system for a drone. Proposed a design methodology to make a quadcopter using Ardupilot software. Gave an overview of the tethering system, the steps involved in making a generalized a tethering system. Prepared a spreadsheet which has the list of all components required for making a tethering system for a drone. Researched and documented a detailed analysis on the various parameters governing a tethering system of a drone. Prepared a complete deck which contains all block diagrams showing how to make a tethering system for a drone in a sequential manner.

PS-I experience: A nice, insightful and an enriching experience giving me an exposure to the fascinating world of drones and also an opportunity to be of help, in whatever small little manner I could to the Indian Army that in turn works for the security, well-being and prosperity of the billions of population of our nation.
An experience to work on a real-time research project in a group, thus enriching team-spirit and ability to strictly adhere to time-commitments when working on a project in a professional organization.

Learning Outcome: PS 1 enabled me become familiar with a whole new lot of softwares like Mission Planner, Pixhawk and ArduPilot.
It helped me enhance my technical report writing, presentation and oral communication skills.
It taught me the appropriate way to work on a formal project, thus giving me an early exposure to the professional world.

Name: MITESH BHARDWAJ .(2020A4PS1483G)

Student Write-up:

PS-I Project Title: 315 Army Base workshop (3) , Pitoragarh

Short Summary of work done: 315 Army Base workshop (3) , Pitoragarh

PS-I experience: To provide important and serious information in a war-like situation or any sought of serious operations between two communicating officers who are at different locations where signals are not present. The provided information should be kept secret and should not be leaked with help of third-party applications so for that end to end encryption is a good solution and our project aimed on this only

Learning Outcome: LEARNED ALL ABOUT E2EE and also about some software used in e2ee such as 'Certainsafe' and also about enhancement of signals

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Name: SRIGOPAL SARDA .(2020AAPS2099H)

Student Write-up:

PS-I Project Title: Visual Detection of Drones by Integration of Day time image with AI

Short Summary of work done: As our project was Visual Detection of Drones by Integration of Day time image with Artificial Intelligence and Machine learning, We learned about different software and algorithms that we used in this project. The major part of our project was based on project detection for which we used YOLO V5 algorithm and roboflow to train our model with a custom dataset.

PS-I experience: It was a good experience.

Learning Outcome: we learned about how image detection works, how to use google colab for machine learning projects, basics of machine learning.

PS-I station: A. V. Engineers (onsite) , Gurugram

Student

Name: PREET PARESHKUMAR PATEL .(2020A4PS1092P)

Student Write-up:

PS-I Project Title: Design and Manufacture of formula styled spaceframe chassis

Short Summary of work done: The company expected us to decide a project for ourselves and we could work on it while the company would be providing the required support and resources needed. So according to our project we first started off with the designing parts of various components which were done using Fusion360, SolidWorks and for some simulations ANSYS was used. Once all that was done we manufactured according to the plan.

PS-I experience: It was an amazing experience working at AV on such a project.

Learning Outcome: Fusion360, SolidWorks, ANSYS
Though when it comes to coming out of the virtual world, things don't always go according to your plan and hence you need to always keep improvising and we developed many

soft skills like team working, communication skills, and everything required to complete your work in actual world

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Name: SHIVANSH GUPTA .(2020A4PS1587P)

Student Write-up:

PS-I Project Title: Design and Manufacture of Formula Styled Spacefram Chassis

Short Summary of work done: Our company told us to pick our own project, so we 4 people made our plan and selected our project. We did designing the chassis model in Fusion 360 and SolidWorks, and then started manufacturing it using various machines like Vertical Milling Machine, Hand Grinder, Chop Saw Machine and Drilling machine. After that we did finishing process and de rusted it as in so many days, the rods were rusted and finally packed the complete chassis.

PS-I experience: Overall it was a very good experience. I was having good expectations from offline PS as for our mech branch, learning in offline is more beneficial and thankfully, it was upto the mark. The staff member in our company were very supportive, they helped us in various stages, in almost every aspect. I seriously suggest my juniors to take this company as their PS station in future.

Learning Outcome: I learned a lot form my offline PS. First I learned various softwares like Fusion 360 and SolidWorks as I was not having much idea about them previously and then when the time of manufacturing came, it was a very good learning experience as we practically used machines on our own. The atmosphere there was very encouraging to work. I am very thankfully to my team as I learned a lot from them, we had a great coordination and I learned how to work as a team together and listen to each and every team member. I also learned how to interact with the factory workers and staff.

Name: PANCHAL BHARGAV RAJESHKUMAR .(2020A4PS1862P)

Student Write-up:

PS-I Project Title: Design and Manufacture of Formula Styled Spaceframe chassis

Short Summary of work done: Our work at A.V. Engineers comprised of designing and manufacturing of Spaceframe Chassis for the Formula Student Team of BITS Pilani. The initial few weeks were spent on design changes, analysis, and software like SOLIDWORKS, Fusion360, and ANSYS. After completion of the design, we started the chassis manufacturing process, which took the better half of our PS-1 duration. We used several machines, power tools, and mechanical techniques during manufacturing.

PS-I experience: A.V. Engineers have been an old sponsor of the Formula Student team of BITS Pilani and provided us with all the necessary equipment and know-how to manufacture our chassis and other associated parts. It was a great experience as we got to work hands-on with several machines and tools and learned a great deal regarding the manufacturing industry.

Learning Outcome: I learned a lot more about the extra features in SOLIDWORKS and Fusion360 during the Design phase of our project and used them to implement in our design and manufacturing process of Chassis. We learned to use new machinery and power tools during the manufacturing phase of our Chassis. We learned a lot about the manufacturing sector.

Name: MUDIT SRIVASTAV .(2020A4PS2024H)

Student Write-up:

PS-I Project Title: Designing of Suspension and Steering for All Terrain Vehicles

Short Summary of work done: We started our work by researching data for suspension from previous similar projects. Then we moved on to creating mock setups in VSUSP software. After optimization, we finalized the front and rear suspension system. Then we moved on to Damping and Shock calculations. After that we started researching on different steering systems. We created a 3D model in Solidworks. We also did wheel hub and star modeling and created a wheel assembly model. After that we started simulations in Altair and Adams softwares.

PS-I experience: Starting of the PS-1 was very challenging. I had been allotted Maruti Suzuki but they pulled out. So then I was allotted A.V.Engineers in online mode without any choice of mine. The project was interesting. I had to work on many softwares. It was interesting to work as some of my team members were onsite while 3 of us were online.

The quizzes and seminars were taken place properly and we're challenging. The expert talks were very useful.

Learning Outcome: I learnt about how an all terrain vehicle works and designed the suspension and steering mechanisms for it. I worked on Solidworks l, Matlab, VSUSP, Altair and Adams.

Name: HARRIS FAROOQ ASHAI .(2020ABPS1843P)

Student Write-up:

PS-I Project Title: Designing of Suspension and Steering for All Terrain Vehicles

Short Summary of work done: Our project is 'Designing and Manufacturing of an all-terrain vehicle suspension and steering.' We will design a model for steering and suspension setup of our ATV using software like VSUSP and integrate it with 3-D simulations from MATLAB and LOTUS to check the working of the design. We will be manufacturing the components and parts based on the final design that would fit our requirements. A research paper will also be produced along with DVP and DFMEA reports that are used in industry standards around the globe. These reports are used to understand the failures, their frequency and detection that can take place in the various systems.

PS-I experience: Initially I was assigned MSIL but due to the Covid spread our onsite PS could not take place. Later, we were reallotted to AV Engineers which was also onsite but for the reallotted students they gave the option of an online PS. Our PS-1 project which was 'Designing and manufacturing of ATV suspension and steering.' There were 5 members in our team, 2 of them were onsite while the rest worked through online mode. We used to set meets and group calls to coordinate and discuss our progress over time. Internet sources were our go-to for studying about designing a suspension and steering. Various websites and modelling software were used to make a virtual model. All in all, it was a great experience working in hybrid mode for the first time.

Learning Outcome: I learned a lot during my PS-1, not only how to use modelling software like fusion 360, MATLAB or VSUSP but also how to work online with my teammates and instructors both from the college and the company. Writing project reports, diaries and making ppts is also a soft skill that students need to learn.

Name: RITISH PURI(2020B5A41664P)

Student Write-up:

PS-I Project Title: Design and Manufacturing of Suspension and Steering for ATV

Short Summary of work done: Our task was to design the suspension and steering of All Terrain Vehicles. The aim was to design better design than previous year for Bits Goa BAJA team which will be participating in SAE BAJA competition. It was more of research-oriented work. We went through research regarding the required parameters and values of design. We run mock setups in VSUSP software before making our final design. CAD softwares like Fusion 360 and solidworks were used to make 2-D and 3-D sketches. Analysis of it is done from MSc. Adams software.

PS-I experience:
I learnt some basics of Automobile Engineering and get industry exposure to it. I got some exposure to CAD softwares. The faculty was very cooperative. Since it was an online PS we couldn't do much as it is more of practical work. Some of the members of our team were working offline so there was not much communication with those working online. The industry expert sessions were very good and informative.

Learning Outcome: I got very valuable information from the industry expert sessions. I get some hands-on experience on Fusion 360.I got some exposure to how automobile industry works. Also, I learnt the way to make a proper formal report and presentation which will help in future works.

PS-I station: Aditya Birla Science & Technology , Mumbai

Student

Name: GUNJAL OM RAJESH .(2020A1PS2513H)

Student Write-up:

PS-I Project Title: TREATMENT OF COPPER FLUE DUST FOR EXTRACTION OF VALUABLE METALS AND SAFER DISPOSAL.

Short Summary of work done: My work during the PS 1 was to study the various ways to treat copper flue dust (CFD), which is a by-product in the copper smelting process. It contains valuable elements like copper, zinc, gold, indium, etc. as well as hazardous elements like arsenic and cadmium. It also contains lead, which is both valuable and hazardous. If disposed off untreated, it would waste valuable metals and cause great harm to the environment. It was my assignment to study the various ways to separate these elements in copper flue dust, so that it may benefit the company economically and also have a lesser impact on the environment.
Another task that was assigned to me was to come up with a complete process to extract most of the elements present in CFD, about which I've written in detail in my final report.

PS-I experience: PS 1 gave an insight to how researchers work in real life to come up with more efficient processes. The outcomes, if practically feasible, is then used by customers or partner companies for their economic benefit.

Learning Outcome: Learned various methods of how copper flue dust is treated before its disposal. Valuable metals are extracted for economic benefit of the company, whereas hazardous elements like Arsenic, is extracted for safer disposal of the dust. Learned more about metallurgy and processes like hydrometallurgy, pyrometallurgy, etc.

PS-I station: Aditya Cement Works , Shambupura

Student

Name: SHREY OJHA .(2020A1PS1714P)

Student Write-up:

PS-I Project Title: Characteristics Of Alternative Fuels And Its Impact On The Cement Process

Short Summary of work done: First I read about the whole cement manufacturing process and about our plant . then got to know about the sustainability targets set by our government and how we approached towards them till now and what we have achieved In this project we researched about all the AFR types and how they are different from each other and their induvial impact . we then saw the feasibility to apply those AFR

practices . also read then abt the upcoming technology and use of carbon capture and storage . at last calculated the impact , TSA , TSR , profit if we apply all the appropriate AFR's and overlooked the whole supply chain for it

PS-I experience: the experience was good and as per expectation , not very rigorous and at the same time got to learn something

Learning Outcome: learning outcome was whole process of AFR, real life application of research done by other , overlook the supply chain being build for the process , calculate profitability on using AFR solution

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Name: SHRAVANI KULKARNI .(2020A1PS2052G)

Student Write-up:

PS-I Project Title: Cement manufacturing process, heat balances and ways to optimize efficiency

Short Summary of work done: We studied in detail the cement manufacturing process and then calculated heat balances for each unit. Then we found efficiency of the current systems and studies the ways to improve it.

PS-I experience: The PS experience was very beneficial in understanding the cement sector. The professor and mentor were very helpful and guided is throughout our projects.

Learning Outcome: We learn about the cement sector.

Name: ISHIKA PRAHARAJ .(2020A1PS2064G)

Student Write-up:

PS-I Project Title: Study of Cement manufacturing process, assessment of heat balances and ways to optimize efficiency

Short Summary of work done: First, we studied the cement manufacturing process in detail. Then, we understood the heat inputs and output and the heat balances involved in every unit. Finally we researched on ways to improve the heat efficiency.

PS-I experience: The experience and learning was good.

Learning Outcome: I understood the practical implementation of thermodynamics such as heat integration

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Name: MOHIT DHOOT .(2020A3PS0531H)

Student Write-up:

PS-I Project Title: Electrical arc flash level study of LT and HT panels

Short Summary of work done: steps to calculate incident energy, case study of electrical arc flash related panels, results and conclusions

PS-I experience: wonderful, great learning experience

Learning Outcome: Learnings of Arc flash hazards and its preventive methods

- Selecting a case study among 12-13 case study, makes a broader mindset on the topic.
- Solutions of Arc flash hazards present in the market.
- Becoming knowledgeable in the field of warning labels
- Learnings of various kinds of faults currents.
- Understandings of all categories of PPEs required while working on electrical panels.

Name: MOHIT DHOOT .(2020A3PS0531H)

Student Write-up:

PS-I Project Title: Electrical arc flash level study of LT and HT panels

Short Summary of work done: Part 1 contains the learning opportunities from the cement sector. Student has provided a Case study with technical support. The main aim of the project is " To study about arc flash hazard calculation and protect the human by providing suitable rating arc flash PPEs during working on electrical panel". Categories of wearables PPEs according to the level of incident energy

PS-I experience: wonderful, great learning experience

Learning Outcome: Learnings of Arc flash hazards and its preventive methods
 Selecting a case study among 12-13 case study, makes a broader mindset on the topic.
 Solutions of Arc flash hazards present in the market.
 Becoming knowledgeable in the field of warning labels
 Learnings of various kinds of faults currents.
 Understandings of all categories of PPEs required while working on electrical panels.

Name: DARSHAN MOHAN KHADE .(2020A8PS1512G)

Student Write-up:

PS-I Project Title: Digitalisation of cement plant

Short Summary of work done: We digitalized two manual tasks at cement plant

PS-I experience: Good and engaging, we had great mentorship by Sreedhar sir

Learning Outcome: We learned the cement plant machinery and also about automation and robotics

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Name: SAMEER V KATTI .(2020B1A81944G)

Student Write-up:

PS-I Project Title: OPPORTUNITIES OF DIGITALISATION IN CEMENT PLANT

Short Summary of work done: I identified manual tasks involved in a cement plant. Then, shortlisted two of those tasks to be digitalised: “Checklist for activities in the cement plant” and “Sample collection from the conveyor belts”.
Project 1 - Build a web page to which can digitalise the on-paper checklist.
I learnt languages like HTML, CSS and JavaScript which are used to design a web page. I learnt these languages through online courses from Coursera, YouTube etc. Computer Science is the domain of this project.
Project 2 - Design a pick and place robot to digitalise/automate sample collection from conveyor belts.
A pick and place robot was designed to automate the collection of samples from conveyor belt. The robot mechanism is similar to that of a bulldozer. The overall cost of building the robot is estimated to be ₹ 2000 - ₹ 2500. Materials required: RFID transmitter and receiver, Arduino microcontroller, A4988 driver module, Stepper motor, Motor driver module, 4x Servo motors, 4x wheels, Chassis, 2x Arms, Batteries and Wires. RFID based transmitter and receiver is used to initiate the robot. The receiver and driver modules are connected to the Arduino board. Motor driver module, which is connected to 4 servo motors, controls the forward and backward movement. A4988 driver module, which is connected to the stepper motor, controls the collection and dropping of samples. 2 connections for each motor is given to control clockwise and anti-clockwise movement of the respective motors. Electrical and Electronics is the domain of this project.

PS-I experience: My PS-1 was in online format. The faculty-in-charge and the mentors were supportive and guided throughout the PS-1. I was not able to learn HTML, CSS, JavaScript, Arduino programming and Embedded C, but also implement them and design web pages and a robot. My communication and technical skills have also improved because of PS-1.

Learning Outcome: 1. Understood the role of manual tasks and activities in the maintenance of the cement industry.
2. Learnt the methods used currently to digitalise a few of these manual tasks in the cement industry.
3. Learnt and implemented the web designing languages like HTML, CSS and JavaScript.
4. Designed and built a web page.
5. Learnt and implemented Arduino programming and Embedded C.
6. Designed the connections between the components and build a pick and place robot.

Name: JATIN GUPTA .(2020B4A81989P)

Student Write-up:

PS-I Project Title: Power Optimisation scope

Short Summary of work done: Came up with 5 power optimisation techniques for the organisation. Understanding vairous electronic devices being used in cement manufacturing. Researched on how some of these devices can help to increase the efficiency and decrease the cost of cement manufacturing. Also read about new machinery and innovations being made in power optimisation for cement manufacturing.

PS-I experience: I have got industry experience and learnt a lot about cement industry and its processes.

Learning Outcome: Understanding the functions of variable speed drives. Understanding that how VSDs can help to eliminate the use of excess power by controlling speed and torque of electric motors.
Learning about multidrive coolers. Understanding the system layout of multidrive coolers. Learning about how the DC output array can help us to get different output by attaching multidrive coolers of different sizes can help us to get the power needed which is not possible in single drive coolers.
Understanding the working of turbo blowers and their application in cement manufacturing.
Understanding the different types of pollutants emitted by cement plants and how kiln fuel mix optimized by Expert Optimiser can help reduce those emissions.
Understanding that how Expert optimiser can help in controlling various variables in the kiln more accurately and quicker than manual methods.
Throughout the project, I was always curious about how the biggest cement manufacturer, Lafarge, applies power optimisation so I studied about it. Learning about low pressure oil-free compressors and how Lafarge used them to decrease their energy consumption in transportation by using them.

Name: KRISHNA PRASAD S .(2020B5A41891G)

Student Write-up:

PS-I Project Title: Study operating principle of bag filters and find out way improvement opportunities to enhance its efficiency

Short Summary of work done: Initially I learnt about cement sector. I learnt about the process related information, various technologies involved in cement production, various stages of cement production, cost aspects involved in cement production, industry sustenance etc. Then my focus was on my project work. I understood the operating principle and also the various types of bag filters used by cement industries and finally came with few suggestions to increase the efficiency of those bag filters.

PS-I experience: It was a good experience. It was well organized. My PS-I faculty and mentor was very helpful.

Learning Outcome: I learnt about cement sector, operating principle of bag filters, various types of bag filters, need and importance of bag filters in cement industries and also few ways in which efficiency of bag filters can be improved.

PS-I station: AECOM Infrastructure, , Mumbai

Student

Name: YASH ABHAY SURANA .(2020A2PS0243P)

Student Write-up:

PS-I Project Title: Design of footings, columns, beams and slabs..

Short Summary of work done: I had a pretty interesting topic for my PS1 project. My mentor provided me with the plan and elevation of a single storey building during my 2nd week of internship. The work was to do the analysis and preparing the design, general arrangements and reinforcement drawings. I took help of some youtube videos and IS: 456. As a aspiring structural engineer, this topic and the work has really helped me in gaining the knowledge and experience of the mentors.

PS-I experience: It was a great learning experience. I got to know about various concept that aren't taught in the BITS curriculum as of 2-2. I also got to understand may things about the components of the building. How a company works, what is the hierarchy of profiles, everything was understood.

Learning Outcome: I learnt new things like what is footings, it's importance in a building. I understand many key terms like excavation, shuttering, deshuttering, centering, etc. for columns, beams and slabs. PS gave me a pretty good experience in connecting the things taught in the curriculum with the actual work.

PS-I station: Amara Raja - EPC , Hyderabad

Faculty Name: Murari Verma

Faculty Write-up
Amara Raja Infra Pvt Ltd (ARIPL) is an EPC Construction company in India with capabilities to offer Design-Build and General Contracting Services for Industrial & Manufacturing Plants, R&D Centres, Pharma Facilities, IT Parks, Airport Terminals, Power Plants , Townships, Smart Cities, Water & Wastewater Treatment Plants, Public Buildings, Banks, Hospitals, Hotels, Residential and Institutional Campuses.

Mentors at Amararaja was expecting students onsite. Since the PS1 was online they have just try to train them in quantity surveying, bar bending schedules and reading engineerin Drawings. Overall i feel the task and projects given were not planned and was not motivating enough.

Student

Name: YASHVARDHAN PRASAD .(2020A2PS1775P)

Student Write-up:

PS-I Project Title: Construction practices in switchyard and substation

Short Summary of work done: In this journey of PS, I worked with the Amara Raja Group of Hyderabad, particularly with the EPC Division(Engineering, Procurement and Construction). I firstly interacted with my in charge, Mr. N Srinivas, who was the design and engineering head of the EPC Division. He took my orientation and explained how his

firm was like a contractor which accepted the tenders released by various clients, mainly those related to designing substation and switchyard. He then explained the whole process of tendering and how there was an EPC team which took care of all the engineering works and the B&D Team(Business and Development) which took all the costs into account and made estimates for the bids accordingly. Then he assigned me the task to create a presentation on Project Kaleshwaram which is world's largest lift irrigation project and describe its power network. Upon completion of this task, he introduced me to his team in which Mr. Vasu was an electrical engineer and Mr. Rajesh was a civil engineer. Both gave me tasks regarding planning, calculation and designing of building plans for their clients. Tasks for calculation were mainly related to civil engineering like Schedule preparation and Topographical survey analysis but the more relevant works were the presentation works in which I had to communicate technical details to the client.

PS-I experience: The experience was completely great for me. I interacted with real engineers for the first time and it felt great to be a part of their projects. It helped me understand how much do the soft skills matter for an engineer which are developed by taking responsibility and calls. I understood that industry does not work like only technical works but a lot of non-technical tasks are also necessary for its functioning. As an intern, I had prepared one sketched pdf for indicating difference of requirements in the plan from the Amara Raja firm and its client. This task is not a very technical in nature although it had great impact in acceptance of the tender offer. Apart from that, I learnt how conference calls work in office and how an organizational hierarchy works efficiently.

Learning Outcome: My learning outcome was cooperation with all the engineers involved in the project and communication of necessary details across the intern and the in-charge. I also learnt how to design plans as per the standards codes, creating reinforcement schedule like the Bar Bending Schedule and calculating cutting and filling quantities from a topographical map.

PS-I station: Amararaja , Hyderabad

Student

Name: GAURANG KRISHNA .(2020A2PS1489P)

Student Write-up:

PS-I Project Title: QUANTITY SURVEYING

Short Summary of work done: As a quantity surveyor, my first task was to analyze the drawings which were sent by my
mentor and understand all the technical terms behind them. After my analysis was completed, my mentor sent me a BOQ(Bill of quantities) excel sheet which provides the data on the number of materials, labor, and costs in construction work.
Preparing the BOQ is perhaps the most important role of a quantity surveyor and I calculated quantities for excavation works, shuttering work, plinth beams, and many more. Also, I developed an understanding of the legal duty of a quantity surveyor and how to decide whether the given tender is economical or not. I also had to create ppts and present them to my mentor to update him about the work progress.
My final PS work was to analyze a RA bill that was sent by mentor and to prepare a presentation on it. Since, our previous course covered this concept of RA bill it was easy to complete this part of project.

PS-I experience: The learning part of PS-1 was quite good where I came to know about various real time civil engineering projects. Although, there was some communication gap between me and my mentor but he was supportive and helped me in learning concepts.

Learning Outcome: I understood the importance of quantity surveyor when it comes to construction projects and got exposed to various real time civil engineering concepts like estimation, bar bending schedule, BOQs, rate analysis and many more.
It felt great to be a part of an ongoing civil engineering project and contribute as a quantity surveyor.

PS-I station: Atomic Energy Regulatory Board - Chemical Engineering , Mumbai

Faculty Name: Sayan Das

Faculty Write-up
AERB (three stations): All the three stations of AERB handled the three students very well. All of their mentors had weekly meetings and kept the students busy with their respective research work. Their practice school started with a rigorous literature review. Later on they were involved in numerical/theoretical analysis with the help of various computational software such as MATLAB and also performing coding in languages such as C and FORTRAN. The students were also equally interested in interacting with their mentors and performing their research.

Student

Name: MOHIT KUMAR .(2020A1PS1721P)

Student Write-up:

PS-I Project Title: Hazop Studies of process modifications containing explosive/flammable material

Short Summary of work done: The project was related to risk analysis and risk management in process industries. Before the mid-term the project was quite theoretical in nature, covering all the major aspects of HAZOP analysis process. After mid term the project became a bit interesting as the industry mentor asked us to work on simulations that could model process failures in chemical industries. Altogether, it was a pretty much theoretical yet somewhere interesting project.

PS-I experience: At AERB, I got the opportunity to explore various aspects regarding the background of my project. Although much of it was theoretical in nature, yet it was something which would become very crucial if you are employed in any process industry in future. Also, with the inclusion of simulations in the project, the learning domain was further widened. Altogether, it was a great learning experience. The industry mentors too were quite supportive and engaging and were willing to help us anytime.

Learning Outcome: Got to learn quite a lot about HAZOP studies and various other aspects linked with it along with running simulations which again is something which is going to help us in core chemical engineering domain.

Name: KUNAL CHATURVEDI .(2020A1PS1722P)

Student Write-up:

PS-I Project Title: HAZOP Studies in chemical engineering processes

Short Summary of work done: Our project was focused on performing HAZOP studies for chemical processes. HAZOP is a method which is used to analyze any process/operations and find that if there is any risk associated with it. If it is so, It also recommends possible solutions to deal with it. During our first two weeks we learnt about our organization and brief of HAZOP process. After that we learnt about the guide words

and official method of conducting HAZOP studies. After that we discussed the case studies of various incidents that happened in past and prepared HAZOP flow sheets for it. I was lucky enough to visit AERB for two days where my mentor introduced me with their team and I interviewed them for my PS-1

PS-I experience: Overall it was a great learning experience. It was online PS. Both my PS mentor at BITS and AERB were helpful. They guided me in every aspect of internship. My PS mentor was Mr. Jayabrata Dhar sir. He arranged quizzes, group discussion related to subject which were highly engaging. My mentor at AERB was Mr. Vishvajit Bhatkhande sir. He was so much helping for every aspect of knowledge related to my PS either theoretical or practical. He also arranged a visit for me at AERB so I can learn practical things too.

Learning Outcome: 1. Learned to perform HAZOP studies
2. Technical knowledge related to safety procedures
3.Working with team
4. exposure to corporates world.
5.Dealing with challenges.

Name: BASUDEBA JHA .(2020A1PS1979G)

Student Write-up:

PS-I Project Title: Consequence Analysis of Chemicals in Solvent Production Facilities

Short Summary of work done: Consequence analysis is a risk assessment methodology. There is a need to carry out consequence analysis of a process to assess its impact on the environment, personnel and parts of the plant. The atmospheric stability conditions are assessed and fed into a software. The software used depends on the circumstance. PHAST is typically used but in plants with hinderances on their terrain, a CFD model such as FLACS or ESCAPE is more applicable. After feeding the atmospheric conditions, the model relies on certain assumptions. These assumption are typically closed to provide a more conservative result however, they must have some grounding in reality. Based on guidelines such as ERPG and AEGL, the potential harm to personnel or public is assessed. In consequence analysis, there is always a possibility of fire if the release is combustible. Here the concept of fire and explosion analysis was introduced along with fire modelling. There are several methods to fire modelling. Emphasis was laid on algebraic models, zone models and field models.

Along with this, a literature review of ten research papers were carried out to gain a more intuitive understanding of consequence analysis and the softwares used to carry out the same.

PS-I experience: It was a thoroughly enriching experience. I had the opportunity to learn a lot about risk assessment and the tools used to model a hazard and its consequences. I was exposed to ALOHA software and was made to practice problems from chemical process calculations quantitative risk analysis.

Learning Outcome: I got to learn about various softwares such as FLACS, ESCAPE, ALOHA, PHAST and how they are used to carry out a consequence analysis. I also learned how to make appropriate assumptions to create a model. I was exposed to various guidelines such as AEGL and ERPG that help assess potential damage to the public in case of a hazard.

PS-I station: Atomic Energy Regulatory Board - Impact Analysis , Mumbai

Student

Name: YASHWARDHAN P NAIKNIMBALKAR .(2020A2PS0225P)

Student Write-up:

PS-I Project Title: Performance Assessment of Nuclear Reactor Containment Structure under Missile Impact Loads

Short Summary of work done: I had to analyse the damage on nuclear reactor containment structure subjected to missile impact. I studied about nuclear reactor containment structure, impact loads, damage cause by them and failure mechanisms by reading multiple research papers. For carrying out the analysis I had to model a target Reinforced Concrete slab and simulate impact load on it at various velocities. The analysis was carried out through Finite Element Analysis on ABAQUS where proper material model needed to be studied like Johnson-Cook model and Concrete Damaged Plasticity Model.

PS-I experience: PS-1 was a great learning experience and I got to learn many new things as I solved many problems with the help of my PS mentor that I faced due to

restrictions in learning edition of ABAQUS. I also recieved lots of help from my PS mentor who always focused on learning more and I learnt many things I might never learn in my undergraduate studies.

Learning Outcome: I learnt basics of Finite Element Analysis, got conversant with ABAQUS, learnt in detail about properties of materials like stress strain response of concrete and effect of high strain rate on steel. I also got to learn about Impact loads and how are they simulated on softwares.

PS-I station: Atomic Energy Regulatory Board - Integrity Analysis , Mumbai

Student

Name: TANDON SHAURYA GAGAN .(2020A4PS1556G)

Student Write-up:

PS-I Project Title: Integrity Assessment of Containment Pressure Boundary under Missile Impact: Leakage Rate through Cracked Concrete

Short Summary of work done: The project assigned to me was the integrity assessment of containment pressure boundaries under missile impact with a focus on leakage rate determination. To better understand the project, initially, I read articles related to nuclear safety which later helped me grasp the purpose behind more in-depth and complex papers I read as part of my literature review. To conduct the numerical analysis needed for the project, I developed MATLAB skills as well. Apart from this, weekly meets with the industry mentor helped me bridge gaps in my understanding of the concepts. I studied the existing literature to develop an understanding of the various aspects of a nuclear power plant followed by which I picked up experimental data from the available literature and arrived at similar results. I coded a function for the leakage rate on MATLAB and tested a few cases mentioned in the available literature. Inspired by the Monte Carlo method, I used the rand function to generate random values for the parameters of crack width, temperature, and pressure inside the containment. After obtaining the corresponding leakage rate values for these three parameters, I plotted graphs using the scatter and surf functions. Following this, I laid out my inferences from the plots generated and presented the results in my report.

PS-I experience: Throughout the course of PS-I, I feel I was surrounded by knowledge and opportunities. Apart from the project assigned, industry sessions opened up interesting avenues and it was rewarding to have gained insights from professionals in the industries. PS-I pushed me to work on my skills and develop an acumen for research. The industry and faculty mentors guided me every step of the way and I'll be forever grateful for their help.

Learning Outcome: Having a research-based project, I learned a lot through literature review and various articles I read. I developed an understanding of containment integrity and reactor safety not just throughout the course of the project but also through the quizzes and group discussions conducted. I also developed technical skills like MATLAB to successfully conduct the numerical analysis required by my project. Lastly, I learned key lessons in time management, communication and responsibility throughout my PS-I internship which truly helped me grow as a person and a professional.

PS-I station: Atomic Energy Regulatory Board - Mathematical Model , Mumbai

Student

Name: SAHIL SAMIR PATWARDHAN(2020A4PS0957P)

Student Write-up:

PS-I Project Title: Studies on smoke filling in a ventilated enclosure

Short Summary of work done: My project was related to Mathematical modelling. For my project, I had to model behaviour of smoke in a ventilated enclosure, and carry out parametric studies. To model the problem statement, a set of non-dimensional coupled ODEs was to be derived and solved using numerical methods. The results were then compared with experimental data. Parametric studies were then conducted to study effects of key variables. The project required some basic knowledge of programming to solve the equations. Some useful languages were FORTRAN, MATLAB and Python.

PS-I experience: Overall, PS - I was a good experience. I got to learn something new and apply topics from subjects I already learned. It was interesting for me to model and predict smoke behaviour using only ODEs. The provided study material was also very helpful and interesting. Other than my project, the allotted faculty mentor as well as station

mentor were very responsive and helpful during my entire PS. This was very encouraging for me.
The only problem I had was with the lms portal towards the second half of the PS. Since it would not work very often, we had to ask our mentor to mark our attendance every time.

Learning Outcome: PS helped me revise many concepts and learn new programming languages. I learned the significance of the concept of non-dimensionalization in experimental studies. I also learned how behaviour of a bodies can be modelled using the idea of control volume to derive set of ODEs. These helped me revise and better understand concepts taught in fluid mechanics course.
My project helped me improve my Python programming and I learned how to apply it in a real problem to solve ODEs. The project also pushed me to learn MATLAB which was a new language for me. I also learned about different smoke models and other techniques currently in use to model smoke behaviour.
The group discussions and quizzes helped me to learn about AERB and nuclear energy and its applications in different areas such as power sector and medical field.

PS-I station: Atomic Energy Regulatory Board - Reactor Physics , Mumbai

Student

Name: SAUMARJIT GOSWAMI .(2020B2AA2115G)

Student Write-up:

PS-I Project Title: Development of Inverse Kinetics Model for a Nuclear Reactor

Short Summary of work done: The diffusion of neutrons, responsible for fission reactions in a nuclear reactor, is governed by a diffusion equation. The diffusion equation consists of differentials of several parameters of the reactor and is dependent on factors of space as well as time. Since it is relatively challenging to compute absolute solutions for the neutron concentration in such a scenario, the equation is translated in terms of only the time factor. Hence the term "Point Kinetic" is termed for the transformed ordinary differential equation, as the reactor is hypothetically assumed to be devoid of space, in essence, a point. The project work mainly consisted of two paths: one is the calculation of the neutron density, i.e., n(t), from the point kinetic equations where the value of the reactivity parameter ρ(t) is given, and second, the calculation of ρ(t) from the shared

values of the power profile P(t), which can be equated to n(t) in the ODE as in a reactor, the power generated is directly proportional to the neutron density. In the latter case, a mathematical technique called Inverse Kinetics was used to solve the ODE along with a statistical approximation tool called Kalman Filtering Technique. Inverse Kinetic is a method to manipulate the Point Kinetic ODE in such a way that we obtain an expression for the reactivity profile ρ(t), where n(t) is a given parameter in the equation. The entire computation was completed using the MATLAB environment and its ODE solvers like ODE45, ODE23S, etc. Specific properties of ODEs such as "stiffness" was demonstrated for the Point Kinetics ODEs.

PS-I experience: Understanding underlying principles of neutrons in a reactor, such as fission, fusion, radioactive capture, etc., helped me develop a more profound knowledge of Reactor Physics. Working with Ordinary Differential Equations in the MATLAB environment allowed me to learn more techniques for solving ODEs and gain perspective about some of their deeper properties. An experience with a PS Station such as AERB, which is the workhorse of the government for regulating all nuclear activities of the country, expanded my standpoint towards the importance of nuclear safety and environmental moderation of nuclear projects. It was an enriching experience to work under mentors as knowledgable and adept as scientific officers of AERB, who were able to provide their simplified and refined outlooks in the field of Nuclear Physics.

Learning Outcome: I gained a more profound understanding of the principle of nuclear reactors and the parameters that govern them. Furthermore, I also developed better mathematical knowledge of Ordinary Differential Equations. I also developed more in-hand experience in working with the MATLAB environment and writing and manipulating differential equations in it. Last but not the least, I gained exposure to a professional atmosphere towards scientific temperament while working under scientific officers of AERB.

PS-I station: Balaji Cement Works , Budawada

Faculty Name: Sayan Das

Balaji Cement Works: There were a total of 10 students in this station (all from different engineering and science backgrounds). Almost each of these students were given separate projects due to the diversity of their background. However, there was very little interactions with the industry mentors. So I had to search for relevant research articles based on their project topics and give them assignment based on that as well as ask them to prepare the project report and the seminar. Every week I used to hold meeting on the project progress with the students. In addition to this, I tried my best to follow up with the mentors, requesting them to interact with their students, but most of the times there was

rarely any response. Ultimately most of the students had to depend strongly on me for any research articles or study materials for preparing the project report. I made sure that were able to focus on the project topic that was given to them, without diverting too much from the topic.

Student

Name: BISHNU.R .(2020B4A11934H)

Student Write-up:

PS-I Project Title: Quality and Safety in Industrial Construction Projects

Short Summary of work done: As part of the PS-1, we were first given an informative orientation on the site and the company. Later, we were assigned projects based on our courses, and throughout the course of the PS-1, we were recommended to attend certain industry talks on various topics. The talks were very useful, easy to follow, and enlightening. We were

PS-I experience: PS-1 was very engaging and fun. I was able to learn a lot of new things and explore new fields as a result of the exposure provided by PS-1. It was informative and a great experience.

Learning Outcome: I was able to understand how the field of construction worked on a daily basis. The day to day activities, the raw materials used, the processes involved in construction were all explained to me in great detail. All the industry talks I had the pleasure of attending were designed in such a way that it was welcoming to a newbie to the field such as myself. I acquired a few contacts and acquaintances who will prove of great help to me down the line in the future.

Name: ANANY SHARMA .(2020B4A41837G)

Student Write-up:

PS-I Project Title: Non-Destructive techniques & condition monitoring techniques in the maintenance of equipment

Short Summary of work done: I did research on Non-Destructive Techniques in maintenance of equipment, specially related to the cement industry and other industries as well. I studied all these methods in detail, their process, equipment used, level of the skill set required to conduct these and type of error/ fault they detect. And attended many knowledgeable expert seminars, and learned a lot from them as well. I also prepared for the Group Discussions and Seminars.

PS-I experience: It was a good experience overall, I got to learn a lot, be it insights of a cement factory or formal corporate communication. While doing my research on my topic and making my report, I could apply my knowledge gained from the 'Technical report Writing' course taught in my 1st year. Group discussions were very exciting, exchanging ideas and debating on them was also very insightful. And delivering the seminar boosted the confidence in myself.

Learning Outcome: Got in-depth knowledge of Non-Destructive Techniques in maintenance of equipment, various methods, their process, equipment used, level of the skill set required to conduct these and type of error/ fault they detect. Apart from academic knowledge, I gained confidence while debating in Group Discussion and delivering the seminar. And also learnt the art of formal corporate communication.

PS-I station: Bela Cement Works , Jaypee Puram Bela- MP

Student

Name: SOUVANIK DE .(2020A8PS1461H)

Student Write-up:

PS-I Project Title: Field Instruments for Measuring Process Parameters

Short Summary of work done: I researched on Control Systems/Parameters and Various Field Instruments. Firstly, I tried to define what are Process Parameters , Process parameters (also called process variable) are certain measures that refer to status of the process. In order to obtain effective execution of the process , its parameters should stay under continuous control. Examples of process variables in control systems are the temperature measurement in a location, the pressure produced by a cooling water pumping system, or the voltage maintained by a standby generator. There are basically 4 process parameters common to any industry: Temperature, Pressure, Level, Flow. Then I tried to define what are Field Instruments, Field instruments are designed to control

automation processes. Field instrumentation is employed to measure and monitor flow, level, pressure, temperature and analyze liquids. Finally I elaborated on the different Field Instruments : Flow Meters, Pressure Transmitters, Temperature Transmitters , Level Meters with their further classifications and images in my ppt.

PS-I experience: Though my ps1 was online , still it was a productive experience. I got a virtual 'Cement Works' experience about how all the functioning takes place. My mentor was from Electrical/Electronics background which beneficial for me as I am an Instrumentation student. My project title was also related to my branch so I was always enthusiastic in the process. To wrap it up, I can say that my PS-1 experience was pretty much useful for me.

Learning Outcome: I got to learn about various Field Instruments and their principles of working

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PS-I station: Bharat Forge Ltd. (onsite) , Pune

Student

Name: ANVAY WAYAL .(2020A4PS0814H)

Student Write-up:

PS-I Project Title: Methodology to calculate scope 3 emissions from downstream activities

Short Summary of work done: I was told to calculate scope 3 emissions from downstream activities (the transportation corresponding industry outlet to its customer).I read various research papers, and did a lot of research every day on methods used globally and locally and finally combined then with my ideas to implement them for achieving the desired goal. I visited various departments in the industry several times to understand the supply chain management. I also got all the insights of the industry during by induction training program at the beginning of my internship.

PS-I experience: The overall experience was amazing. The learning matters more than the stipend. Working in an organization helps you to attain a good routine and makes you punctual. Also communication skills really help as unless you speak no one is gonna come running to help you.Thus having the eagerness to learn and trying to extract as much as possible is a quality one must possess.

Learning Outcome: I learnt patience, communication skills, presentation of my ideas, punctuality, discipline, and ability to withstand every situation and live outside my comfort zone to get a taste of life.I learnt about sustainability and supply chain management as well which were the topic of my interest in my project.

Name: HAJARE DHIREN DATTAJIRAO .(2020A4PS1868P)

Student Write-up:

PS-I Project Title: Machined Component Division - 1(MCD-1)Total Productive Maintenance(TPM) - Jishu Hozen(JH Pillar) Step 1 & 3

Short Summary of work done: I worked on Step 1 & 3 of JH Pillar of TPM on pin grinding machine in MCD-1. Step 1(Initial Cleaning) include observing and identifying multiple abnormalities, sources of contamination and easy to access points. Identified and observed more than 150 such points. Measures that need to be taken to eliminate these points were proposed and implemented. Step 3(inspection) include observing and identifying parameters of inspection that operator needs to inspect. Later, discussed with the maintenance team for standard values of these parameters and the frequency of inspection. Time of inspection and action that needs to be taken was also studied. Preparing PPT and excel sheet of the results for further steps.

PS-I experience: My overall experience of PS-1 is pretty good. The station is very big and had a lot new to learn. Firstly we had our induction process in which we were given introduction about the different divisions. Apart from that, my mentors from the PS station were very helpful and understanding. They gave us different assignments apart from the alloted projects for learning purpose. Our teaching assistant from the institute also helped and guided me throughout. Being a Onsite station, I learned many things outside my project domain as well as my division. The station provided lunch, evening snack and tea.

Learning Outcome: Beginning with industrial exposure, I gained a lot of knowledge regarding how things work in an industry. There were different divisions based on their role. I learned how there is proper coordination between divisions for getting desired results. Also, learned professional ethics that need to be followed within the workspace. For eg:- coming on time, completing all the given work, etc. Overall, the learning experience was excellent.

PS-I station: Bharat Heavy Electricals Ltd. (onsite) , Haridwar

Faculty Name: Ram Chandra Murty Kalluri)

Faculty Write-up
BHEL Haridwar is a large plant spread over a wide area. It offers a very good exposure to various applications in mechanical engineering. Overall it is a very good place for a motivated student to learn as much as he/she can.

Industry looking for in a -I intern

BHEL Haridwar offers a predefined training for a predefined duration to all the students irrespective of their background. So it is not ready to actively give projects to the students that can result in a useful piece of work at the end of two months. Therefore the student needs to be motivated enough to involve with their mentors and volunteer to do original work that can benefit the organization and add value to the student in terms of learning beyond the basic training that is offered.

Student

Name: PRANAV TRIVEDI .(2020A4PS1567G)

Student Write-up:

PS-I Project Title: Design and analysis of components of Steam Turbine

Short Summary of work done: BHEL Haridwar unit is composed of two divisions -
1) HEEP (Heavy Electricals Equipment Plant)
2) CFFP (Central Foundry and Forge Plant)
My work during the given period was based in STE (Steam Turbine Engineering) Department of HEEP.
In the STE Department, I was assigned in Mechanical Designing team of STE where the main course-of-work includes generating 3-D models of the components from 2-D drawings sheets (which includes exhaustive set of detailed and sectional views) provided using designing software Creo Parametric.
After the 3-D model is completed, its dimensions would be further verified on AutoCAD, and compared with actual drawings.
When verified, the 3-D model would be simulated on Engineering simulation software ANSYS Workbench, and the necessary set of boundary conditions would be applied on the given component using the datasheet provided.

My project primarily includes 'Guide Blade Carrier' of 800 MW LP (Low Pressure) Turbine and 'Inner Seal Ring' of 600 MW IP (Intermediate Pressure) Turbine.

PS-I experience: The experience was overall insightful, with the help of qualified and supportive mentors. Also, the environment at the workplace was very conducive from learning point of view as all the employees were quite approachable and there were no hierarchical obligations followed as such.

Learning Outcome: My major learning outcome includes the fundamental knowledge of finite element analysis where I learned about- different types of meshing pattern, dealing with singularity in functions, application of different types of boundary condition (majorly symmetric and anti-symmetric), different tools available to analyse a component, reasons for failure in meshing, etcetera.

Name: A ADVAITH .(2020A4PS1883P)

Student Write-up:

PS-I Project Title: Design and Development of IP Turbine for 210MW R&M Project

Short Summary of work done: The initial 15-20 days were spent in only observing the manufacturing process of turbine parts. Then few of us were assigned to design and perform analysis of certain components on software for the rest of the time duration.

PS-I experience: Overall good experience and exposure to different parts of a turbine and its designing & manufacturing

Learning Outcome: Creo Parametric, Ansys Mechanical, AutoCad, observing various machining/forging process

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PS-I station: Birla Polyfibers , Harihar

Student

Name: SAUMYA AJAY KUMAR .(2020A1PS2086G)

Student Write-up:

PS-I Project Title: Study and improve steam economy in an evaporator

Short Summary of work done: The objective behind the project was to make us familiar with the functioning and working of the evaporator and coming up with new ideas for improving the steam economy. The project helps to gain knowledge of the company in the chemical domain and secondary research skills.

PS-I experience: PS-1 being my first ever industry exposure was really great and I had a lot to learn daily. Hence it made my summer term quite valuable and insightful.
Our PS instructor who was in charge, ensured the smooth flow of the PS throughout the course of the two months and was the primary point of contact with the company.
The things that we study in our classes and the things that we are able to observe in a plant and the factors affecting each and every process is immense.

Learning Outcome: It was definitely a very good learning experience throughout my PS-1 program .Got to know about the steps involved in Pulp and Fiber making process in depth .
Gained a good understanding of the basic structure of the plant and the instruments involved in the various steps.
And most importantly , communication skills were enhanced by the activities involved in PS-1 like group discussions.

PS-I station: Birla White Cements , Jodhpur

Student

Name: AMAN VIJAY KHANNA(2020A1PS1697P)

Student Write-up:

PS-I Project Title: Raw Mix Chemistry For The White Cement Manufacturing Process & Raw Mix Design

Short Summary of work done: Learnt about the raw mix chemistry of cement. Got an insight into the cement industry. Difference between Portland Cement and white cement, the composition of cement and it's properties. Got to know about Kiln operations, sintering, quenching, bleaching etc. How can these processes be improved. Studied about the raw mix design and it's formulation. Answered questions like what is burnability and factors affecting it. Also researched about clinker and it's properties followed by the general learning outcomes of the cement sector.

PS-I experience: The PS1 experience for me was something different altogether. Even though my PS1 was online, we got to know a lot about the cement industry. How cement is made, what are it's key components and it's uses. For the entire PS1 duration we were divided into groups of 3 and we selected the topics we wanted to study about/research from the given topics. We made presentations, reports, interacted with the mentors, the dept. HOD etc. All in all it was a good experience.

Learning Outcome: The production of White Cement requires about twice the energy as compared to ordinary
Portland cement (OPC). Carbonation – It is a chemical reaction in which carbon dioxide penetrates into the concrete
and reacts with hydration products. These hydration products could be – CSH gel (Calcium-Silicate-Hydrate) or Ca(OH)2. The Effect of Changes of Major Oxide Components like CaO, SiO2, Al2O3, and Fe2O3 84 values in the raw mix has consequential effects on raw materials burning and clinker quality.

Name: SOUMITRA VATSAL .(2020A1PS1723P)

Student Write-up:

PS-I Project Title: Raw Mix Chemistry For The White Cement Manufacturing Process & Raw Mix Design

Short Summary of work done: Academic Activities-
Quiz 1: Based on slides ans sessions
Group Discussion 1: Given Topic on Spot

Seminar 1: Based on the PPT and report prepared by me on given topic (Raw Mix Chemistry For The White Cement Manufacturing Process)
Project Report 1: Based on Raw Mix Chemistry For The White Cement Manufacturing Process (an 86 Pages report which included project deliverables and outcomes and 52 pages ppt was prepared for the mentioned topic)
Diary 1: Based on talks and sessions on PS 1 along with project description
Quiz 2: Based on slides ans sessions
Group Discussion 2: Given Topic on Spot
Seminar 3: Based on the PPT and report prepared by me on given topic (Raw Mix Design)
Project Report 1: Based on Raw Mix Design (an 86 Pages report which included project deliverables and outcomes along with 40 questions based on our PS and 52 pages ppt was prepared for the mentioned topic)
Diary 1: Based on talks and sessions on PS 1 along with project description

PS-I experience: We have over the span of approximately two months, deeply studied the various aspects of the Cement Industry and its Applications in real life. We have also learnt about the various steps involved in the manufacturing of cement, particularly the White Cement. We have gained insight about the functioning of the Rotary Kiln and the ways to bring out maximum efficiency of a cement plant. For these, we have referred to various sources on the internet such as research articles, journals, blogs and youtube videos.
A deep understanding of the chemistry involved in cement manufacturing and the properties of various components of cement have been discussed through our Project Report along with potential solutions to make the process of White Cement manufacturing more efficient.

Learning Outcome: - [ ] Ways to reduce the release of large amounts of pollutants in the process of cement production.
- [ ] How are the emissions presently dealt with.How to fill up minor deficiencies in the raw mix after additives.Burnability and Homogeneity.The production of cement leads to the release of massive amounts of the greenhouse gas.
- [ ] The production of White Cement requires about twice the energy as compared to ordinary portland cement.
- [ ] Power generation in white cement plants from waste heat recovery using steam-organic combined Rankine cycle.
- [ ] Carbonation as a method to improve climate performance for cement based material.
- [ ] Chemical reaction in which carbon dioxide penetrates into the concrete and reacts with hydration products.

Name: SAKSHI SINGH(2020A1PS1980H)

Student Write-up:

PS-I Project Title: Conceptual Study of Air Heaters

Short Summary of work done: I had to make a study project with two other group members. I read a few journals, research papers, and online books to complete the project report.
I referred to the orientation presentation held at the beginning of the PS, where we were introduced to the cyclone preheater, a device based on a pre-heating function of an air heater.
I further had to summarize the applications of air heating devices from the air heater selection guide, which includes calcining, pre-heating, as mentioned above, and drying, mainly focusing on the basics of cyclone preheaters since they are prominently used in the cement manufacturing industries.
For the end semester evaluation, we had to do a literature review of a research paper and write down the learning outcomes and project deliverables.

PS-I experience: The PS experience was informative since in the seminars I got to know the various fields and domain present in an industry setting. Since I had heat transfer course in my fourth semester at the college, I was able to use the concepts taught in the course to tackle doubts while reviewing the research papers.

Learning Outcome: I got to know the functioning of the factory specially the use of cyclone preheaters, their functions and what all fields require further research do make air heaters more optimal and optimized.

Name: VIGNESH R NAIR .(2020A1PS2489H)

Student Write-up:

PS-I Project Title: Conceptual Study of Air Heaters

Short Summary of work done: During PS1 the project we did was on conceptual study of air heaters. it was observed that most of the recent developments and research focus had been maintained on solar energy-powered air heaters. It can be justified because reducing the dependency on fuel-powered heaters by switching to solar-powered ones can help maintain the sustainability of the environment. Also, the future improvement prospects are heavily dependent on fin efficiency and heat storage materials so as to optimize the heat transfer. the heating elements are the core of the air-preheater, and

changes in plate geometry have a substantial impact on APH performance. The heat transfer characteristics of the plates can be determined using a wind tunnel-like setup that seeks to imitate the conditions of an air-preheater. However, there may be a significant discrepancy in the readings when we compare the simulated readings to the readings of the experiment performed on an actual air-preheater, indicating that additional work needs to be done to determine the performance characteristics of the heating components.
Besides the project many helpful talks on various subjects was also conducted. We also got to know about the workings at Birla White Cements.

PS-I experience: The PS experience was very helpful as it helped us improve our team skills and also provided us with a first hand experience of working in a company.

Learning Outcome: Effective use of Solar Heaters, a type of air heater powered by solar energy, can help maintain the sustainability of the environment since it is powered by a renewable energy source.
Improvement in the design of heating elements used in the air heaters can help control power usage and energy loss.
The heating elements are the core of the air-preheater, and changes in plate geometry have a substantial impact on Air Pre-Heater performance.
Additional work needs to be done to determine the performance characteristics of the heating components.
Air pre-heater, an essential commodity in industries (like cement) to improve the efficiency of furnaces, can be researched and improved upon.

Name: KOLLI SHANMUKH .(2020AAPS0391H)

Student Write-up:

PS-I Project Title: Drawing P&ID diagram for Powder Distemper.

Short Summary of work done: Our instructor gave us a process flow diagram that tells about the process of making powder distemper with the machinery that is used in the Birla White Cement Factory. we meant for me and my teammate Srikar Sivaraju to make several references to understand how to draw a P&ID diagram and draw it neatly and submitted. Later we explained about PLC and the machinery required for building a manufacturing unit of powder distemper. After that, we made a case study on PLC based controlled 3-floor elevator to show how a PLC works by controlling all the parts single handheld.

PS-I experience: It is very wonderful that it made me know about various equipment and how they were controlled with the help of using the PLC.

Learning Outcome: I may learn about PLCs and their various uses. I may also learn about what is distemper and its uses.

Name: RUDRANSH SHARMA .(2020B5A12133G)

Student Write-up:

PS-I Project Title: Conceptual Study of Air Heaters

Short Summary of work done: I studied about the Air heater from the book, journals, literature review and research paper and came up with a project report.

PS-I experience: First impression of the PS station was good, Sanjay Parmar (HR) was very kind and helpful to us. Our HOD/guide was also nice to us. The experience was good.

Learning Outcome: I got to know about the components of cement factory, how cement got manufactured from limestone to the final product. I also learnt about the air heater and use of pre-heater in rotary kiln.

PS-I station: Blue star Limited-Mechanical (Air conditining and commercial refrigeration) , Ogli

Faculty Name: Sayan Das)

Faculty Write-up

Blue Star India Ltd.: There were a total of 14 students in this station (all from Mechanical Engg.). The projects were allotted towards the end of the second week of the practice school. There were a total of four projects (productivity improvement unit 1 and 2, maintenance and quality assurance). Although one or two of the teams had weekly

interactions with the students, the rest rarely had interactions with the mentors. I tried my best to keep the students busy by giving them research articles that were relevant to their respective project domains.

Student

Name: GUVVALA SRI HARSHITA .(2020A4PS0884H)

Student Write-up:

PS-I Project Title: Quality Improvement of ODU line in HP1 plant

Short Summary of work done: We got the opportunity to get a practical experience of the assembly of different parts of an air conditioner. We were demonstrated with the assembly of the outdoor unit (ODU), indoor unit (IDU) and the heat exchanger coil shop. The ODU houses the compressor and the condenser systems which are two out of the four main components in an A.C's. The production line of an ODU starts with ODU base pans loaded onto the assembly conveyor belt. Manufacturing of the heat exchanger starts with the huge rolls of hydrophilic precoated aluminum being unrolled and fed into a machine that presses it into large rectangular fins with multiple holes in them. The indoor unit contains an evaporator coil and blower fan to pull warm air from the room, across the cool evaporator coil, then return the cooler air back into the room. Refrigerant runs through the copper tubing to the outdoor unit where the compressor and condenser coil are located. Apart from these, we were given research papers which helped in in depth understanding of the topics.

PS-I experience: Taking up the Quality Improvement project of the ODU assembly line at Blue Star Ltd has been a great learning experience. It helped me to move a step closer to gaining practical exposure to what we learn in our academics. It gave me an insight into the functioning of large-scale manufacturing industries and the practices they adopt to ensure customer fulfillment. The knowledge of the various methods of manufacturing employed in these industries will be of great help in my future projects.I would like to express my gratitude to our mentor, Mr.Mukesh Soni, from Blue Star Ltd, for assisting us in our project and the development of this report.I would like to thank our Practice School Faculty, Mr. Sayan Das, Assistant Professor BITS Pilani Hyderabad Campus, for his kind and patient advice at every step of our PS and for guiding us at every step making it a very enriching and a valuable learning experience for me.

Learning Outcome: The purpose of this project is to find possible solutions for the quality improvement of the ODU and its assembly line. The assembly of the ODU, IDU, and the manufacturing of the condenser at the coil shop is also been discussed. The various quality improvement tools and methods have been suggested for much better and more efficient manufacturing results.

Name: VEPA BHASKARA MONISH .(2020A4PS0901H)

Student Write-up:

PS-I Project Title: QUALITY IMPROVEMENT

Short Summary of work done:
Quality Improvement in the main Ogli Station.
How the Air Conditioners are manufactured with utmost quality.
Defects which occur during the process

PS-I experience: The overall PS-1 experience was fascinating and educational .Our PS instructor who was in charge, ensured the smooth flow of the PS throughout the course of the two months and was the primary point of contact with the company. Furthermore, the Group Discussions were very informative and helped me gain some ground on my project and a few key concepts.

Learning Outcome: PS 1 in Bluestar provided me with indepth knowledge of CDC's (ME F217and ME F220) and exposure to industrial applications of the concepts taught in the course.

Name: PERAM AVANTHIKA .(2020A4PS1524H)

Student Write-up:

PS-I Project Title: Quality Improvement and Assurance

Short Summary of work done: The purpose of this project is to find possible solutions for the quality improvement of the ODU and its assembly line. The various quality improvement tools and methods have been suggested for much better and more efficient manufacturing results.

Quality improvement basically focused on better client/customer satisfaction via better quality of the product but not at the cost of other resources. It also helped to discover and research about various approaches to make the work place better, less stressful and safer.

PS-I experience: It has been a wonderful experience to get to know of the various methods, operations and testings done in the industries in order to make sure that a quality product is delivered to the customers. It has also been a great learning experience interacting with the project heads, industries, the people conducting frequent talks. The discussions with my batchmates have also helped for better perspective on various matters

Learning Outcome: Taking up the Quality Improvement project of the ODU assembly line at Blue Star Ltd has been a great learning experience for all of us. It helped us move a step closer to gaining practical exposure to what we learn in our academics. It gave us an insight into the functioning of large-scale manufacturing industries and the practices they adopt to ensure customer fulfillment. The knowledge of the various methods of manufacturing employed in these industries will help us in our future projects.

Name: SATYAM JHA .(2020A4PS1631G)

Student Write-up:

PS-I Project Title: Maintenance of equipment

Short Summary of work done: The work was focused on reducing the downtime of manufacturing process. We worked by analyzing the breakdown data of all the machines in the plant and through various problem solving methodologies and root cause analysis we found the main causes of downtime in the coil shop and implemented 5s and qc tools to reduce the downtime.

PS-I experience: It was a very good learning experience, giving me exposure to various things about the working of a company and how a manufacturing plant works. I also gained practical knowledge about various tools like kaizen and 5s and how to implement them.

Learning Outcome: I learned about manufacturing of heat exchangers, different maintenance methods and how every step of the manufacturing process should be scrutinized, and a continuous trend of evaluation and improvement can increase the overall production.

Name: PATEL VRAJ PARIMAL(2020A4PS1848G)

Student Write-up:

PS-I Project Title: Maintenance of Equipment

Short Summary of work done: I was part of the Maintenance of Equipment project Team. Analysed breakdown time of various machines in the plant. Finding solutions to reduce the total breakdown time of the plant was our work. Starting a new project from the root level gave us knowledge of basic requirements and full procedures which is to be followed for the construction of a structure.

PS-I experience: PS-1 gave me good practical exposure. I got to learn a lot and saw real engineers at work.
To add to it, I also got to meet a lot of new people helping me establish new connections and thus expanding my network. It was very useful listening to the feedback of the people working in the industry giving me clarity on what skills might be useful to acquire in the coming years of my undergrad.
PS-1 was my first experience working in the industrial sector. It gave a new perspective to what I have learnt from books and how to apply them in real life. PS-1 is a perfect opportunity to get hands-on experience and a taste of industrial/ corporate life.

Learning Outcome: We became familiar with the actual corporate work environment. We saw the challenges faced by a manufacturing company, how they deal with such challenges. Some soft skills were also enhanced like presentation skills, and analysis skills. Learned various plant management strategies which are implemented to run the plant smoothly and reduce breakdown time of machines like TPM, Lean Six Sigma, PDCA cycle and many more.

Student

Name: URVI MARCHINO(2020A4PS2061G)

Student Write-up:

PS-I Project Title: Maintenance of Equipment

Short Summary of work done: This project was aimed to study the techniques adopted for the maintenance of equipment for the smooth functioning of a manufacturing plant. To ensure that production lines and plant equipment are maintained in good working condition with key responsibilities of planning, training, learning, SGA (Subjective Global Assessment), QC (Quality Control), Kaizen, TPM, Legal compliance, safety improvements, data analysis, parts management ensuring 100% compliance with ISO standard 9001:2015 & 45001. We followed the 12 steps of problem-solving to analyze, find the root cause and find effective solutions to the problems.

PS-I experience: Being exposed to the industry for the first time in PS-1 was great, and I learned a lot every day. Thus, it contributed to the value and memorability of my summer term. Working with experts in the field was a very unique experience. The PS-1 experience as a whole was exciting and instructive. I had ample time and resources to finish the projects that were allocated to me because of the industry mentors and our PS Instructor. Additionally, I learned a lot from the Group Discussions and made progress on my project and a few important ideas.

Learning Outcome: I received training in how to work from professionals with extensive industry expertise. Being a part of one of the greatest Indian air conditioner manufacturers gave me the chance to thoroughly grasp and comprehend each step of the AC manufacturing process. I learned about numerous quality management technologies while I worked on the projects and looked for answers. It was a wealth of knowledge to go through, comprehend, and organize the PPTs and excel sheets offered by the industry and the data they provided. Last but not least, the evaluations brought some incredibly useful experiences to my PS1 term, such as the group discussions or the creation and presentation of the project reports.

PS-I station: Carborundum Universal Ltd. (onsite) , Chennai

Student

Name: SOUMYADEEP KARMAKAR .(2020A4PS2233H)

Student Write-up:

PS-I Project Title: Influence of Temporary Binders on the Green Strength of Vitrified Products

Short Summary of work done: My work during PS-I was based on trying to find a relation between viscosity of temporary binder used to make abrasive grain mixtures and the green strength of bars moulded from the resulting mixture. The project work included measuring the viscosities of three temporary binders, and performing volatile content test on them. Viscosities were measured using Analog Viscometer.
We prepared abrasive grain mixtures by hand -mixing, and measured the flowability, tap density and compressibility of the mixtures. Flowability was determined in terms of repose angle. tap Density Apparatus was used to measure bulk density, tap density and compressibility index.
We moulded bars from the grain mixtures and evaluated their green strength in terms of breaking load and breaking strength. This was achieved through progressive loading at the centre of the bars supported at the two ends. Breaking load values were plotted in the form of line graph in Excel.
From the varying breaking load values of bars made from mixtures prepared using binders of different viscosities, we derived conclusions as to how the viscosity of the temporary binder used to prepare an abrasive grain mixture significantly affects the green strength of the products moulded from the mixture.

PS-I experience: Most of the work during the first week involved observation of the production processes inside the plant resulting in the manufacture of abrasive grinding wheels. As the work progressed, it was oriented more towards determining the effect of binder viscosity on green strength of resulting bars.
The environment inside the PS Station was conducive to learning. The industry mentors provided their valuable feedback despite their extremely busy schedules. My PS Faculty provided some great suggestions as well. Overall, it was a good experience even though there was some difficulty in adjusting to the ceramics field in the beginning.

Learning Outcome: During the course of PS-I, I learnt the value of discipline in accomplishing goals related to any academic endeavour, not only projects.
Through constant interaction with my industry mentors, PS faculty and plant workers, I honed my interpersonal skills.
Making the report and the presentation improved my presentation mastery and enhanced my organization skills.
Deadlines for the PS-I evaluation components made me aware of the importance of time management in our daily lives.

PS-I station: CCS STRATEGY SOLUTION - FLEXSIM , New Delhi

Faculty Name: Ram Chandra Murthy Kalluri

Faculty Write-up

CCS FLEXSIM (online) PS-1 station is based on software FLEXSIM. It is a 3D Simulation Modeling and Analysis Software aimed at visualizing, understanding and optimizing real world industrial processes. It requires atleast one year of student's time to understand the software well to apply it to the real use cases. Hence it offers plenty of opportunity to the student to learn the software and the intricacies involved in modeling and optimizing the real world processes.

Industry looking for in a -I intern

CCS Flexsim offers sufficient opportunity to the students to learn their software which can be applied to the real world processes in a wide range of industries. However, the company is very clear that the students time will be completely spent on learning it and that the students cannot contribute to their ongoing projects productively. Therefore the company is open enough to offer sufficient material to aid students' learning but cannot spend time with them beyond what is required as they are short of resources.

Student

Name: TANISHQ CHOUDHARY .(2020A4PS0590P)

Student Write-up:

PS-I Project Title: Robot Palletization and AGV Material Handling Simulation

Short Summary of work done: Our work was related to structuring and palletizations of factories which helps in maintaining the efficiency of the time of the factories depending on the structure and load of the factories. We also had to preserve the order of the transporting vehicles and command them to their respective work with the help of "Automated Guidance."

PS-I experience: The overall work was excellent, and the coordination with the mentor was perfect and communicable.

Learning Outcome: We learned about the structure of the working of different factories and also gained knowledge about how time is significant to the producers as well as to the consumers.

Name: JOSEPH KURIAN .(2020A4PS1632G)

Student Write-up:

PS-I Project Title: Plate Mill Simulation

Short Summary of work done: We were given the layout of a plate mill from a famous Indian steel manufacturer. We were to make the Flexsim model and simulate it to find the potential bottlenecks and other matrices of analysis.This required us to extensively Learn about the software from the tutorials and discussions with the company officials. Finally we were able to successfully complete the model to the best of our abilities.

PS-I experience: PS1 required me to think out of the box and accustomed me to apply theoretical skills to real world problems. This also enabled me to think and experiment to find solutions to difficult problems. Finally this helped me to improve my networking skills.

Learning Outcome: PS1 helped me to understand how to apply theoretical principles to practical scenarios.This sharpened my soft skills like presenting my ideas and voicing my opinions during group discussions and asking the correct doubts to the company officials.

Name: CHIKKAM SRI KRISHNA ADITYA .(2020A4PS1878P)

Student Write-up:

PS-I Project Title: Warehouse Simulation

Short Summary of work done: The Company provided the resources that helps us to gain the familiarity and also handsome experience working with the FlexSim software.The resources helped a lot in the learning process and our doubts were also used to get clarified in the scheduled meets. Later on we were divided into 6 groups and was allotted different projects to work on. Our project is on warehouse simulation and it mainly deals on creating a 3D model and getting data about the satisfied orders vs unsatisfied orders and hence calculating the throughput of the warehouse.

PS-I experience: It was a good experience working with CCS Strategy Solutions. The company used to provide various information through the letters which used to give deep insights about the work.

Learning Outcome: I have got familiarised to the flexsim software and have bagged some experience working on the cad drawings and understanding the importance of time factor in an industry.

Name: SAI ARAVIND INKOLLU .(2020A4PS2308H)

Student Write-up:

PS-I Project Title: Plate Mill Simulation

Short Summary of work done: The project that was assigned to us was Plate mill simulation. A team of three members are supposed to work on the project. We have to basically create a 3d model from the provided AutoCAD layout using Flexsim and obtain the throughput, potential bottlenecks and other aspects mentioned in the question.

PS-I experience: The 8 weeks of PS were fruitful. I have learned a complete new software FLEXSIM which helps the companies to apply alternative changes in the factories without any fear of risk.

Learning Outcome: Learned what happens inside a plate mill and learned Flexsim software. This is mostly a self learning process. I had to watch YouTube videos and Flexsim tutorials to learn the software. So the PS was altogether a new experience and I have come to know how a company oerates.

Name: SNEHA SANJIV PATIL .(2020ABPS1832P)

Student Write-up:

PS-I Project Title: Crankshaft manufacturing simulation

Short Summary of work done: Work done during PS:-
Brief report on the project
Presentation
Daily diary report
Final problem solving (Crankshaft manufacturing simulation)

PS-I experience: PS -1 experience was good
Got to know various new and different things.
Got the chance to learn and explore simulation.

Learning Outcome: Learning various problems which come in way while simulation
Going through those problems and learning to find a way out through it
Learning FlexSim software
Learning to take effective participation in groups discussions

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Name: SNEHA SANJIV PATIL .(2020ABPS1832P)

Student Write-up:

PS-I Project Title: CRANKSHAFT MANUFACTURING SIMULATION

Short Summary of work done: Our work was to simulate Crankshaft manufacturing process.
It consists of using FlexSim software as well as included with multiple quizzes, group discussions, reports and presentations.

PS-I experience: PS-I was nice experience...

Learning Outcome: Learning outcome specifically includes Flexsim software learning as well as it was my first step towards supply chain management...

Name: AVANI SHARAN .(2020B5A41219G)

Student Write-up:

PS-I Project Title: Traffic Simulation using FLEXSim software

Short Summary of work done: To simulate the truck traffic in the factory docking area in the FLEXSim software using the provided CAD Models and Truck Schedule and Docking Time Data. The project involves doing the analysis of the given data and the total throughput along with checking for congestion at junctions and finding the time when trucks leave. This simulation is done using the FLEXSim software wherein the various 3D elements are used and process flow is made accordingly.

PS-I experience: Good and working with company gave me an exposure to the co-operate world

Learning Outcome: Learning a new software and understanding how 3D simulations work. My another main learning outcome was also that working with the team gives you an altogether new exposure and you can learn a lot of new things.

PS-I station: Everest Blowers Pvt. Ltd , Jhajjar

Faculty Name: Jayabrata Dhar

Faculty write-up
Everest Blowers PS-1 station studied the thermal design and analysis of roots blowers and how to make their design optimum and oil free. The students actively participated in designing different blower components. The active association of the enterprise was an essential motivation and learning curve for the students.

Industry looking for in a -I intern
Understanding of their responsibility, teamwork, understanding customer preferences, interest in their focused field of interest and strong motivation to work hard and smart.

Student

Name: NEHA JOHN ELUVATHINGAL .(2020A4PS1822G)

Student Write-up:

PS-I Project Title: Mechanical

Short Summary of work done: We were asked to learn more about blowers which is the primary focus of the company. We studied thoroughly on the topic and conducted presentations and finally came up with a design for a blower

PS-I experience: It was really good to say the least. We learnt immensely to work as a team and had hands-on experience on how to work in a company

Learning Outcome: We learnt a lot on the company and the main device ,blowers. It was an immensely fun learning experience especially under our faculty Mr Jayabrata Dhar and the our mentor from the company Mr Amit Kapue and Mrs Ameeta Nehra.

Name: RACHIT HEGDE .(2020A4PS1945G)

Student Write-up:

PS-I Project Title: Design Improvement Against CAPA and Field Failures

Short Summary of work done: The tasks during the internship could be divided into two phases. The first phase involved gathering and absorbing as much information regarding the products manufactured by the turbo division of the company. This initially involved getting to know the origin/history of roots blowers, its types, applications and current/future ideas regarding its usage. This was followed by diving deeper into the technical areas. This included getting to know the working principles, components, build and operation methods/conditions of the blowers. Further emphasis was made on understanding the common failures in these blowers to pave way for the project. Once this was completed, now we were tasked with coming up with creative solutions to combat failure of critical components such as gears, bearings and seals due to temperature rise. This took us through various fields of mechanical engineering such as conjugate heat transfer analysis, simple simulations, simple qualitative cost estimations and eventually coming up with a solution through tribology (material science).

PS-I experience: The main reason for internships are to get a first-hand look at how to industry works and that is what PS-I exactly provided. It proved to be a source that provided exposure to industry expectations and the necessity of properly conducting oneself. The mentors and the faculty allotted were very kind, supportive and always willing

to help along with being very highly qualified in the same. All in all it was an eye opening experience and it succeeded in giving a taste of how huge corporations work.

Learning Outcome: The experience showed me the importance of professional ethics and the need to have good/clear communication skills. It also taught me about the necessity of organized/structured work, time management, the need to be pro-active in discussions/tasks and presentation skills. It also showed ways to ask the right questions, conduct research and review articles in order to come up with creative solutions for the goal that has been set.

Name: AYUSH KUMAR .(2020B2A41931P)

Student Write-up:

PS-I Project Title: Improvement of Design of Blowers

Short Summary of work done: Everest Twin Lobe Rotary Compressors/Blowers are positive displacement units, whose pumping capacity is determined by size, operating speed and pressure conditions. It employs two Twin Lobe impellers mounted on parallel shafts, rotating in opposite direction within a casing closed at the ends by side plates. As the impellers rotate, air is drawn into one side of the casing and forced out of the opposite side against the existing pressures. The differential pressure developed, therefore, depends upon the resistance of the connected system. The Blowers, being positive displacement type, do not develop pressure within the casing but the discharge pressure depends upon the system resistance / back pressure. Effective sealing of the compressor inlet area from the discharge area is accomplished by use of very small operational clearance, eliminating the need of any internal lubrication of the lobes. A pair of accurately machined alloy steel, hardened and ground timing gears maintain clearances between the impellers, during rotation. The air, thus delivered, is 100% OILFREE. The pumping capacity of a lobe compressor, operating at constant speed remains relatively independent of inlet and discharge pressure variations. These Blowers are constant volume machines, which deliver a fixed discharge against the system back pressure. It is, therefore, essential to ensure that minimum pipeline restrictions, at the inlet and discharge, are imposed. Adequate size piping and large radius bends ensure minimum line losses resulting in higher efficiency and low power consumption. Sudden change in pipeline cross section should also be avoided.
This is focused on Twin Lobe Blowers also popularly know as Roots Blowers-on the name of its inventors. TWIN Lobe Rotary Air Blowers belong to the category of Positive Displacement Blowers. They consist of a pair of involute profiled (shape of 8) lobes/rotors rotating inside an oval shaped casing, closed at ends by side plates. One lobe is the

driving lobe, which is driven by the external power while the driven lobe is driven by a pair of equal ratio gears. Both the lobes thus, rotate at same speed but in opposite direction.

PS-I experience: I had a great experience of working in a team. We had to give a presentation initially and that was a good learning experience. We were guided through the correct way of presentation. We learned new technologies and innovations in the tech field.

Learning Outcome: We were able to articulate and apply principles learned in and outside of the classroom to a specific internship site experience and complete assignments that encourage in-depth reflection of the internship experience. We gained self-understanding, self-confidence, and interpersonal skills. It also helped in developing work competencies for a specific profession or occupation.
Student will complete any specific learning outcomes identified in supplemental documentation provided as part of the internship application process.

Name: SUYASH KUMAR .(2020B5A41454P)

Student Write-up:

PS-I Project Title: Roots Blower Thermal Analysis

Short Summary of work done: The project in PS-1 was divided into two phases. One was a pre midsem part and the other post midsem. In the pre midsem phase, the work was mostly about learning the workings of various blowers and pumps. Everest blowers had provided us with training material for the same. We were to choose a type of blower and pump and then give a seminar presentation on the same in front of the Everest team. After that, in the second phase, we were told to study failures of Roots blower and study in detail from a thermal standpoint of overheating in blowers. We were then to come up with alternate design proposals for the same to mitigate this effect of overheating in blowers due to increase in differential pressure.

PS-I experience: My PS-1 experiece was a fairly decent one. I had a good PS mentor who was regular in conducting group discussions and briefing sessions that helped us all. Also the team from Everest blowers were very reasonable and good to work with. They gave us the freedom to explore and research while making sure that the work was not hectic that it hinders the creative solutions that one might come up with to the problem

posed by Everest Blowers. Our PS mentor guided us at every step and his guidance was important in completion of the project successfully.

Learning Outcome: I learned important topics about mechanical engineering such as gears, bearings, blowers, centrifugal pumps etc. Apart from subject knowledge, I also gained soft skills such as public speaking, presentation making, report writing etc.

PS-I station: GAIL (India) Ltd. (onsite) , Bengaluru

Student

Name: KUSHAGRA GUPTA .(2020A1PS1706P)

Student Write-up:

PS-I Project Title: DISTRIBUTION OF NATURAL GASE THROUGH GAS PIPELINE

Short Summary of work done: I have been asked to make a project describing GAIL India LTD. and their work distributing Natural Gas through the DBPL pipeline. In my project, I have included the processing, transportation, distribution and billing of natural gas. Efforts have also been made to explain the scenario and hydrate reserves of Natural Gas in India. Apart from preparing the report, I have also visited the field to learn about different valves and pipeline systems. I have also learned about different departments in the office. Get the opportunity to work in the control room where patrolling of the pipeline system occurs.

PS-I experience: It is a nice experience of living in a different city. Apart from educational knowledge, I learned how to manage things alone. I also learned about Bengaluru city, their culture, ethnicity and etc.

Learning Outcome: I get to learn about a different city and how to manage things. learn about office culture and different things.

Name: ARYAN SHARMA .(2020B1A41889P)

Student Write-up:

PS-I Project Title: SIMULATION OF NATURAL GAS PIPELINE AND ITS LEAKAGE USING ANSYS

Short Summary of work done: In this project, we first simulated the flow of natural gas in a normal pipe (undamaged). This simulation was performed on ANSYS Fluent to find the difference in pressure, flow, and velocity between the inlet and the outlet. Next, we simulated the flow of natural gas in a hole pipe (damaged pipe having a hole of 50mm diameter) to find the difference in pressure, flow, and velocity between the inlet and the outlet. This project is useful for the company in detecting leaks and also finding out the volume of natural gas lost in case of a leak.

PS-I experience: It was a great experience! I am a dualite, so I haven't started studying my B.E branch which is mechanical engineering but PS-1 provided me the exposure that I needed. My mentors introduced me to various new, necessary terminologies and were always there to clarify my doubts. I got an in-depth understanding of my field and of how industries work along with discipline, work ethics - this has definitely helped me grow and mold my approach towards problem solving in general. I thoroughly enjoyed my PS-1 since I not only liked my project but I also felt that my contribution was significant as it was useful to the company.

Learning Outcome: The learning outcomes of this project are as follows:
1. Good understanding of Fluid Mechanics
2. A Basic understanding of FEM
3. Introduction to ANSYS Workbench Interface
4. Modelling objects using DesignModeler
5. Object simulation/setup in ANSYS Fluent

PS-I station: Gates India Pvt. Ltd. , Chandigarh

Student

Name: DEEP PATEL .(2020B5A40960P)

Student Write-up:

PS-I Project Title: 1) Instrument/Gauge Calibration Tracker , 2) Hose Outer Diameter Detection System

Short Summary of work done: 1) Instrument/Gauge Calibration tracker
the project was pretty simple and all we had to do was create an excel sheet with conditional formatting. Many instrument in manufacturing industry requires calibration on a set frequency for its optimum performance. So the Excel Sheet we created will gives us the next calibration date on basis of previous calibration performed.
2) Hose Outer Diameter detection System
In this we got to learn about the importance of proper measurement of hoses. This was a study oriented project. we got to learn about various mechanism with which dimensions of hoses are measured.

PS-I experience: PS-1 experience was pretty amazing as PS faculty and station mentor were very supportive and helped us walked through the process of PS through out. But since the PS was online, I believe I could have learned more if the PS was offline with specific to this company.

Learning Outcome: I got to learn so much about the manufacturing industry and particularly hoses and V belts. And how important it is to the manufacturing industries.

PS-I station: Grasim Industries Ltd , Nagda

Faculty Name: Jay Pandey

Grasim Industries, Nagda, as my first PS-1 station, allotted total 8 projects to PS-1 interns and assigned the project mentor for each project. This helped interns to quickly take-up the project and reach to logical end of project objectives. Grasim, Nagda is the world's largest producer of spun-dyed specialty fiber and working with this organization, the interns got to exposed the fiber manufacturing process in detail from start to end.

Industry looking for in a -I intern

Any industry always looks for a highly motivated, hard-working and student with solving problem aptitude. The intern should be quick in taking up the problems and come up with feasible solutions.

Student

Name: NIKHIL RAJENDRA SHAH .(2020A1PS1318G)

Student Write-up:

PS-I Project Title: Mass and Energy Balance of CS2 Manufacturing Processes

Short Summary of work done: I, with the help of my teammates, performed mass and energy balance of various processes involved in the manufacture of CS2. We then provided some suggestions to reduce the gap between theoretical and actual values so that the efficiency of the plant is improved.

PS-I experience: It was great overall, although more interaction with the Grasim industry personnel and more involving project was expected. But the overall experience was great.

Learning Outcome: I learnt about the various processes involved in the manufacturing of CS2. My presentation skills have enhanced and I got to learn about time management, work-life balance and team work.

Name: TRIPATHI ROHINI BHARAT VISHAL .(2020A1PS1914G)

Student Write-up:

PS-I Project Title: Mass and Energy balance of CS2 Manufacturing processes

Short Summary of work done: The project topic assigned to me was Mass and Energy balance of CS2 Manufacturing processes. For this project, we had to use the concepts heat transfer, CPC and mass transfer to calculate values for various stages in the manufacturing process of CS2.
The data required for the calculations was provided by our Industry mentor. We calculated values like mass required and energy required for mainly 4 steps in the process i.e. Calcination of Charcoal, Pre treatment of Sulphur, CS2 Condensation and Recovery of Sulphur. After calculations, we were provided with the real time data of the plant. We compared our values (theoretical) with the actual ones and found a gap between them. We then discussed ways to overcome the gap and their feasibility in real life.

PS-I experience: It was a good learning experience. Although PS-1was online, the

exposure was good and I got insights into how organizations function.
The experience was decent. The support we got from
Grasim was decent. Although, it lacked hands on experience but still it gave us a lot of learning and exposure to the industry.

Learning Outcome: PS-1 imparted me with practical skills and helped me gain knowledge of chemical industries. It improved my
communication skills and helped me establish newfound confidence in myself and my abilities. Firstly we got to learn various concepts about the chemical
engineering domain and how it is done practically in the industry level. It also have us a chance to meet with the industry professionals and speak with them.

Name: VAISHNAVI TIWARI .(2020A4PS0204P)

Student Write-up:

PS-I Project Title: Improving the efficiency of cooling tower installed in acid plant

Short Summary of work done: We proposed the ways under the guidance of our industry mentor to improve rather increase the cooling tower efficiency of the cooling tower installed in H2SO4 plant, Nagda .

PS-I experience: Our Project topic was Improving the efficiency of cooling tower installed in acid plant which was more inclined towards the chemical department and we were completely aware of the topic in the beginning. Also because of Industrial Stoppage our industry mentor was unavailable during the initial phase of our PS. But gradually the things were in our favor and we gained knowledge on what is cooling tower, terminologies associated, ways to increase its performance and efficiency. We also have presented and discussed our ways found to increase the cooling tower efficiency and then come up with feasible ways based on suggestion and approval from industry mentor.
I had a good team of people with me supportive all the time and also industry mentor was from the same region so I was quite comfortable in talking with him.
As a group leader of the group, it was my work to manage the things, contact with the industry mentor and the faculty mentor.PS has surely enhanced my confidence and leadership skills and was a great experience.
Only our project was bit theoretical and did not included any software learning.

Learning Outcome: It has more effect on my interpersonal skills than the technical knowledge.

Name: VED CHAUDHARY .(2020A4PS1070P)

Student Write-up:

PS-I Project Title: IMPROVING THE EFFICIENCY OF COOLING TOWER INSTALLED IN ACID PLANT

Short Summary of work done: We had been given data by our industry mentor we had to analyse that. After successfully analysing the data we calculated cooling tower efficiency and presented to our industry mentor. After that we had to find ways to improve cooling tower efficiency, so we started researching for resources and found yeah many research articles about it. After brainstorming for many ideas, we came up with six ways to improve cooling tower efficiency and in the final presentation we showed the findings to our industry mentor and PS faculty.

PS-I experience: It was a very enriching experience and a short glimpse of our future work. For the first time we had real-time interaction with the industry mentor and it helped us very much in regards to our career building skills. Also we were divided into the groups of four and my peers were very helpful and kind they really showed me what real colleagues are. It was a big thing for us to work for a big organisation like Grasim.

Learning Outcome: We learned about acid plants, cooling towers, ways to improve cooling tower efficiency, working of acid plants including many soft skills such as communication skills, presentation skills, managing skills.

Name: BHARATH KRISHNAN H .(2020A4PS1078P)

Student Write-up:

PS-I Project Title: Dryer Steam Reduction

Short Summary of work done: Based on our research for which we used various articles, research papers and the resources provided we were able to perform the

calculations for the drum dryer and calculated the steam required to dry one tonne of fiber. This calculation has given us information about how the variation of different quantities causes different outcomes in the dryer. Studying the equations employed in this calculation lets us arrive at different suggestions to optimize the drying process.

PS-I experience: All the members of the group have researched the working and history of dryers.
While researching we found some of the ways by which we can reduce steam consumption and work upon its efficiency as stated above.
Our mentor provided us with documents, books and data for calculations. We used them and did our research and calculations.
We did a thorough study of some interesting theory and the formulas required for solving the problem statement .
We worked upon our problem statement and calculated the steam consumption for 1 Ton of fibre. Our mentor guided us in understanding the work.

Learning Outcome: Working on this project, we learned about the chemical industry in India, mainly related to Grasim Industries. We learned about how research is conducted from an industrial standpoint to analyze different machines and determine methods for optimization.

Name: SHAIKH FAIZAL SAJID(2020AAPS2107H)

Student Write-up:

PS-I Project Title: Upgrading field instruments

Short Summary of work done: In many cases, geriatric Industrial equipment may outlive its reliability and sometimes even become uneconomic to maintain. To alleviate this condition, it is apparent that contemplations must be made to modify these systems and upgrade them. We learnt about the Process Control & Instrumentation fundamentals so that we could upgrade the pre-existing Instrumentation and Process Control systems.

PS-I experience: We started by learning Instrumentation and Control Systems. The team then began designing and modelling a small-scale plant to manufacture food. Our team then developed the process without human control. The purpose was to understand how can these products be manufactured without human interaction, input or control, and what Instruments would be needed for the same.

The team drew resemblances and Applications from the small-scale plant to apply to industrial equipment in the Manufacturing Plant. Recommendations and Design Changes were proposed and explained to improve the different Transmitters, Alarm Systems, Tanks, Valves, Level Triggers and Sensors.

Learning Outcome: We learnt in great detail about Advanced Control Systems, Instrumentation, FGPA Based Systems, Digital Integrated Circuits, and Industrial equipment design and working.

Name: ANSHUL SUHAG .(2020B2A42040G)

Student Write-up:

PS-I Project Title: Oil Analysis Programme for Improving Reliability

Short Summary of work done: Our project being assigned by the NDT Department of Grasim Industries, i researched about Oil Analysis and various methods to improve its reliability. I also researched on Oil sampling methods and in the end, I did research about the vendors available for oil analysis

PS-I experience: It was a great learning experience. Although PS-1was online, the exposure was good and I got insights into how organizations function. I also learnt how bookish knowledge isn't sufficient in finding solutions to real world problems and how important it is to manage working and personal life in order to grow as an individual. We got to know how a firm works, and most importantly what how a private firm supports its work force. The support we got from Grasim was also decent.

Learning Outcome: I learnt about the role of oil analysis in chemical industries, Basic principles of oil analysis, including but not limited to the properties of hydraulic and lubricating oils and Techniques and machinery used in the industry for oil monitoring

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Name: WADHWANI GAYATRI KISHOR .(2020B2A42523H)

Student Write-up:

PS-I Project Title: Oil Analysis Programme for improving reliability.

Short Summary of work done: Gained an in-depth understanding of the properties of hydraulic and lubricating oils
Identified machines used for oil monitoring methods and learnt how to interpret their readings.
Analyzed the procedures used for the collection of oil samples and identified the most economically viable one
Suggested vendors that Grasim industries can approach to obtain machinery to set up their in-house oil analysis facility.

PS-I experience: Faculty and industry mentor both were very cooperative and provided inputs were time to time. Group discussions were insightful and interesting. Team members were cooperative as well. Overall I didn't face any problem and it was a very good experience.

Learning Outcome: The role of oil analysis in chemical industries
Basic principles of oil analysis, including but not limited to the properties of hydraulic and lubricating oils.
Techniques and machinery used in the industry for oil monitoring.
Improved presentation and communication skills

Name: ANISH RAJIV DHAIMODKAR .(2020B3A40563G)

Student Write-up:

PS-I Project Title: Monitoring and Recommendations for Noise Reduction and High Noise Areas

Short Summary of work done: Worked on reducing sound levels in industries based on data provided and provided recommendations based on the noise levels for workers' safety.

PS-I experience: My PS1 experience was very fruitful. The industry mentor was very responsive and was prompt at providing us with data and information as we were not able to physically visit the station. It provided us with a great learning experience.

Learning Outcome: Learned about various types of noises and ways to reduce the noises in industrial settings.

Name: MAMTA SINGH(2020B5TS1251P)

Student Write-up:

PS-I Project Title: Spares Management to Predict Consumption

Short Summary of work done: The Mechanical Maintenance department of Grasim Industries was facing a problem related to high inventory cost and reliability issues, due to assemblies or timely availability of spare parts. The critical spares which were affecting the production were having a very high lead time, therefore, the mechanical maintenance department wanted to cut down the amount of unused inventory, with the ultimate objective of cutting down the purchase cost of the inventory. The title of our project was "Spares management to predict consumption".
Our two main objectives were:
1. Reduction in inventory cost or the cost of production.
2. To improve reliability of the equipment through systematic prediction of the consumption pattern of spares.
Grasim Industries would benefit from this project as the cost of inventory would be reduced, and the reliability of equipment would be improved. Our project was centered around Inventory management and Reliability of components. Having knowledge of Aging Inventory is essential for Inventory management. Aging inventory also has various benefits such as we can avoid short term storage fees. An organization dealing with large warehouses of inventory, such as Grasim Industries, also needs to have a good knowledge of the reliability of the components, as it should be aware of the fact that products which are kept unused in the warehouse become worse in quality over time. Our main goal of this project was to correlate inventory and reliability of equipment which were kept in the warehouse for a long period of time, and then to predict how much inventory should be stored, such that even with aging, there is a sufficient amount of inventory left, for emergency uses.

PS-I experience: It was a great opportunity to work with the industry professionals and know about the industries functioning.

Learning Outcome: We have learned how to solve inventory-based challenges by working on a project that uses inventory theory. Our work has focused on component reliability and inventory theory.

Name: Suhani KanwarÂ(2020D2TS1292P)

Student Write-up:

PS-I Project Title: "Monitoring and recommendation for noise reduction and high noise areas"

Short Summary of work done: 1. Understanding the topic in depth by reviewing the various noise reduction methodologies,
evaluating and analyzing the topic with the PS mentor and faculty, and discussing the possible
benefits and downsides of each were all used to finalize the project's approach.
2. To gain a more ordered and schematic point of view, do some research on the subject.
3. Reading about the Factories Act, 1948.
4. Review the data related to noise levels for Grasim Industries with the help of the PS mentor.
5. Measuring and evaluating the readings of various machines and sound-producing sources with the
help of some effective online sound meter applications and software.
6. Forming the quantitative questionnaire for analyzing workers' and local people's experience while
working in a high noise level environment.
7. Collecting responses from them via various preferable mediums.

PS-I experience: I can honestly say that my time spent interning with Grasim Industries, Company resulted in one of the best summers of my life. Not only did I gain practical skills but I also had the opportunity to meet many fantastic people. Additionally, I felt like I was able to contribute to the company by assisting and working on projects throughout the summer. Also, I helped to organize in terms of providing various ways of monitoring and reduction methods of high noise levels. In addition to the projects, I also learned about various online applications and software by which one can measure, evaluate, analyze the high noise levels in the various zone. All in all my PS 1 experience at Grasim industries was really very good.

Learning Outcome: 1. Learned about various ways by which home appliances sounds can be reduced and monitored.
2. Find the readings by using online sound or noise measuring tools, such as the NIOSH sound level
meter, smarter noise, mobile crowdsensing, and decibel sound pro.
3. Understanding the different ways of calibrating the sound level meter to provide accurate
readings.

Name: MEDHA HEBBAR .(2020A1PS0645G)

Student Write-up:

PS-I Project Title: Reduction in Steam Consumption of MSFE in AUX 1 and AUX 2

Short Summary of work done: My task was to come up with ways in which low-pressure steam consumption can be reduced in a Multi-Stage Flash Evaporator. We performed material and energy balance calculations along with critical analysis of research papers dealing with MSFE to come up with possible suggestions for the industry

PS-I experience: The PS was completely in online mode hence, the working environment in the industry can't be commented on. Industry experts were very helpful and supportive.

Learning Outcome: Applying critical thinking and prior technical knowledge for solving industrial problems

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Name: HEMANT AGARWAL(2020A1PS0706P)

Student Write-up:

PS-I Project Title: Higher Combustibles in Fly Ash

Short Summary of work done: My project was based on Reduction of Higher Combustibles in Fly Ash. It was a group project. At first we learnt about fly ash- its composition, characteristics, and uses. Then we learnt about the workings of thermal power plants, boilers, steam turbines and a few other power plant components. After that we went through a few research papers and collected vast information and industry data. Our industry mentor provided us with a dataset containing various coal petrological and power plant operational variables. We decided to use these variables to build a Machine Learning model to predict unburnt carbon content in fly ash. We chose 5 variables, for this purpose, out of the various variables present in the dataset after carrying out ANOVA test for each variable and calculating the P-Values. We applied Linear Regression, Decision Tree Regression and Support Vector Machine Regression on these 5 variables to build the ML model using various Python libraries like Pandas, NumPy, SciKit-Learn. We also generated the graph for Decision Tree Regression. We also performed various types of error analysis on the results obtained through the 3 different regressions. These results can help us in optimising the design of boilers and thus, reducing the amount of unburnt carbon in fly ash.

PS-I experience: PS-I provided me with a great experience of the industry. It helped me to develop many skills, both soft skills and hard skills. I got to learn a lot while doing my project. It helped me to gain many qualities like teamwork, communication, seminar presentation etc.

Learning Outcome: 1) Basics of fly ash- its composition, characteristics, uses and types.
2) Working of thermal power plants and its various components such as boilers, steam turbines, cooling towers etc.
3) Basics of Python programming language and Python libraries like Pandas, NumPy, SciKit-Learn.
4) Basics concepts of Machine Learning and various Regression techniques.

Name: ARYAMAN BRIJESH SHAH .(2020A1PS1323P)

Student Write-up:

PS-I Project Title: Enhancing Efficiency of Klaus-Klin Plant

Short Summary of work done: I was assigned a project to enhance the efficiency of Klaus-Klin Plant which is a Sulphur Recovery Plant. I had to complete the project along with 4 other team members. In the project, I had to increase the recovery efficiency of Sulphur extracted from Hydrogen Sulphide combined in Inlet Feed Gases. I started by understanding the reactions and components of the plant followed by exact compositions

of elements, temperature, pressure and many more requirements by a meet with the industry mentor. I had then consulted and read many research papers and articles for understanding the recovery efficiency, thermal efficiency, conversion efficiency, air demand of the plant. After doing sufficient research on the plant, I simulated a model of the plant using DWSim Software. The software helped me understand the change in recovery efficiencies caused by variations in temperature, pressure, molar flow rates, flow directions and compositions. Using the software, I made sufficient changes in the model by changing initial compositions, using conversion reactors, setting package and outlet temperatures through converters, condensers, changing flow directions, and adding extra components like additional separators, converter, conversion separator, heater and compound separator. The cost-based simulator add-in in DWSim helped me analyze the extra cost of adding each part and the return it was gaining in terms of cost of Sulphur recovered. After trying out many test cases, I finally reached a case where I was getting the recovery efficiency higher than expected thus making the model successful. The entire model was made using Peng-Robison Package in DWSim.

PS-I experience: This was a very different and insightful learning experience. I am glad to have got to work as an intern in a Core Chemical Engineering Company. The Simulation Work combined both, Core concepts along with Technology which was a bit tough initially but truly worth the effort.

Learning Outcome: I got to learn about the Klaus-Klin plant processes, reactions, components and conditions following which was a hand-on experience in creating a simulation model of the plant. I did many Test Case model solving where I focused on increasing working efficiency of a specific condenser or heater one at a time hence, I optimized the conditions and finally created a model which successfully increased Sulphur recovery efficiency. I learnt complex and realistic mass and material balances across specific parts of plant . Moreover, the industry expert session organized by PSD helped to understand core topics better.

Name: AVANTIKA SHARMA .(2020A1PS1371P)

Student Write-up:

PS-I Project Title: Reduction of Steam Consumption in MSFE in Aux-1 and Aux-2

Short Summary of work done: The MSFE diagram was studied, to understand the process being carried out, and the possible areas of optimization.
Meetings with the industry mentors were held to get an understanding of the current problems faced.

Research papers were studied to gain help in approaching the possible solutions for the problems mentioned.
Material balance was carried out to find the composition of each component present in the spin bath.

PS-I experience: It was a good experience where everyday we learned something new about the industry and various chemical processes.
Working with other team members made the entire project seem interesting, as we had members to engage in the discussions.

Learning Outcome: Learnt about the importance of certain processes and the need for different units required in a manufacturing plant.

Name: KESHAV MITTAL .(2020A1PS1495P)

Student Write-up:

PS-I Project Title: Reduction in steam consumption of

Short Summary of work done: Various approach were used to find the solution of our problem statement i.e reducing the steam consumption of MSFE in Aux 1 and Aux 2. Initially our Industry mentor shared some ppt and datas regarding the problem which helped us to understand the problem and gave a good introduction to it. Later on we had regular meeting with our industry and PS mentor who helped us to clear our doubts and guided us how to further proceed with the problem. After getting a good hold on the datas we performed material and energy balance on the process flow diagram of evaporator which was shared by our mentor. It gave us ideas about how to find to find solutions to our problem and to gain more confidence to it we read some research paper and articles related to the problems and at last after some resourceful hard work I finally got some solutions to our problem, both theoretical and mathematical.

PS-I experience: It was a great and resourceful experience

Learning Outcome: Learnt how to perform optimization and what's the exact use of it.
Learnt different applications like MATLAB and excel optimizers which are really necessary and helpful in chemical industry
Gained knowledge about different sectors of chemical engineering through PS Talks.

Learnt about industrial and real-life applications of different components like heat exchangers, Evaporators, vessels, etc.
Got more proficient in applying material balance to complex and real life components
Gained more self-confidence in this domain after finding an industrial solution on my own

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Name: SUMEDHA SHARMA .(2020A1PS1695P)

Student Write-up:

PS-I Project Title: Enhancing Efficiency of the Klaus Klin Plant

Short Summary of work done: The title of project was ' Enhancing Efficiency of the Klaus Klin Plant.'
The purpose of the project was to understand the Klaus Klin plant and thereby enhance its efficiency. The entire plant was simulated on the DWSIM software. The efficiency of the plant was then optimized by changing flash specifications, inlet pressure conditions, temperatures and current flows. Material balance across the furnace, convertor and separators of the plant was calculated manually after which an efficiency value was also obtained. For both the cases, particular inlet mass flow rates (kg/h) were assumed.
At the end of the discussion, both efficiencies were compared. Of all the methods of improving Sulphur recovery efficiency, the method used enabled one to pictorially view the plant and explore it via simulation.

PS-I experience: Practice School-1 helped me explore the core chemical industry outside of academic study because of its exposure-oriented nature. The project was an introduction to plant simulations that are done at an industry level. Our PS instructor and industry mentor helped us explore the project in detail, helping us overcome all obstacles that we faced.

Learning Outcome: I was able to understand how Plant simulations function and have learnt to navigate and use major simulation software that is used in industry today. Apart from technical skills, I also developed communication skills and was able to improve my oration skills . Working in a group enabled me to develop collaboration and team skills as well.

Name: ANSHI ROSE .(2020A1PS1717P)

Student Write-up:

PS-I Project Title: Higher combustibles in fly ash

Short Summary of work done: To learn more about python libraries and how to apply them in machine learning.
To predict the amount of unburned carbon content using the mentioned machine learning model by using other advanced algorithms like decision trees and support vector machine.
To create a comparison matrix based on results obtained from the different algorithms.
Try to figure out how such a model can be employed in the industry to make a bigger impact, and how this model can be optimized further.

PS-I experience: Fine

Learning Outcome: Understood the basics of coal-fired thermal power plant, boilers, and cooling towers.
Learned about fly ash and its composition, types, uses, and the different coals whose combustion leads to fly ash production.
Gained a basic knowledge of how to predict unburned carbon content in fly ash using machine learning models after going through various online literature available.
Learned how we can make use of linear and non-linear regression techniques to reduce unburned carbon in fly ash and optimize the design of boilers.
Learned the basics of the python programming language.

Name: ANANYA RAMANATHAN IYER .(2020A1PS1964G)

Student Write-up:

PS-I Project Title: Automation of Kirket Filter Backwashing

Short Summary of work done: I learnt about the automation process that is used in the industry and also I learnt about the functioning of our filter. Learnt about the backwashing

process and it's advantages. Learnt the interface on which we automate. Learnt the various backend processing in the industry.

PS-I experience: It was a very helpful duration for me as I learnt a lot from my mentors. Their guidance and motivation made me even more excited to work in the industry. The project was of my interest and thus I had a great time learning about it. It gave me an exposure to the industry and thus helped me learn. It made me more responsible towards my work and also did I learn new softwares. It was a very inspiring journey

Learning Outcome: I learnt the working of the filter and how it's automated. Advantages of automation and how it works coupled to various systems in the industry. Learnt the backwashing process and its uses in the filter.learnt MATLAB and the PID controller.

Name: ISHAN KUNDU .(2020A1PS1987G)

Student Write-up:

PS-I Project Title: REDUCTION IN REJECT GENERATION DURING VISCOSE FILTRATION

Short Summary of work done: Viscose fiber is a manmade natural fiber, made from pulp obtained from wood or even cotton. Our work involved understanding step by step, the procedure followed to obtain viscose—steps such as steeping(dissolution), maturing (depolymerization), xanthation(reaction with CS2), followed by the filtration procedure. Filtration system has 3 main stages- with different filter media sizes of 20u,18u and 35u(reject stage), and cumulatively 5 stages and centrifugation, before the leftover is rejected. Reject is usually the undissolved/unreacted cellulose, gels etc. Approximately 420MT of viscose is processed each day at the Nagda Plant, and around 3% of this total viscose processed is rejected. Our work was to find/design/identify steps which can reduce this number. Process of viscose is important as the same controls the amount of final product produced- required and unwanted. For example—with the use of 18% NaOH solution for mercerization, we can avoid the production of hemicellulose—for that we can implement an online NaOH concentration analyzer to keep track of its concentration. Methods such as hydrothermal treatment of pulp or use of surface active reagents have been highlighted as per literature review as they can reduce the unwanted gels and knots formed and thus improve the productivity. Each time piston moves inside the filtration drum, about 20L of viscose gets rejected. So the above mentioned parameters can help reduce the piston strokes. Using a spring flap on the piston helps prevent filtered viscose get rejected.

PS-I experience: Through this PS-1 Program, I was able to visualize working in a corporate environment, with team members, and executing every task together. Also, an exposure to the industry standards and operating procedures was obtained, which probably would have been better if it were offline. Nevertheless, the PS program also taught me how to read research papers/journals, as well as type formatted reports.

Learning Outcome: Implementing what is being taught in courses to real life problems, performing mass balance calculations on an actual level, more insights about the chemical reactions and the by products and how we go about controlling them, understanding terms such as head of pumps, etc, and skills such as presentation and communication

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Name: KARTIK CHOPRA .(2020A1PS2126G)

Student Write-up:

PS-I Project Title: Higher Combustibles in Fly Ash

Short Summary of work done: My work involved finding and researching methods to reduce the higher combustibles present in fly ash. Based on the various literature I went through, I decided to build a machine learning model based on boiler operational and coal petrological variables that would help predict the amount of unburnt carbon present in fly ash. My industry mentor provided me with real time industrial data, to help train the model and get as accurate results as possible. The model employed various algorithms such as linear regression, decision trees, and support vector regression to calculate the amount of unburnt carbon.

PS-I experience: My experience with the PS station was a positive one, as there was enough freedom given by the mentor to pursue the project in whatever direction we wished to, and at our own pace.

Learning Outcome: I learned about various machine learning algorithms such as linear regression, logistic regression, decision trees, support vector regression along with learning about libraries such as scikit learn, pandas and numpy. I also learned how to communicate professionally with the industry experts which was a great experience.

Name: NAVYA GUPTA .(2020A1PS2455H)

Student Write-up:

PS-I Project Title: Reduction in reject generation during filtration

Short Summary of work done: 1. Understood the process of viscose formation.
2. Learnt about the various constituents of reject.
3. Got an overview of the entire viscose filtration system.
4. Examined design of filtration equipment.
5. Performed mass balance on a filtration unit as the control volume.
6. Observed how changes in parameters like filtration index (clogging value (Kw)), ripening index, gamma number affect filtration and analyzed the effect of surface active reagents.
7. Examined various stages in the entire process to understand where reject generation occurs.
8. Devised appropriate measures for reducing reject generation in those stages.

PS-I experience: It was a good learning experience, got to know how industries operate, how chemical processes take place at large scale.

Learning Outcome:
i) Learned about the working and design of filtration equipment used in industries.
ii) Got a comprehensive understanding of the viscose process.
iii) Learned soft skills like team work, presentation and technical writing.
iv) Learned about various points to be kept in mind while researching on a topic.
v) Learned how to approach engineering problems, considering constraints and finding out effective solutions.
vi) Learned the importance of process flow diagrams in a chemical industry.
vii) Got an overview of how industries work in real life.

Name: AMARJITH MANJOO .(2020A1PS2514H)

Student Write-up:

PS-I Project Title: To Enhance the efficiency of Klaus-Kiln plant

Short Summary of work done: Figuring out various methods by which we can increase the amount of sulfur extracted through claus process. We simulated the Klaus-Kiln plant through a simulation software named DWSim , which made the work easier and got us better efficiency percentage compared to the one done at the plant.

PS-I experience: It was a pleasant experience considering the fact i learned more about the way in which cement industry works and and the work load was also at a suitable amount.

Learning Outcome: By the end of this project i have learned more about the cement industry and the way in which grasim industry works. I attained a certain amount of knowledge of how DWSim simulation software works

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Name: SAHIL SHARMA .(2020A3PS0319P)

Student Write-up:

PS-I Project Title: Load Flow Analysis and Relay Coordination of SFD Electrical System

Short Summary of work done: My objective was to perform the Short Circuit Analysis, Load Flow Analysis and Relay Coordination on PC3 plant of the industry, and suggest improvements to the existing system. I have performed the hand calculations for the LFA and worked with the ETAP software.

PS-I experience: On the very first day we were assigned our roles and treated as working professionals. This helped me get accustomed to the industry and corporate world quickly. Wherever we were stuck, we were provided guidance and helped to reach the solution to those problems. My experience was very satisfactory as I have learnt a lot from this PS, from academics to the industry world, to team and project management.

Learning Outcome: The project taught me about handling faults in large power systems, dealing with system failures to prevent complete shutdown, perform Short circuit, Load Flow and Relay Coordination analysis, and working with industry-grade softwares like MATLAB and ETAP

Name: Soumitra Sudhir Ambekar(2020A3PS1297G)

Student Write-up:

PS-I Project Title: Load Flow Analysis and Relay Coordination of Electrical SFD system

Short Summary of work done: We learned about the theory and fundamentals behind Load Flow Analysis and Relay Coordination. We also learnt about software like MATLAB (MATPOWER extension) and ETAP (industry level software). During the same time, we carried out the Short Circuit Analysis and Load Flow Analysis for the SLD provided to us. After that, using the data from these studies, we carried out Relay Coordination.

PS-I experience: The whole experience was very positive. The industry mentor was very welcoming and helpful and conducted many sessions to guide us whenever we had doubts in the concepts or any practical applications.

Learning Outcome: I was able to learn the basics of using softwares like ETAP and MATPOWER. Besides these, I also was able to learn more about Power Systems and how they operate in general. Finally I learned many soft-skills like teamwork, communication and presentation which are very helpful in life.

Name: KARVE AVANI ABHIJIT .(2020AAPS1019G)

Student Write-up:

PS-I Project Title: Load flow analysis and Relay coordination of SFD Electrical System

Short Summary of work done: The objective of our project was to perform the short circuit analysis, load flow analysis and relay coordination of the SFD electrical system provided to us. Short circuit analysis was performed in order to find the fault currents in different components of the system and to ensure that these currents were below the rated values. Load flow analysis was done to ensure that the system was stable and to verify that there was adequate active and reactive power for proper functioning of equipment. Lastly, we calculated the TMS and PSM settings for relays in order to ensure proper relay coordination of the system under fault conditions.

PS-I experience: The PS-I experience was very insightful and I got to learn many new concepts like load flow analysis and relay coordination. Apart from this, I learnt how to work in a team and how to implement the theoretical knowledge I had gained in the industry.

Learning Outcome: The learning outcome was to understand why relay coordination is necessary in complex electrical networks and how to use softwares like ETAP and MATLAB to perform the load flow analysis of a circuit.

Name: AMARTYA KUMAR .(2020B1A10615P)

Student Write-up:

PS-I Project Title: RECOVERY OF CS2 THROUGH STEAM REDUCTION

Short Summary of work done: Found the possible loopholes that lead to extra LP Steam Consumption in Recovery trough
and derived plausible solutions to fix those problems.
I had to Formulate an efficient method to reduce the steam consumption from 1.4 ton/ton of fibre to 1.3 ton/ton of fibre, without affecting the production rate.

PS-I experience: This was a truly unique educational opportunity. Despite being online, it was a useful experience to learn how a Core Chemical Engineering plant operates through all of our discussions with our industry mentor. I gained knowledge about topics relevant to my field as well as how to balance work and personal obligations. I acquired insight into the future through PS-1, and as a result, I feel more confident and prepared for it. I developed social work skills in addition to technical skills.

Learning Outcome: A thorough understanding of the spinning department in the viscose manufacturing department, as well as the use of steam and cs2 recovery during the production of viscose staple fibre. I also acquired the ability to plan and assess operational performance using a systematic approach.

Name: BHAVUK .(2020B1A11609P)

Student Write-up:

PS-I Project Title: Recovery trough steam reduction

Short Summary of work done: Our project is based on the reduction of LP steam consumption during recovery of CS2. To understand the process flow and the CS2 recovery process we performed an in-depth literature review and concluded on some of the crucial factors that affect the steam consumption in the recovery system. Our regular insightful meetings with our Faculty In-charge helped us in finding inefficiencies in the process by performing mass and energy balance of the process and analyzing it to find a way to reduce the consumption of Low- Pressure Steam while keeping the CS2 recovery rate the same.We further analyzed the working of the boiler and how it produces steam. We can improve the efficiency of steam and prevent energy loss of steam traveling from the boiler to the recovery trough if higher pressure is maintained on the boiler side and lower pressure on the recovery trough side.
We also found radiation losses from the steam moving from the boiler to the trough. In the case of 1.4 t/tf steam consumption, 44630 kcal/hr energy is lost in the form of radiation.Steam consumption can be reduced by reducing these radiation losses, and the PRS system can reduce these radiation losses. Steam consumption can also be improved by improving the efficiency of the boiler and by maximizing the recovery of the steam coming out of the recovery trough.

PS-I experience: The internship at Grasim Industries Ltd, Nagda has provided me with adequate knowledge of the Viscose staple fiber industry and the process of manufacturing and the chemistry involved. Apart from knowledge gathered I was able to gain industry experience through interactions with my department mentor Ashutosh Singhal sir and Purva Gautam mam and my PS instructor Dr. Jay Pandey. I have acquired the necessary skills as well as have gotten accustomed to the way of working and thinking as an engineer working in these fields. Along with the great foundation provided by BITS, this internship program has helped provide me with industrial exposure for implementing my skills in real time and improving on them furthermore.

Learning Outcome: A thorough understanding of the spinning department in the viscose manufacturing department, as well as the use of steam and cs2 recovery during the production of viscose staple fibre.

- Engage in real-world business issues and connect academic theory with actual issues.
- How to approach a challenge and generate potential answers.
- Comply with our mentor's directions and complete a task using the right equipment and methods.
- Acquired the ability to plan and assess operational performance using a systems approach.

Name: TANISHQ JAIN(2020B1A11897P)

Student Write-up:

PS-I Project Title: Automation of Kirket filter backwashing

Short Summary of work done: We were given the task of automating the filtration and backwashing process used in viscose preparation process through MATLAB code and using in-built tuning function for optimizing the results.

PS-I experience: Nice. PS Instructor was strict from the start of my PS which was annoying in the beginning but at the end I realised that the work that my group did was much better than many other PS stations.

Learning Outcome: MATLAB coding

Name: KAUSHIK KUMAR .(2020B2A41929G)

Student Write-up:

PS-I Project Title: Automation of Kirket Filter Backwashing

Short Summary of work done: We worked on automation of Kirket Filter Backwashing. Kirket Filter is a filter that has many candle like structure in it with a PPE cloth wrapped over it. We studied about logic gates and Distributed Control System for its automation. We used matlab for designing a PID Controller and its optimization.

PS-I experience: PS 1 experience was nice. Our Faculty mentor and Industry mentor both were quite cooperative. It was in online mode but you will definitely learn something in this PS station.

Learning Outcome: I understood how to automize a mechanical device using DCS and PID controllers. I also learned how to optimize a PID Controller.

Name: DHRUV TULI .(2020B2A82042G)

Student Write-up:

PS-I Project Title: Load Flow Analysis & Relay Coordination of SFD Electrical System

Short Summary of work done: Our Industry was chemical based in which we had an electronic project. We did Load Flow Analysis & Relay Coordination of SFD Electrical System.

PS-I experience: It was a great learning experience. I personally liked the electronics project.

Learning Outcome: I learned about load flow analysis, relay coordination and short circuit analysis

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Name: VANSHIKA JAIN .(2020B4A12268H)

Student Write-up:

PS-I Project Title: PRACTICE SCHOOL 1 END-SEMESTER GROUP REPORT ON IMPROVEMENT IN PERFORMANCE OF ANHYDROUS EVAPORATOR IN AUX-2

Short Summary of work done: By examining the process data, operational parameters, and heat exchanger characteristics in the anhydrous evaporator, we completed the project work. The mass and energy balance was created utilising data provided by our mentor and a research article on the optimization of multi-effect evaporation systems.
We were able to pinpoint the issues with the evaporator by talking to our mentor and reading academic literature. By examining the current process flow diagram and learning how vapour and condensate may be recycled to increase steam economy utilising mass and energy balance, recycle and recovery systems were created. Finally, after reading a

research article on the fundamentals of continuous evaporation, it was clear how the quantity of impacts and vapour recompression systems affect the steam economy.

PS-I experience: It was nice. Mentor and the faculty instructor was helpful . We gained a new experience of work life . We also developed problem solving skills and being in group how to help each other.

Learning Outcome: We aim to use the fact that recycling the latent heat of water vapor can improve the steam economy of the evaporator.
Since heat transfer in forced convection depends on the Reynold's number, by examining the equations governing the process, we can change the flow rates accordingly and find out how the rate of heat transfer is affected in each case.
We can detect leakages using material balance over the system, which in turn can help us recognize ways to prevent the leaks and hence improve upon the steam economy.
We can try to find optimized algorithm by altering the feed flow sequences.
We can use compressor in order to increase the efficiency through latent heat of evaporation

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PS-I station: Gujarat Alkalies and Chemicals Limited (onsite) , Dahej

Student

Name: VIVSWAN PADMESHYA .(2020A1PS1915G)

Student Write-up:

PS-I Project Title: 1. TO SUGGEST A FEASBLE ALTERNATIVE TO THE CURRENT SOLVENT (iso-amyl alcohol) USED FOR LIQ-LIQ EXTRACTION IN THE PAP PLANT ; 2. FINDING WAYS TO TREATE LIQUID EFFLUENT IN THE PAP PLANT AND MATCH ITS CHARACTERISTICS WITH RAW/CLARIFIED WATER AND REUSE IT IN

Short Summary of work done: Project 1:
In the phosphoric acid plant , to produce rock phosphate , the phosphate rock is first leached with HCl. Now from the so formed Dissolution Liquor , we need to extract P2O5(note that P2O5 remains in equilibrium with H3PO4);so for that we are currently using iso-amyl alcohol, which is a mixture of 65% pentanol and 35% 1-methyl butanol.

The significance of our project lies in finding solvent(s) which shows better extraction for P_2O_5 than iso-amyl alcohol, as well as the one which is indigenously produced in India, to reduce import burdens.
We started by making a table , including potential alternative and their properties like MW, density ,etc. Among them , TBP caught our special attention. Though TBP has properties which are much higher than the current solvent , be it MW , density, etc, the research papers we considered pointed towards a high extraction rate. Hence, we moved ahead with TBP.
To ensure smooth flow of solvent , a cosolvent has to be added to TBP to reduce density and viscosity. Further , research ended us with Sulphonated Kerosene. Further, different wt% of TBP and Kerosene were taken and analysed.
It was mixed with dissolution liquor , and wt% of P_2O_5 were calculated in solvent phase. After many combinations , a mixture of 80% TBP – 20% S.Kerosene , (vol/vol) , proved to be the best alternative.
Project 2:
The Phosphoric acid plant generates a huge amount of effluent , viz 1300 m3 daily. Currently , its being neutralised and dumped in sea. Hence our work was centred around finding ways to do so.
Based on our initial research , we focused on selective electrodialysis , coagulation and flocculation , fly ash and RO.
The effluent contained 1 lakh ppm TDS and same order of hardness as well. We proposed to feed the effluent to SED first , where by the use of monovalent cation and anion selective membranes , two exit streams , namely , dilutant and concentrate emerged. Dilutant had very less and temporary hardness , while Concentrate had high and permanent hardness. The Dilutant can be further treated by fly ash , or by using coagulants like PAC. Meanwhile , after recovering some amount of HCl from concentrate stream , the leftover is discharged to sea. The treated Dilutant goes for RO treatment , from where ~pure water is acquired and recycled back to plant , while the RO concentrate is also discharged to sea.
Though in very basic form , we tried to give an approach , but more extensive research is required in this field to get optimal results.

PS-I experience: After spending a handsome amount of time in online covid era, I deliberately wanted to go out rather than just sit and do PS1 from home. Only a few chemical core companies came, and among them even , a fraction for on-site internships. I opted for GACL, Dahej. Initially reluctant , but later it proved to be one of my best decisions taken . Dahej is a small industrial sea shore village in Bharuch district of Gujarat. There are even two SEZs in Dahej and this belt (Bharuch-Ankaleshwar-Dahej) , is the hub of chemical industries. One could find ONGC , NALCO , NTPC , Thermax , Pidilite , etc big firms here.
We were provided accommodation by the company at the GACL colony in Bharuch only . Food , accommodation and travelling were free of cost. We need to go to office Mon-Sat , though every 2nd and 4th Sat and public holidays were off as well. It takes 1 hour to go to Dahej by Bus. So, we would go by 7:30 am and come back by 6:30 pm. Honestly

, it was hectic at the beginning , but slowly I started utilising my time in bus either reading books, sleeping or watching amazon prime!
At the plant , breakfast , lunch and dinner were provided at an extremely subsidised rate(it takes around rs. 50 / month !!). We were assigned Phosphoric Acid Plant(PAP).Its one of the 9 plants at Dahej , within its whopping 230 acres land area. We would spend our day time reading research papers , visiting plant , attending library and of course sleeping a bit! . Though we were given a separate room at HR office , but we made sure we spent much time in plant.
Initially , the things were very exciting ,as we were looking the concepts like mass transfer , heat transfer , till now in books, to now at reality. The concepts of leaching , liq-liq extraction , multi-effect evaporators came now at practical domain. We made flowsheet of the processes and did material balances. Got to know about various chemicals. An interesting fact : Even in a dry state , you could smell alcohol vapours freely in the air.
After a brief overview of the plant , we were given our project titles and later on, spent much time on them only. Sometimes it felt boring and just kind of a 9 to 5 repetitive job but then at the other time, the underlying challenges made it interesting. You have to ensure the plant works smoothly for 24 hrs, as even small shutdowns cause losses in crores.
We had a good company of friends here too, some were from IIT, some from Gujarat only and also a few from BITS , doing their PS 2. Not only did we study hard, we made trips to Statue of Unity , Surat , etc and utilised the time to the hilt! We also went to Baroda Plant for a visit. Its about six times smaller than Dahej and some 10kms off Baroda. The main product of GACL is Caustic Soda , and the plants like PAP, PAC(poly-aluminium chloride),etc are setup to consume the by-product of Caustic , i.e , HCl. We also got the chance to do a presentation before the top officials of the company.
END NOTE : I would strongly recommend for an onsite internship, if you want to know what chemical engineering means. Being in Dahej, allows you to be in a hub of chemical industries and you will get to know about the real life of a chemical engineer and then make a decision to where choose industry, research or another field ahead. PS-1 is absolutely not about “filling excel sheets “, as portrayed in common culture. At the end will just say, come out of your comfort zone, explore.

Learning Outcome: 1. Knowledge is not bounded to books
2. Communication and soft skills matter a lot.
3. Time management
4. Value of good friends in life

Name: YASH CHAUHAN .(2020B5A10688P)

Student Write-up:

PS-I Project Title: Project 1 - “TO SUGGEST A FEASBLE ALTERNATIVE TO THE CURRENT SOLVENT (iso-amyl alcohol) USED FOR LIQ-LIQ EXTRACTION IN THE PAP PLANT” , Project 2 - “FINDING WAYS TO TREATE LIQUID EFFLUENT IN THE PAP PLANT AND MATCH ITS CHARACTERISTICS WITH RAW/CLARIFI

Short Summary of work done: I understood all 9 sections of Phosphoric acid production and I was given problem to find a substitute of Organic solvent i.e. Iso-amyl alcohol for liquid-liquid extraction in section 2, which is often also called ‘Heart of Phosphoric acid plant’. I went through several research publications and drew some possible alternatives in the form of Tri-butyl Phosphate along with few co-solvents such as Sulphonated Kerosine, Methyl Iso-Butyl Ketone and Butanol. We used HCl to treat with Phosphate rock which is based on the design developed by IMI. Most of these research was done in Egypt, China, Korea, Syria and Iraq. Now I was introduced to a problem which is common to every chemical Industry i.e. treatment of Effluent generated in PAP plant in order to reuse it as raw/clarified water. I read various research papers related to Phosphoric acid wastewater treatment and my task was to reduce amount of Total dissolved solids (TDS) under permissible as per GPCB guidelines. After observing methods used in the industries and reading various research papers we reached a conclusion to use Fly-ash, selective electrodialysis and Fenton’s reagent to treat effluent generated.

PS-I experience: I began my journey with GACL, Dahej on 31 May. I was asked about all my topics studied and based on my learning I was assigned Phosphoric acid plant. Although GACL’s crown jewel is it’s Caustic soda plant and one of it’s byproduct is HCl (Hydro chloric acid) in order to consume it Phosphoric acid plant (PAP) was established in 1994 by Israel Mining Industries (IMI). My first objective was to understand it’s way of functioning and suggest some feasible solution to improve it’s overall efficiency. After spending 2 weeks in understanding all 9 sections of phosphoric acid plant we were finally a project statement to focus on finding an alternative to iso-amyl alcohol used in section 2 and which must have an improved extraction coefficient with respect to P2O5 and must be available with in INDIA as we have to currently import iso-amyl alcohol from Germany. I was able to find options which can be used in its place after going through several research papers and most prominent name among them was Tri-butyl phosphate (TBP) along with co-solvents such as sulphonated kerosene and metyl iso-butyl ketone. Now I was introduced to a problem which is common to every chemical Industry i.e. treatment of Effluent. I was given the task to reduce amount of Total dissolved solids (TDS) under permissible as per GPCB guidelines. After observing methods used in the industries and reading various research papers we reach a conclusion to use Fly-ash and Fenton’s reagent to treat effluent generated.

Learning Outcome: My main aim to go for an onsite PS station was to get industry exposure and understand how does life of a chemical engineer looks like, what exactly it feels to be a working professional. My first lesson learned was all about Time management as he had to leave for company sharp at 7:30 am and reach at Dahej at 8:30 am and there after followed by a schedule of 8 hours till 5: 30 pm excluding lunch

time. My second lesson learned is related to discipline, to complete a given task allotted by our PS mentor with in a given time frame. I still can't forget moment when one of the sir who was explaining me the process of Phosphoric acid production asked me to help Interns in future if I get an opportunity like this, well this was my third and a very important lesson for life i.e. Gratitude for everyone. In schools or colleges we often focus problem solving from uni-directional approach i.e. it's technical feasibility but in an industry we also have to look into dimension such as economic feasibility, environmental impact and future sustainability. I would conclude my overall learning of PS I is to understand my responsibilities not only from my own perspective but also my from the point view of the organisation for which I am currently working and maintain a balance between professional and personal life.

PS-I station: Gujarat Cement Works , Kovaya

Student

Name: ARJUN SAI SINHA .(2020A3PS0353P)

Student Write-up:

PS-I Project Title: A feasibility study for a small wind turbine installation

Short Summary of work done: Kept in contact with mentors, did research on the scope of harnessing wind energy in coastal cities like Kovaya, difference in onshore and offshore wind energy driven turbines.

PS-I experience: It gave me exposure in the real world of how a cement plant works, how to interact with mentors, teammates.

Learning Outcome: Good professional ethics and communication skills

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Name: PRAKHAR SINHA .(2020A3PS0494H)

Student Write-up:

PS-I Project Title: Feasibility of setting up a wind turbine for power generation at Kovaya site

Short Summary of work done: We found out about various wind turbine sole in India and which one is appropriate to be used at the site. Also we found out the cost of setting up the farrm and how much time will it take to recover it.

PS-I experience: We were made to interact with company officials to discuss the topic and had to research on it to decide the final answer to question of whether it is feasable to set up a wind turbine farm on site or not. Our mentor from BITS carried out many activites/assignment to make the project more interesting and to keep us engaged every week. He also help us to get in touch with the company men to discuss about the project.

Learning Outcome: We decided whether the project should be expanded to other places like BITS campuses or commercial places where the energy demand is high and electricity is expensive.

Name: NITIN GAUTAM .(2020B4A42132G)

Student Write-up:

PS-I Project Title: Improvement in cement reliability

Short Summary of work done: Our title was 'Improvement in cement reliability'. The reliability assessment of two identical machines used in a cement manufacturing company has been studied. The work has proved the importance of reliability evaluation and maintenance planning in a process plant. The study involves the rank-ordering of the failure time data of two machines, determination of the probability of failures of the machines, the Weibull scale parameter, θ and Weibull shape parameter, β of the machines, the mean time to failure of the machines, their failure rates and reliability of each machine. The data obtained from two identical machines were
analyzed using 2-parameter Weibull failure distribution technique The proposed model can be generalized for any process plant. Our PS mentor and PS faculty guided us in a correct way to complete our project. In a group project, everyone worked finely and regularly. Our PS faculty took regular meets to assist us properly.

PS-I experience: My PS-1 experience was nice. I got exposure to cement industry and learnt new things related to this area. PS station members and PS mentor guidance's were very helpful. Orientation and other things were done properly.

Learning Outcome: With the help of this project, both Organization and P.S. station could study and research about the same and can estimate various failures and possible outcomes to overcome the same. These are given below-
1. On applying new PM schedule, Mean Time to Repair (MTTR), Mean Time between Failure (MTBF) and Operational Availability (Up Time) conclusions will be drawn. By analyzing these factors, an organization can maintain economic growth by maintaining machine properly.
2.There will be decrease in machine downtime and increase in machine or equipment operational availability.
3.There will be increase in Production rate due to increase in availability of machines
4. The values of the mean time to failure (MTTF) of the two-machine found to be very close. As the mean time to failure of the machines increases, their reliability is seen to also
increase.
5.Reliability of the two identical machines was found to be increasing as their values of scale parameter, θ increases. Machine GDA had a scale parameter, θ = 1616 hrs. which resulted in a reliability of 0.5845 (58%) while machine GDB had the highest reliability of 0.5665 (57%) for θ =1551 hrs.\

PS-I station: Hilti (India) Pvt Ltd. , New Delhi

Student

Name: ADVIK SINGH .(2020A2PS1735P)

Student Write-up:

PS-I Project Title: Concrete Construction Methodologies

Short Summary of work done: I did primary research on the uses of anchors, chemical anchors and rebars in specific. In the scope of the research, I covered the various types of chemical anchors, there different use cases and new opportunities the company can explore in this field. In addition to this, I also tried to gauge competitors' products to give an insight on how current products could be improved. The Learning Modules provided by Hilti assisted me in the same

Furthermore, I learnt about Post Installed Reinforcing Bars which are used to connect new and old concrete structures. I understood how they are designed and installed. I also researched upon rebar couples, there advantages and upcoming trends in the field.

PS-I experience: Overall, the PS experience gave me a good insight into the industry and the regular meets with our PS professor and our company project mentor allowed for a smooth learning experience.

Learning Outcome: PS gave me a good insight into the industry

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Name: SHAURYA VATSA .(2020A2PS1758P)

Student Write-up:

PS-I Project Title: Pre engineered buildings

Short Summary of work done: Learnt about various construction processes through company modules, researched on Pre Engineered buildings (PEBs) and If they are a suitable endeavour for the Indian construction Industry

PS-I experience: As it was online we did not get to have a first hand experience but it was a good industry exposure overall.

Learning Outcome: How a company works, various company values and about PEBs

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Name: ISHITA SRIVASTAVA .(2020A2PS1769P)

Student Write-up:

PS-I Project Title: The future of facade types in India and details of facade types with the needs of facade industry in light ventilated facade solution.

Short Summary of work done: I was grouped in a team of two members. We had to do a report and a presentation in front of the Head of Marketing. As a part of the PS, we first did a thorough research of the topic using various internet resources and linkedin articles, followed by talking to various personas through linedin. This part was quite difficult as it was all about writing in a way that you get responses.

PS-I experience: Experience was quite good. Got an industrial exposure. Mentor provided was very nice and helping, quite directive at times but that is also necessary. Their organizational culture was really positive and supporting.

Learning Outcome: Learnt a lot about facades.

Name: RUNWAL AYUSH PRASHANT .(2020A4PS1619G)

Student Write-up:

PS-I Project Title: Pre-Engineered Buildings and the Fitment of Hilti Solutions in India.

Short Summary of work done: Students at the station were divided into groups. Our group was given a project titled 'Pre-Engineered Buildings and the Fitment of Hilti Solutions in India.' For the first two weeks, we familiarized ourselves with Pre-engineered Buildings (PEB) and the tools and solutions HILTI provides(this was done in the form of modules provided by the company). Later we gave presentation of our findings to the Head of Marketing of Hilti (India) Pvt. Ltd. , New Delhi.

PS-I experience: Overall, it was a GREAT industry exposure, synchronized with relevant evaluation components like Quizzes, GDs, Presentations & Reports.

Learning Outcome: 1. Learning about Pre-Engineered buildings, their components, construction process, maintenance, applications.
2. Comparison of PEB with conventional construction and the pros and cons.
3. Various tools manufactured by HILTI and their Uses.

Name: DAIDA SRIKAR REDDY .(2020B4A42007H)

Student Write-up:

PS-I Project Title: Concrete Construction Methodologies

Short Summary of work done: In the scope of the research, we have tried to cover the various types of chemical anchors, their different uses and new opportunities the company can explore in this field. In addition to this, we also tried to gauge competitors' products to give an insight on how current products could be improved.
We have learnt about the design specifications and the installation of the rebars.
Rebar couplers are one of the applications which our group has researched to learn more about chemical anchoring.
We also learnt that the upcoming trend of using building information modelling is one of the most useful software that can be used to avoid any rebar confrontation and also as a tool that can help the efficiency and cost saving.

PS-I experience: It was very refreshing after breaking the routine of two years. We got to learn the ins and outs of a corporate company works and the company representatives were very welcoming and took time to explain how things work.

Learning Outcome: We have tried to cover the various types of chemical anchors, their different uses and new opportunities the company can explore in this field. In addition to this, we also tried to gauge competitors' products to give an insight on how current products could be improved.

PS-I station: Hindustan Petroleum Corporation Limited (onsite) , Mumbai

Faculty Name: Jayabrata Dhar)

Faculty write-up
HPCL PS-1 station studied various types of lubricants and its industrial use. The station was partially onsite and partially online. The mentors and station have managed the PS-1 session well.

Industry looking for in a -I intern
Understanding of their responsibility, teamwork, understanding customer preferences, interest in their focused field of interest and strong motivation to work hard and smart.

Student

Name: SUVARNA ISHAN SATHISH .(2020A4PS1824G)

Student Write-up:

PS-I Project Title: Lubricants for Mist Lubrication and its Market in India

Short Summary of work done: Mist Lubrication is an innovative new way of delivering lubricants to the bearings and the moving surfaces. It involves the atomisation of lubricants, which are then transported through the air and land on the surface, coalescing into larger droplets and ultimately forming the lubrication film. This project focuses on the study of lubricants and their properties, the industrial applications, the process of mist lubrication, recent technical developments, and the market in India for such functions.

PS-I experience: The project was very interesting. There was a slight delay at the start of the internship, but once the projects were allotted, the work started pretty fast. My mentor was very helpful and helped me understand the myriad details of my project and the way in which I could gather information. The faculty member allotted to us was also very helpful, and helped us in solving our issues and connecting with the officials from HPCL. The initial part of my project was learning about lubricants and their characteristics, and the latter half was focused on mist lubrication systems, and their advantages. Finally, I was required to analyze the market potential of mist lubrication in India. The station was supposed to be on-site, but we never got to visit the actual sites. Nevertheless, the research and learning experience was valuable.

Learning Outcome: I learnt a lot about lubricants, their characteristic properties, as well as their functioning. More importantly, I gained a lot of insights into the ways in which various industries use lubricants for various purposes. I spent considerable time researching mist lubrication systems, understanding the various components of such a system, and analyzing their benefits and limitations. Further, I studied the industrial usage of lubricants to gauge the potential benefits that using a mist lubrication system would give them. Overall, I gained significant insight into an important industry.

Name: ADITYA SATISH PATIL .(2020A4PS1880P)

Student Write-up:

PS-I Project Title: Current and Future Heat Transfer Fluids And CFD Analysis of Heat Transfer in a Helical Coil Heat Exchanger Using ANSYS Fluent

Short Summary of work done: First of all, I studied about heat transfer fluids and then different heat transfer fluid brands of different companies. Next , I did analysis of heat exchange in helical coil heat exchanger using ANSYS. Lastly I did study about application of heat transfer fluids and new emerging technology in heat transfer fluids.

PS-I experience: PS1 was a great new learning experience for me. It gave me many new experiences and confidence. It was a lot of addition in my knowledge.

Learning Outcome: PS1 helped me with learning CFD softwares , improving communication skills and reading regular particular reasearch papers.

Name: KILLEDAR PRATHAMESH VINAYAK .(2020A4PS1938G)

Student Write-up:

PS-I Project Title: Process improvement in manufacturing of lubricant.

Short Summary of work done: Got to know the process of manufacturing of lubricants. Suggested improvements in minor steroid of manufacturing to make it more cost efficient.

PS-I experience: Overall great experience the station was onsite so for to experience many new things.

Learning Outcome: It was great learnt many most of the things related to manufacturing of lubricants, protestors of additives, standards of lubricants and testing parameters of lubricants.

Name: EVIN ROY .(2020A4PS2279H)

Student Write-up:

PS-I Project Title: COMPARATIVE STUDY OF LUBRICANT CONDITION MONITORING TECHNIQUES

Short Summary of work done: My work was regarding the condition monitoring of lubricants. Studying how lubricants work , what type of tests to be conducted for maintenance, predicting the service life of lubricants and checking engine, transmission, machine health in which the lubricants are used.

PS-I experience: It was a great learning experience. Learnt the inner workings of a company and management.

Learning Outcome: Learnt a lot about the petroleum industry and lubricants. Learnt how a companies work etc

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Name: AARUSHI ROY .(2020ABPS1855P)

Student Write-up:

PS-I Project Title: Contribution of Re-Refined Oils to Circular Economy

Short Summary of work done: As a part of my PS-1 Project, I was supposed to thoroughly understand the circular economy concept and its need in the Lubricants Industry. This led me to study the in-depth circular economy in general and the idea of how lubricants are made from base oils by adding additives. I learned in-depth about the refining and the re-refining processes and the various technologies used in the same. I read about why India lacks in the process compared to other countries. I carefully analyzed the hurdles and suggested feasible solutions to the same. The process has several limitations, from collecting used lube oils to transportation to the refineries. NITI Ayog has conducted in-depth research on this topic and presented a report on the circular economy. My work was to further contribute to the investigation as an HPCL intern.

PS-I experience: My PS-1 experience was enriching as I learned a lot about India's refining industry and the obstacles in the process. My faculty was supportive and helped me a lot in the process.

Learning Outcome: My learning outcome was that India has different hurdles in terms of its refining infrastructure and a population density which need other methods to be

tackled compared to those applied in foreign countries. Still, we can surely take cues from them.

PS-I station: I Care Foundation , Mexico

Student

Name: SHIKHAR SHARMA .(2020A2PS0643P)

Student Write-up:

PS-I Project Title: Website & Coursework Development for Education

Short Summary of work done: We were divided into three projects broadly, based on our preference. My work was the development as well as complete deployment of a learning management system platform whose user are the under privileged children from the local communities of Mexico. We also designed the coursework for children between 6-16 years of age.

PS-I experience: It was a really good experience working with such amazing people and the foundation. Never did we feel pressurized and we were always motivated and appreciated by our mentors for all the small steps that we took through out our time working with them for our PS-1.Working closely led us to achieve many goals that we aimed for. The exposure to the work culture of a foreign organization taught many new and useful things.

Learning Outcome: I learnt several skills while working with the mentors, such as Problem solving Ability , written as wells as oral communication skills, Teamwork, Innovative, Investigative skills. technical skills such as website development, deployment, domain purchase etc.

Name: PRATHA SHAH .(2020A3PS0758P)

Student Write-up:

PS-I Project Title: Digital Marketing

Short Summary of work done: Digital Marketing is slowly gaining popularity in today's generation. It mainly includes creating posts for social media and increasing visibility of the organisation among the masses. Working in these directions, we, a group of nine students worked on increasing visibility and popularity of I Care Foundation. We made posts, videos, reels and flyers that could be posted on the foundation's social media platforms. We helped them in starting their own blog account, a wikipedia page and a pinterest account. Apart from that we helped them in forming a templates for all their public documents.

PS-I experience: A non-profit organisation since 2017, I Care has commendable achievements. To be a part of an organisation that works so selflessly to bring a difference in the lives of backward communities of Mexico was indeed an honour. Our PS coordinators from I Care were always encouraging us to bring new ideas and appreciated all our work. They have always been very polite and helpful to us, and gave us ample of time to convert our creativity into reality. It was because of their guidance along with that of our PS faculty that we were able to achieve so much progress in such a short span of two months. If given the opportunity to work with the foundation again, i would surely not miss on it.

Learning Outcome: I have always wanted to know how an NGO works, being a part of one helped me learn a lot about the same. The employees and volunteers as always so keen to bring out new ideas and help each other in their work to bring out the best possible solutions to deal with a situation. They teach us the values of respect, kindness, selflessness and much more. Working in a non profit gives you an opportunity to reflect on yourself and change for the better. Apart from this, working in the digital marketing domain helped me in gaining in-depth knowledge in the same field and overall working for I Care gave me a memorable experience

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Name: ANUMEGHA DE .(2020A3PS1221P)

Student Write-up:

PS-I Project Title: Digital Marketing

Short Summary of work done: We looked into the marketing campaign of I Care Foundation. There were 3 sub topics- 1) Google Grants
2) Social Media Campaign
3) How to increase visibility on Google
out of which we were to choose two topics. I chose the 1st and the 3rd sub topics. We were first supposed to set up a Google Ad Grants account for I Care Foundation. This was followed by an in-depth research about how to increase the visibility of the Foundation on Google and SEO. We were then asked to create content to like ppts and blogs for increased visibility. We also created an ad campaign on Google Ads and opened a Google Analytics account for more in depth analysis.

PS-I experience: My PS-1 experience was enjoyable as I got the chance to interact with not just my peers but also working colleagues at my PS station. PS-1 gave me the opportunity to understand what the real-life scenario is- hence it was a great first-time exposure.

Learning Outcome: My learning outcome was not just restricted to learning more about Digital Marketing, but also learning about team-work, office hour work, group discussions.

Name: CHIRAG AGRAWAL .(2020A3PS1750G)

Student Write-up:

PS-I Project Title: Web dev

Short Summary of work done: In the ps station I care foundation we were divided into 3 groups of 10. I was in group 3 which had web dev as a project. We built a web site for the company in which we provided free courses for the kids aged between 5-15. Courses included financial litracy, language, mathematics along with others. The courses were well structured with equal time given to theory and practice.

PS-I experience: This was my first time with any project and the experience was surreal. Got to meet so many new people with so much to learn from. Got hand to hand experience of real world and how to deal with real world problems. It was quite challenging yet fun for me.

Learning Outcome: I got to learn about so many new things in the field of website development. Wordpress and wix were among many thing I got to know about in a project.

Name: MAMIDISETTI VENKATA SIDDARTH .(2020A4PS1810G)

Student Write-up:

PS-I Project Title: Digital Platform Development

Short Summary of work done: I was involved in the digital platform development wherein educational content was to be hosted so that the underprivileged kids could get access to information, we initially had a website designed on two platforms with one on Wix and the other on WordPress, and I was leading the development on Wix but later on, we switched to the WordPress Counterpart. The second half of the project was the educational content designing, we unanimously decided to go with courses as it would be easier for the target demographic. I designed the Financial Literacy course as it is one of the most important topics to be taught to kids growing up. I also helped the foundation by consulting them on the requirements to be procured such as the platforms to be hosted on as well as the direction we were heading in.

PS-I experience: My experience working with I Care has been wonderful, to say the least, working with a well reputed organization that fights for the underprivileged has taught me a lot

Learning Outcome: Having now worked with a multicultural team has helped me understand cultural differences and how communication between different cultures can be attained, I have also understood how software for medium-scale distributed products works. I have also learned how to resolve internal conflicts and help the Foundation with its needs without any hassle so they could focus on what matters most

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Name: PRUTHVI GUDIPATI .(2020A5PS1681H)

Student Write-up:

PS-I Project Title: Report writing

Short Summary of work done: the work given to us by the i care foundation was to write a report on building a community plaza for th community of raices

PS-I experience: it was a worderful experince and learnt what all goes on in buliding a commuinty center

Learning Outcome: i became more proficient in writing a report

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Name: HIRAKJYOTI NATH .(2020A7PS2078H)

Student Write-up:

PS-I Project Title: Digital Marketing

Short Summary of work done: The project was divided into many objectives. Our group worked on creating social media content and devising market strategies for the Foundation. In the duration of one and a half month, we succeeded in developing and executing various ideas for improving the visibility and popularity of the Foundation across the globe.

1. We wrote blogs for them. The blogs were based on their pillars and covered several other areas of functioning of the foundation.
2. We created a Wikipedia page mainly to let people know the work I Care Foundation does and also to increase the visibility of the foundation.
3. We were provided with 6 presentations from the foundation which were to be presented to new donors and volunteers and were asked to make them more eye-catching and friendly. We drafted 6 redesigned presentations for the same.
4. We opened their official handles on Medium, which is a popular blogging site and Tumblr, which is an American micro blogging and social networking website which we used to gain attention of donors and volunteers from Mexico.
5. We also created social media content like videos, posters and collages for their various social media handles like Instagram.
6. We also made a pinterest account which is photo sharing website to increase the popularity and the visibility of the organization.

PS-I experience: I am very thankful for the opportunity to work with I Care Foundation, Mexico under the mentorship of Mr. Neel Vohra and Ms. Mafer Estrada at I Care Foundation. During this period of time I worked on the field of digital marketing. My project included making interactive and impactful presentations and writing blogs to spread awareness about the foundation.

Learning Outcome: During the duration of one and half month we helped the foundation inch closer to its objectives which is to positively impact the lives of people living in

vulnerable communities of Mexico. They will surely become one of the most popular non-profit organizations in the world one day provided they keep doing the great work that they have been doing until now.

Name: ZEHAAN SHARMA .(2020A8PS0549P)

Student Write-up:

PS-I Project Title: Writing a report on the feasibility and implementation of creation a recreation center in the community of Raices, Mexico.

Short Summary of work done: The project assigned to us was to prepare a report on the feasibility and process of creating a recreation centre in Raíces, Mexico. The team comprised 10 students under the guidance of a PS faculty and a mentor from the PS station.
Through the preliminary meetings with our PS faculty and mentor from the station, the team decided on what the report should cover. The purpose of this was to decide what the I care foundation would find most useful, as they will be the ones using this report. Following this, the team was split into different verticals, each vertical would be responsible for covering the assigned section in detail in the report.
Work within each vertical was structured in a similar manner: researching about the assigned topic, gathering data the PS station could use to implement its project ilove aditya nair more efficiently and providing an in depth analysis of what undertakings the PS station could execute along with their pros, cons, extent of feasibility and suitability to the community and PS station.
Through weekly meets and discussions the team would analyse each vertical's progress and give suggestions for further work, with the help of our PS faculty and PS station mentor. The final stage of work involved collaboration between the verticals to ensure the report was easy to read and and comprehensive in nature as dynamics between different verticals had to be accounted for.

PS-I experience: My PS experience can be subdivided into three categories as mentioned above.
The first stage required extensive deliberation and discussion to decide what the report should cover. The guidance and insights from our mentor and faculty were extremely helpful in pointing us in the right direction. The second stage pertained to researching and writing the report and the final stage was primarily about the entire team collaborating to create a cohesive report for the foundation.

Learning Outcome: -delegating work and learning to work in team: Working in a team of 10 people, split into different verticals in a project which required a lot of cross vertical collaboration allowed me to learn from people and work better in a team.
-sharpening my research and writing skills: exposure to creating a report right from deciding the content to exploring the depths of each topic within the content required me to understand the complexities and nuances of the different dynamics at hand. The report could only have been prepared if each team member had a comprehensive understanding of the task given to us.

Name: VIHAL J ROTTI .(2020AAPS1030G)

Student Write-up:

PS-I Project Title: Digital Marketing

Short Summary of work done: Our team was in charge of setting up a Google Ads Grant account which helped the organization to get more traffic on their website, increase the CTR, and helped in getting more donations for the foundation. I also wrote Blogs, made decks with new templates and set up accounts on Pinterest and other platforms with a Wikipedia page.

PS-I experience: It was a fantastic experience. I want to thank PSD, Rajiv Sir and I care Foundation for providing me with the opportunity. I learned many things from them, which helped me become a better person.

Learning Outcome: Learned Networking, Content writing, SEO, Marketing and a lot of skills

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Name: VIHAL J ROTTI .(2020AAPS1030G)

Student Write-up:

PS-I Project Title: Digital Marketing

Short Summary of work done: I was assigned to work on Google Ads Grants.Helped them set it up and added analytics to it.Along with it, I was allotted to increase their presence In Google.To do that, we wrote blogs , made posts , and some social media accounts for them .

PS-I experience: It was great.

Learning Outcome: Networking, Team Management, social media marketing , etc

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Name: ANOUSHKA CHAKRABARTY .(2020AAPS1424G)

Student Write-up:

PS-I Project Title: Digital Platform Development

Short Summary of work done: I have been working in the field of website development and was involved in a project of designing an online learning platform. My project includes giving inputs on the design and features to be included in the website, and designing course work for students of various age groups that could be uploaded on the website.

PS-I experience: Good.

Learning Outcome: I learnt how to work with an NGO. Delivering work on time even without strict rules and deadlines is a challenge. But I learnt it eventually. Further I learnt how to build a website and how to design courses for school going kids.

Name: ROHIT AKASH R .(2020B1A32073G)

Student Write-up:

PS-I Project Title: Google grants and Social Media marketing

Short Summary of work done: My work at I Care foundation was mostly based about helping I Care foundation with Google SEO and ad grants. We also worked on creating pitch decks for the foundation as well as redesigning their previous presentations. We also worked on creating social media posts for the foundation and blog content

PS-I experience: The PS I experience was very good with the faculty co-ordinator and the I Care team guiding us in our work as well as helping us wherever necessary. I got to learn a lot of new things.

Learning Outcome: My learning outcomes for this project include working as a team, preparing pitch deck presentations as well as gaining important knowledge regarding Google Ad grants and working with SEO

Name: AVRAJIT SARKAR .(2020B2A31920G)

Student Write-up:

PS-I Project Title: Report Writing

Short Summary of work done: The organization asked us to write a report on the construction of a plaza with a detailed plan and feasibility study for a marginalized community named Raices. The report writing was divided into six verticals. We were asked to choose a particular vertical and conduct research on it. Ultimately all the findings were compiled in a single report. I worked on two verticals Financing and writing of the Executive Summary.

PS-I experience: It was enriching. Learned about how NGOs operate and finance themselves. Also got to learn about a marginalized community Raices in Mexico for whom the plaza was being built.

Learning Outcome: Learned about the functioning of NGOs, and how they raise funds and operate.

Name: ABINIDHI G .(2020B4A81910G)

Student Write-up:

PS-I Project Title: Developing a digital education platform

Short Summary of work done: Our project focused on developing a digital platform to help provide better education to children in the Mexican Community. The website developed includes a brief look into basic courses like Mathematics, Science, English for children 6-15 years old as well as other general and essential courses.

PS-I experience: The experience of working with the foundation was great and enriching.The project was evenly paced and it was a gratifying experience to work on a project that would help society.

Learning Outcome: Working with a team was a great experience.I learnt about working with Wordpress and Wix as well as how to go about formulating content for courses.

Name: ADITYA SHARMA .(2020B5A40967P)

Student Write-up:

PS-I Project Title: Digital Marketing

Short Summary of work done: . I had the pleasure of working with the I-Care Foundation in Mexico under the mentorship of Mr Neel Vohra and Ms Mafer Estrada at the I Care Foundation. I was mainly working in the upcoming field of digital marketing. My project involved creating content for social media, managing Google ad grants and increasing the Foundation's visibility on Google Search. I worked on setting up a Google ad grants account and then creating ad campaigns for the same using Google Analytics, social media content creation and a complete makeover of the existing social media accounts of the Foundation. I also redesigned the presentations for the Foundation.

PS-I experience: I got a lot out of working on this project for over two months. I learned the critical lesson of divide and conquer. Thanks to highly enthusiastic group members who were as motivated to work on the project as I was, I had a great working environment and learned much about work ethic and teamwork. I also learned about professional and business communication through regular meetings with the I-Care team and learned to use essential terms to communicate my progress to my superiors.

Learning Outcome: I also improved my presentation design and content writing skills. I was content with working with Canva and various Google software. Through a lot of research on various technical programs and software, I have gained a lot of technical knowledge about working with web 2.0 and web 3.0 applications. I also gained research exposure by researching different communities and technologies.

PS-I station: Indian Red Cross Society - IT , Mumbai

Student

Name: Arihant Bansal(2020A3PS0567G)

Student Write-up:

PS-I Project Title: Create a mobile-based version of the entire website if not already exists

Short Summary of work done: Did a thorough analysis of IRCS Mumbai website, looking for UI design issues, UX problems, and content review. Made a comprehensive list of issues and bugs to fix, along with possible solutions. Made suggestions to improve LightHouse score of AWPRC website and identified unused resources, and compression techniques to improve user experience on their website.
Did research on AWPRC, and their competitors (including SEO, and social media analysis).
Researched on the topic of “Physical Weakness” (technical term is “Asthenia” and prepared a blog post with concise and clear content.

PS-I experience: I had a great learning experience with my PS-I station. Be it the work environment, the mentors, the staff and my peers all were quite great. We enjoyed and had a great time working together. Our mentors were really helpful and keen to help us whenever we were stuck somewhere. Overall it was a great experience and I shall cherish these 2 months in my near future.

Learning Outcome: I learnt a great deal about web development, testing websites, and different metrics for user experience on websites. Learnt about Lighthouse scores, how they work, and how to improve a website's Lighthouse scores.

Name: MILIND SINGH RAO .(2020A3PS1765G)

Student Write-up:

PS-I Project Title: Web Development for IRCS (Mumbai)

Short Summary of work done: worked on bringing into the limelight the issues with the official website of AWPRC and created a clear-cut report stating the fixation and improvements for the same. We also fine tuned our medical articles and blogs and continued our work towards inspecting the official site of the Indian Red Cross Society, Mumbai. As a result, we provided an extensive, to-the-point proposal document pin-pointing the issues and their respective fixations and beautification of the website.

PS-I experience: We worked on a range of topics, from content writing to video editing to web development. We created blog posts and worked on SEO for them, to increase awareness. We scripted, shot and edited an introductory video for AWPRC to boost social media presence. We worked on finding issues and bugs in AWPRC and IRCS's websites, and suggested solutions for the same. We got the opportunity to learn about a wide array of topics and develop our skills as developers.

Learning Outcome: 1.Better Understanding of UI/UX aspects of the website
2.Improving the performance of the Website using service Workers and bundling
3.Other non technical skills such as working efficiently in a team-based environment and having openness to feedback.
4.Ability to debug a built website and enhance the UI/UX of the website.
5. SEO

Name: DHAVAL SHARMA .(2020A4PS1887P)

Student Write-up:

PS-I Project Title: Web Development for IRCS (Mumbai)

Short Summary of work done: Prepared the proposal for making the changes in the website and also wrote blogs and learnt how to edit footage, images, music & audio

together across multiple editing tracks. Learnt about various video editing frame rates, resolutions & aspect ratios. Learnt about colour correction and Professional video editing terms & definitions. Also learnt how to make real web applications and create responsive, accessible, and beautiful layouts for the frontend part. Made enhancements to the current website like improving the products and Gallery pages. Making it responsive and more accessible and also using beautiful layouts for the frontend part to make it look more attractive. Adding more description / details
about the doctors working with them. Also worked on Search Engine Optimization (SEO), Search Engine Marketing (SEM), Social Media Marketing (SMM) and Digital Analytics.

PS-I experience: Worked for Indian Red Cross Society and AWPRC both of which are non-profit organizations where volunteer contributions would strengthen the organization and support their activities. For the same proposed a proposal for the websites of both the organizations suggesting marketing techniques , creating content for their websites in the form of blogs and promotional websites which were reviewed by the AWPRC team and got accepted. Overall it was a very nice experience.

Learning Outcome: Learnt the ability to debug a built website and enhance the UI/UX of the website. I learnt the ins and outs of HTML, CSS, and Modern JavaScript for web development and also learnt how to make real web applications and create responsive, accessible, and beautiful layouts for the frontend part. Learnt how to edit footage, images, music & audio together across multiple editing tracks. Learnt about various video editing frame rates, resolutions & aspect ratios. Learnt about colour correction and Professional video editing terms & definitions. Wrote some blogs which helped a lot in refining my grammatical and communication skills. It also helped me in getting better at content creation. It also helped in improving social networking and marketing skills. It also helped me in managing my time properly and organising my work before executing it.

Name: MEDINI N B .(2020A7PS1722H)

Student Write-up:

PS-I Project Title: Web Development for IRCS (Mumbai)

Short Summary of work done: We worked with writing medical blogs, articles, and video creation for AWPRC. We also worked on the official website of AWPRC and created a report stating the fixation and improvements for the same. We fine-tuned our medical articles and blogs, inspected the official site of the IRCS, Mumbai, and finally provided a proposal document highlighting the issues and their respective fixations and beautification of the website.

PS-I experience: PS-I was a fulfilling experience where we got to observe the inner workings of a large organization and its tie-ups. An overall enriching experience.

Learning Outcome: Content writing, Web development

Name: ABHINAV TYAGI .(2020A7PS2043H)

Student Write-up:

PS-I Project Title: Create a mobile-based version of the entire website if not already exists

Short Summary of work done: The work I did in IRCS was related to web development and content creation. The main goal of the project was to make changes to the website of Indian Red Cross Society (IRCS), Mumbai and Adams Wylie Physio Rehab Centre (AWPRC), Mumbai. The project also involved the marketing and promotion of AWPRC on the social media. Initially we were asked to learn the basics of Web Development, the sources for which were provided to us by our faculty in-charge. The team I was part of worked on the proposal of the changes to be made on the websites of AWPRC and IRCS-Mumbai. The website was thoroughly examined and necessary solutions were given for the bugs found. This involved proposing changes to the User Interface layout, fixing broken links and making sure that the website is responsive to all types of devices. We also proposed creating new useful pages (like making FAQ page, donation option), and removing certain features/parts (login feature) that may negatively affect the user's experience. We were also responsible for writing blogs on the website about different kinds of pains in the body, their causes, symptoms and remedies. As social media presence is also important for an organization, we were also tasked with creating a video for AWPRC, to help promote the centre on various platforms.

PS-I experience: The working environment was very fun and challenging. Everyday felt like an opportunity to learn something new. The constructive feedback I got for my work, helped me gain a lot of confidence. The faculty in-charge was very supportive and guided us smoothly through the internship. My peers very extremely friendly, and all in all it was a wonderful experience.

Learning Outcome: The Basics of Web Development, including HTML, CSS and JavaScript.
How to Analyze and Debug a Website.
How to Improve a Website's UI and UX.

Search Engine Optimization (SEO).
Search Engine Marketing (SEM).
Social Media Marketing (SMM).

Name: SHIKHAR SRIVASTAVA .(2020A8PS0712G)

Student Write-up:

PS-I Project Title: Create a mobile-based version of the entire website if not already exists

Short Summary of work done: Web development , video editing , content creation , blogs and article writing , physiotherapy treatment details.

PS-I experience: It was good . I learned teamwork and web development .

Learning Outcome: Web development , video editing , content creation , blogs and article writing , physiotherapy treatment details.

Name: ANANT JAIN .(2020B1A10641P)

Student Write-up:

PS-I Project Title: Web Development and Content Creation

Short Summary of work done: The work done was mainly based on revamping the IRCS and AWPRC websites and suggesting the changes to be made in the current versions of the website in the form of a proposal that was forwarded to the organization for the approval, the major issues were related to responsiveness of the website and some UI/UX issues and also included suggesting about the possible use of metatags in search engine optimization. We also created content in the form of blogs related to the medical terms which are closely related to AWPRC and for which they provide medical assistance.

PS-I experience: The whole journey has been enriching as regular discussion with peers helped me to get hands-on experience on team building activities and working in a corporate environment exposing us to the real life problems and allowing us to develop solutions for the same,a sense of responsibility also get generated when we take up a task and accomplish it with full diligence.

Learning Outcome: Ability to debug a built website and using HTML,CSS and JavaScript, DevTools and also enhancing the UI/UX of the website.
Preliminary understandings of the content creation using video editing softwares.
Other non technical skills such as working efficiently in a team-based environment and having openness to feedback.

Name: NAINAR SURAJ MANIVANNAN(2020B2A41993G)

Student Write-up:

PS-I Project Title: Create a mobile-based version of the entire website if not already exists

Short Summary of work done: Adams Wylie Physio Rehab Centre (AWPRC), a project by Indian Red Cross Society-Mumbai, is a premier physiotherapy and sports rehabilitation center, helps individuals and athletes overcome their injuries, and physical problems and aims to bring them back to peak health. Our Practice School tasks started with writing medical blogs and articles, as well as video creation for AWPRC. We further worked on bringing into the limelight the issues with the official website of AWPRC and created a clear-cut report stating the fixation and improvements for the same. We also fine-tuned our medical articles and blogs and continued our work towards inspecting the official site of the Indian Red Cross Society, Mumbai. As a result, we provided an extensive, to-the-point proposal document pin-pointing the issues and their respective fixations and beautification of the website.

PS-I experience: We worked on a range of topics, from content writing to video editing to web development. We created blog posts and worked on SEO for them, to increase awareness. We scripted, shot and edited an introductory video for AWPRC to boost social media presence. We worked on finding issues and bugs in AWPRC and IRCS's websites, and suggested solutions for the same. We got the opportunity to learn about a wide array of topics and

develop our skills as developers.

Learning Outcome: Onsite exposure to the workings of a Physiotherapy rehab centre.
Introduction to the basics of Search Engine Optimization, Search Engine Marketing
And marketing methods for social media platforms.
Basics of content creation.
Blog writing.
Professional application of video editing software.
Introduction to Canva (tool for creating posts for social media)
Professional ethics and better communication skills
The intricacies in the functioning of Indian Red Cross Society as a
Humanitarian organisation.
The aim, role and principles of IRCS.
Previous fundraisers initiated by IRCS.
Upcoming fundraiser event and expectations regarding
participation.
The process of arranging and forwarding work as a team
to higher authorities.
Legal, social and other factors regarding approval of inputted work.

Name: ARYAN MILIND PINGLE .(2020B3A70362G)

Student Write-up:

PS-I Project Title: "Create a mobile-based version of the entire website if not already exists"

Short Summary of work done: Web Development in HTML/CSS/JavaScript, Content Writing for medical issues, Website Analysis for AWPRC and IRCS

PS-I experience: Great experience, learnt lots of new concepts in web development, got to work in a team which shared unique perspectives on problems

Learning Outcome: Improved my content writing skills, learnt to contribute to a team project, obtained some fancy web dev skills

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Name: IRVIT GUPTA .(2020B4A30726P)

Student Write-up:

PS-I Project Title: Web Development for IRCS (Mumbai)

Short Summary of work done: We submitted a proposal for the websites of both organisations for the same purpose, suggesting marketing strategies and producing content for their websites in the form of blogs and promotional webpages.

PS-I experience: My PS-I experience went quite well. Writing blogs for the organisation helped me learn a lot of knowledge on a variety of issues and improved my research abilities. I acquired a basic understanding of web development to address issues with the organisation's website.
I got to connect with classmates from other campuses, and we had a great time working on our assignments. Overall, the experience was extremely enjoyable.

Learning Outcome: I have learnt various things such as
1. Preliminary to intermediate understandings of the marketing techniques.
2. Ability to debug a built website and enhance the UI/UX of the website.
3. Preliminary to intermediate understandings of the content creation.
4. Preliminary to intermediate understandings of video editing.
5. Other non technical skills such as working efficiently in a team-based environment and having openness to feedback.

Name: VEDANT SINHA .(2020B5A82255H)

Student Write-up:

PS-I Project Title: Website Development of IRCS Website

Short Summary of work done: Blogs and articles on different physical conditions a human body suffers and that can be cured by physiotherapy which includes
Osteoarthritis 2) Joint Pains 3) Ligament Strain 4) Back Pain
A video depicting the Adams Wylie Physio Rehab Centre's technologically advanced machinery and world-class physios. The primary aim was to attract attention through online channels and social media platforms.

Website enhancement of the official AWPRC website to facilitate high traffic and optimize the search. Moreover changing the visuals and functioning of the website.

PS-I experience: During the start of my PS-1, I had little to no idea about the functioning of big organizations like AWPRC and IRCS, and now as I'm almost to the mark I've gained much-needed industrial experience and exposure to real-world scenarios.
Dealing with industry professionals and learning from them has evolved my professionalism. Understanding the functionality of such industry giants has been my major learning.

Learning Outcome: Web Development: HTML+ CSS+ Javascript, learning this combo enabled me to make the skeleton, and style and to develop the interactive nature of the website.
Video editing: Learnt video editing software like Adobe Premiere Pro and Lightworks to make a video for Adams Wylie Physio Rehab Centre.
Apart from this my communication skills have developed as I was the only coordinator in contact with the concerned authorities at AWPRC through online media.
I have become much better at delivering information efficiently.

Name: CHINMAY MURAGESH SABANE .(2020A1PS1572G)

Student Write-up:

PS-I Project Title: Mobile Application Development to Guide First-Responders in an Accident Site

Short Summary of work done: This project involved building a mobile application for both android and iOS operating systems, for Indian Red Cross Society, Karnataka state branch, which performs the primary function of providing medical guidance to a first responder in an accident site and help reduce fatalities. This application will also find applications in organizing blood donation camps, registration for first aid training, providing a portal for IRCS volunteers to update the work they have performed in an outing and will also provide a portal for colleges to upload photos and videos as a proof of youth red cross work conducted by them.

PS-I experience: Pursuing PS-1 with IRCS helped me learn how companies are organized ,gave me an opportunity to work with a team which required trying to

understand my team-mates capabilities and distribute work accordingly. But I would have preferred an offline internship as it would have involved more learning.

Learning Outcome: Through this internship we learned how companies are organized at their core and observe how the different domains (like technology group, finance group, design group and HR) collaborate to achieve high quality products and services. Through this project we learned to use Flutter SDK & Flutter Framework for building native iOS and Android apps and thereby gain the required skillset to design any type of mobile application for both Android and iOS operating systems. Through the numerous talks, on wide-ranging topics from domains in the IT, finance, Health -Care, Manufacturing and Chemical sector, from the industry experts we expect to gain a deep understanding of what work an employee actually performs by being a part of a company and expect to come to a conclusion on what type of jobs we would like to pursue. While working as a group on our chosen topics we expect to improve our abilities to work with people with different skill-sets and try to successfully get the best out of each other.

PS-I station: Indian Red Cross Society Tech , Bengaluru

Student

Name: SHANTAM SRIVASTAVA .(2020A4PS2019H)

Student Write-up:

PS-I Project Title: Backend Database Management System

Short Summary of work done: Created a Backend Database Management System using MySQL and integrated it with a front end using Django

PS-I experience: Experience was good, mentors were helpful and patiently answered all our questions

Learning Outcome: Learned about relational databases
Django and Python

Name: CHUNDURU ROHIT .(2020A7PS0018G)

Student Write-up:

PS-I Project Title: Introducing a Backend System to track YRC payments.

Short Summary of work done: Creating a user-friendly database that can be run on a local server with authorization by the employees of the India Red Cross Society, Karnataka Branch in order to access data on the registration fees collected from universities all over karnataka for the Youth Red Cross wing.

PS-I experience: It was a good experience, working with people from different branches while sharing each other's knowledge is truly an unique experience.

Learning Outcome: Learnt the implementation of skills in university better,getting used to work culture present in offices.

Name: ADIT KALBALIA .(2020A7PS0064P)

Student Write-up:

PS-I Project Title: Website Portfolio Creation

Short Summary of work done: Created and designed a website to act as a portfolio for the vice chairman of the organisation.

PS-I experience: Industry experts were helpful and gave all resources needed. Regular communication with PS faculty for giving updates. Variety of projects in the IT sector were offered.

Learning Outcome: Mostly learned web design basics and different methods to setup a website.

Name: METUKURU YOGESH .(2020A7PS0098G)

Student Write-up:

PS-I Project Title: Sub Website development for district branch of Red Cross Karnataka

Short Summary of work done: We were asked to develop website template using Word Press and use it for all district branches of Red Cross Karnataka. We have initially made a template on wordpress and then used that for deploying district branches' websites.

PS-I experience: It was a good experience.

Learning Outcome: Learned how to build a site on Word Press. Learnt about how a humanitarian organization like Red Cross works. Apart from that learnt technical skills such as Figma etc.

Name: BIRLA PRATHAM SANDEEP .(2020A7PS0114P)

Student Write-up:

PS-I Project Title: Development of Subwebsites

Short Summary of work done: Developed subwebsites for the 8 districts of Karnataka. Made a dedicated template and got it approved and then applied the same to all of them.

PS-I experience: Great experience of learning about web development. Faculties were friendly and supported us a lot. And also we got timely data and updates from everyone. Learned to work with a team on professional level.

Learning Outcome: Web development on Wordpress

Name: SANJANA PADAVALA .(2020A7PS1207P)

Student Write-up:

PS-I Project Title: Database Management System for YRC Accounting

Short Summary of work done: We developed a database backend and integrated it with a frontend to manage the transaction system of the YRC university system

PS-I experience: It was a decent learning experience, with ample support from both the company and from the faculty

Learning Outcome: I learned more about working in a team, soft skills and exposure to a professional working environment

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Name: ANANTH RAGHAV .(2020A8PS1797G)

Student Write-up:

PS-I Project Title: Frontend for the Database Management System

Short Summary of work done: Implemented a front-end portal for administrative users of the organisation. It also involved extracting data from excel files to be populated in the database and creating filters for ease of access of data.

PS-I experience: It helped us gain real world experience.

Learning Outcome: Learnt web development and cyber security concepts.

Name: SHRISH SANJAY KUTHE .(2020B1A11900P)

Student Write-up:

PS-I Project Title: Development of sub websites for 31 district branches of IRCS Karnataka.

Short Summary of work done:
My project dealt with frontend web development and aimed at developing sub-websites for district branches of IRCS Karnataka. We started with making a website template that could be customized according to the data available for various districts and made it responsive and dynamic. We used WordPress to create the website because the tech staff at IRCS is familiar with the software, and it would be easier for them to update the website with new information in the future.

PS-I experience: It was an enlightening experience and gave valuable insight on how industries work and the process of making and submitting projects in an organization. The beginning part of the project was given a generous amount of time, so that team members can pick up the essence of the project and get acquainted with the technology stack without being overwhelmed. In later stages, we faced some challenges while getting the required data for the websites from the organization due to busy schedule of district secretaries , but we hope to sort it out. Overall, it was a good experience
which led to developing a lot of skills, technical as well as soft skills.

Learning Outcome: The project helped me understand how an open source organization like IRCS works. It also helped me in improving my front-end knowledge. As there were several evaluation components during PS1, I also learned how to prepare myself for group discussions and seminars. Furthermore, PS1 provided me with the required industry exposure that will help me to grow as a person. It helped me learn a lot by applying my knowledge and skills in real-life situations. Also, one of the significant objectives of practice school is to learn organizational structure and its functions and to develop community exposure and skills. I believe this exposure will help me in my personal growth and make me a refined individual ready to contribute to the industry in the best possible way.

Name: AKSHAT DOOMRA .(2020B1A22524H)

Student Write-up:

PS-I Project Title: MOBILE APPLICATION DEVELOPMENT TO GUIDE FIRST-RESPONDERS IN AN ACCIDENT SITE

Short Summary of work done: Building native iOS and Android Apps via the use of Java SDK, Flutter SDK & Flutter
Framework for the Indian Red Cross Society, Karnataka. With a simple, user-friendly UI, the
mobile application focuses on assisting the citizens of Karnataka with providing medical guidance in an accident site. Integrating some of the features of the website in the app, one can. sign up to be a volunteer, an intern, or a blood donor, through this portal.

PS-I experience: My experince at the Indian Red Cross Scociety is very good, its my pleasure to work with this organization who help lot of needy persons and our Industry expert is also very helpful who told us about many things at the red cross society and our Bits instructor is also vey helpful who help us in lot of things so overall the experience is great

Learning Outcome: I learn about Android Development in this practice school an make an app for the IRCS Karnataka

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Name: S NIHARIKA .(2020B1A82034G)

Student Write-up:

PS-I Project Title: App Development, Web Development

Short Summary of work done: Created a Backend Software using MySQL to streamline the various transactions of the Youth Red Cross wing. Converted an Excel file into multiple tables that could be hosted as a web app and could display the various universities affiliated to the Youth Red Cross and make it easier to track funds allotted to various activities and events at the University/College level. Furthermore, we made a Flutter Application to function as an Emergency Responder App which would also allow the user to sign up as an intern or a volunteer through the portal.

PS-I experience: My PS-1 experience at Red Cross was overall fruitful. We got real projects that could actually streamline things for the organisation, so this was motivating. There were sufficient projects for the number of people allotted to this station so everyone got to contribute.

Learning Outcome: I ended up going through a lot of resources to learn different software, trying to optimize the solution. My team and I made an app using Flutter/Dart from scratch and even learnt MySQL and the various transaction procedures.

Name: ADITYA KARANTH .(2020B4A41614G)

Student Write-up:

PS-I Project Title: IMPLEMENTATION OF THE FRONTEND PORTAL FOR THE DATA MANAGEMENT SYSTEM

Short Summary of work done: The Youth Red Cross covers over 2700 registered colleges under 33 different universities throughout the state. Currently, all the data on the registration fees of each college and volunteers of YRC enrolled in each college are stored in excel sheets. Storing data in excel sheets comes with multiple disadvantages such as lack of authorisation, higher chances of loss of data or missing data, extracting and printing data on specific queries and many more. Excel is also not very user-friendly, and the application rounds off very large numbers using precise calculations, which compromises accuracy.
Hence, switching to more modern technological solutions to store this data in SQL-based databases makes this data more accessible and easy to sort through while being secured for the Indian Red Cross Society employees.
My team and I were given the task of creating the frontend user interface for the members of IRCS

PS-I experience:
The key learning from this project are:
1. Learning the basics of HTML, CSS and JavaScript
2. Learning aspects of basic design principles and Figma
3. Learning the basics of an application called Django

Learning Outcome: I had to learn languages like HTML, CSS, and JavaScript and use these to learn the basics of web development. The design of the frontend elements and the creation of the user flow and draft wireframes was my key contribution to the group. I created and shared draft wireframes and UI with the team and the industry representative. For this purpose, I had to learn and implement many key design principles, including concepts like Visual Hierarchy, Fitts law, and Hicks law, among many others.

PS-I station: Indira Gandhi Centre for Atomic Research (IGCAR) , Kalpakkam

Student

Name: AYUSHMAN MAZUMDER .(2020A2PS1751P)

Student Write-up:

PS-I Project Title: Computation of a program for structural Analysis of Helical Staircase

Short Summary of work done: Designed a program that can take inputs from the user and calculate all six internal reactions of the helical staircase. The program can verify the details provided by the user with respect to the standard conventions mentioned in the Indian Standards, British Standards, and the National Building Code. The code reads values from experimental graphs and gets the values of constants from graphs digitized from the original book by using the software. It provides internal reactions at every point of the structure, which includes vertical bending moment, lateral bending moment shear strains, both vertical and lateral. It also includes the torsional forces. These values were then plotted on the graph for dynamic inputs, and the obtained results were matched with the manually obtained spreadsheet values for testing.

PS-I experience: My experience here at IGCAR has been a learning and informative one. I have received constant support from both faculty mentors from BITS and Industry mentor at IGCAR, which played a significant role in the successful outcome of the project.

Learning Outcome: My significant learning outcomes from this project include extensive research on designer manuals. The most challenging part was digitizing the experimental graphs from a few nonclear images from the book. The C++ code can interpolate between all these separate graphs and read the values by itself. Generating dynamic graphs has also been one of my major learnings in this project. Apart from this, I also learned how the actual design is done for 3D structures and the different parameters involved.

Name: AKASH KUMAR .(2020A3PS0324P)

Student Write-up:

PS-I Project Title: Development of algorithm for Electronic nose

Short Summary of work done: Read various research paper and articles on article related to project and studied various machine learning algorithms like PCA,SVM,Random forest etc. which were implemented as the pattern recognition technique for the electronic nose.Learned the Lab VIEW software as well as python language to implement the algorithms.

PS-I experience: Good

Learning Outcome: Machine learning algorithms,Hardwares used in elecgtronic nose.

Name: AISHWARYA SAM .(2020A7PS0001P)

Student Write-up:

PS-I Project Title: Development of secure Email client App (Android based) with multi-factor authentication for IGCAR

Short Summary of work done: The Project assigned was: DEVELOPMENT OF A SECURE EMAIL CLIENT APP (ANDROID BASED) WITH MULTI-FACTOR AUTHENTICATION FOR IGCAR.
I was a part of a two member team and we were supposed to carry out the following tasks:
-Learn JavaScript + React Native Fundamentals
-Configure an email server using Postfix on Ubuntu
-Create a server for authentication purposes
-Create the frontend for the Android app
-Create the backend to receive requests and send responses to the frontend.

PS-I experience: Being allotted a station as prestigious as IGCAR is a matter of pride for me. It was a great learning experience so far. I learnt the fundamentals of JavaScript, React, React Native, how emails travel across the internet and the process of setting up an email server, building an application from scratch and spending endless hours fixing bugs! It was a very satisfying and fulfilling experience. I am grateful to our mentors at IGCAR and our BITS Faculty Mentor, Dr. Praveen Kumar AV, for their guidance and patience. I express my heartfelt gratitude to them for being so understanding and helpful.

Learning Outcome: I have learnt a lot during my internship at IGCAR. I learnt JavaScript, React, React Native, Express, Node.js, Postman API, Working of an email server, building an app from scratch and implementing custom functionalities. Apart from this, the various expert talks, group discussions and quizzes were also great learning opportunities.

Name: ABHAY NARENDRAN .(2020A7PS0037P)

Student Write-up:

PS-I Project Title: Development of a secure email client (Android-based) with multi-factor authentication for IGCAR

Short Summary of work done: Made frontend for an app in React Native, and integrated it with a Node JS + Express backend, along with a MySQL server to store data. Authenticated users using a combination of a hashed password, as well as through JSON web tokens. Set up an email server using Postfix and Dovecot on Linux.

PS-I experience: It was an interesting experience overall, especially to see the nature of the types of projects that the company was undertaking.

Learning Outcome: I learnt basic full stack development, as well as the basics of how emails are sent and received. I also learnt about the nature of work that goes on in a company.

Name: CHIRAG MAHESHWARI .(2020A7PS0983P)

Student Write-up:

PS-I Project Title: DESIGN AND DEVELOPMENT OF CONTENT MANAGEMENT FOR PORTAL

Short Summary of work done: The project aims to make it easier for user and organization to maintain their website without manually managing the static pages of the website. The portal will enable the users to see, add or update their details. The data entered will be dynamically update the user's profile section on the official website of IGCAR. This would make the process quick, and all the information can be dynamically displayed on the official website of IGCAR.
For this, I developed and designed a web portal on ReactJS. On this portal, the teams after authenticating from login Page, will be navigated to home page where they can select their section to add or update changes. When saved, the content will be updated on the database created on MySQL with help of APIs made using ExpressJS backend framework. I also developed a hbs file which which dynamically call data for display on the website. This could be embedded inside the original HTML file of the website with help of API. This whole process, Content management system will make process automated and dynamic.

PS-I experience: Overall, it was a great experience working under guidance of mentors of one of the most prestige organization of India. I had frequent meetings with my Mentor throughout the PS1 period. Although the workload was very high because I was working individually on the project and have to manage all frontend, database and backend alone. But because of constant support from mentor with resources and motivation, helped me complete the project.

Learning Outcome: For the project, I individually made a frontend, backend and database for Content Management System for a web portal. While building the CMS, I learned and improved many web technologies skills like HTML, CSS, JavaScript, ReactJS, NodeJS, ExpressJs, Handlebars, and MySQL. I also learned to collaborate and work under mentors and frequent meetings with them helped improve my communication skills.

Name: YUVRAJ SINGH BHADAURIA .(2020A7PS1685G)

Student Write-up:

PS-I Project Title: Image classification using CNN

Short Summary of work done: I created CNN project for classification of images of biodiversity.

PS-I experience: The experience was very fruitful.

Learning Outcome: I learnt basics of machine learning and applied cnn model.

Name: ROHIT JOHN MATHEW .(2020A8PS1806P)

Student Write-up:

PS-I Project Title: Design of Instrumentation System for Viscosity and Conductivity Measurement of High Temperature Nuclear Glass Waste

Short Summary of work done: Studied about the various methods used for viscosity, conductivity and level measurement. Decided the best method for each. Created an instrumentation system on MATLAB Simulink to measure the viscosity.

PS-I experience: It was a great experience. All the IGCAR mentors are really dedicated and the are always approachable. My project involved a lot of literature review before I could finally start working on the project.

Learning Outcome: Learnt to use Simulink.

Name: ISHIKA BHOLA .(2020A8PS1821H)

Student Write-up:

PS-I Project Title: DESIGN OF INSTRUMENTATION SYSTEM FOR VISCOSITY AND CONDUCTIVITY MEASUREMENT OF HIGH-TEMPERATURE NUCLEAR GLASS WASTE

Short Summary of work done: In this report, we studied the fundamentals to successfully design an instrumentation system for the viscosity and conductivity measurement of high-temperature nuclear glass waste. The different methods to measure viscosity, conductivity and level were thoroughly analyzed. For the present application, rotational viscometry, laser flash method and radar level transmitters were the most suitable methods.

A basic simulation was created for the rotational viscometer using MATLAB & Simulink. This included a motor speed controller, torque sensor and angular velocity sensor. At present all the components are assumed to be ideal. These need to further be modified to accurately consider all the losses and errors. This will give us a better understanding of the system and enable us to reduce errors in the calculations.
Similar models need to be created for the conductivity and level measurements. After successfully creating these models, we will finally be able to complete the instrumentation system. The objective of this project was to be able to decide if the radioactivity of the nuclear glass waste is sufficiently low to be able to bury it in steel containers underground. By measuring the viscosity and conductivity, we will have sufficient data to make this decision

PS-I experience: With the help of my mentors from BITS and IGCAR, I was able to create and maintain a learning environment that was really supportive and empathetic for both myself and my colleagues. We all were able to significantly improve our reading comprehension and fluency through interesting activities and helpful learning techniques. I learned a lot about professional communication and how to work in a workplace with someone you are reporting to. In addition to being a part of my education, this program made me feel proud and honored to work with IGCAR. I'm really appreciative that BITS and IGCAR gave me such a prestigious opportunity.

Learning Outcome: With the help of the PS-1 , I was able to learn teamwork and how to work under the guidance of a reporting authority. I was able to learn about nuclear systems working and how the waste produced can be disposed off efficiently and how different properties of the material affect it.

Name: SAHAJ TANDI .(2020B1A31904P)

Student Write-up:

PS-I Project Title: Parametric studies of Temperature sensitive Magnetic Device for passive safety feature of Fast reactors Shut Down system

Short Summary of work done: My project was based on finding the optimum parameters for the Temperature sensitive magnetic switch mechanism that is employed in fast reactor shutdown. The TSMS has multiple components, majorly- an electromagnet, a curie point based sensor, primary and secondary coils, an armature, a soft iron core and molybdenum rings. The separation of the upper and lower parts varies in actuated and deactuated states. I ran multiple simulations with varied distances between the armature and the sensor that were 0.1mm, 0.05mm, 0.3mm, 1.8mm. We also varied the

current supplied to the coils between 5 A and 2 A. After having run the simulations, I was able to successfully optimize the parameters, especially the gap between the upper and lower parts to maintain the armature at 0.7 N.

PS-I experience: It was a new experience, working in the industry for the first time. I was able to learn a multitude of new things and feel grateful for the opportunity.

Learning Outcome: I would like to say that I feel consistency is the key to working efficiently. The weekly diary format was successful in keeping me on my toes and I feel that effective time management goes a long way, especially when it comes to STEM fields.

Name: CHAITANYA SETHI .(2020B3A71961P)

Student Write-up:

PS-I Project Title: Cancer Detection by Infrared Image Recognition using Deep Learning

Short Summary of work done: The objective of the project was to train a deep learning model which recognizes infrared images of breast tissues, and categorizes them as benign cancer, malignant cancer or being a healthy tissue. I learned and used the python programming language to develop the model, firstly a sample model on Google Colab notebooks followed by a model based on two python scripts, main and prediction. I developed a Sequential Keras model, having three pairs of Conv2D and MaxPooling2D layers followed by multiple dropout and Dense layer and a Flatten Layer. I enable image denoising using fastN1MeansDenoising function () and was able to develop a working model thorough main.py script and upload and predict the class of a breast tissue by prediction.py script. Later, I combined the functionalities of the two scripts into one using a GUI enabled python script and converted it to an executable windows application for direct use on double-clicks. The model provided an accuracy of 80% (Validation accuracy) and predicted the class of the tissue correctly with >99% accuracy.

PS-I experience: It was a privilege to work with one of the most accomplished and prestigious research institutes in India, IGCAR. My industry mentor, Dr N. Madurai Meenachi was very supportive and has provided me with specific guidance to make progress on the project. She helped me significantly through sharing resources, datasets and project-related information for smooth conduction of the project.
I enjoyed exploring python programming for the first time and making a working deep learning model from the same. It was great to learn how neural networks work and

experience their implementations through convolution layers and other associated layers and parameters.
Lastly, I cherished the thought-provoking group discussions, quizzes and seminars to improve on my learnings thorough not only my own project but also others' projects and perspectives.

Learning Outcome: The Practice School-I at IGCAR was an insightful and worthwhile experience as my first industry exposure through an esteemed government research institute. I learnt new technical skills such as machine learning, deep learning, python programming and code implementations based on these skills. The applicative part of the project was a great learning, as I learnt dealing with multiple errors, utilized a combination of various python libraries and also learnt on how to convert a file from python script to an actual window application (.exe) file which can be deployed on any PC through an installer file.
Apart from the technical aspects, I was also exposed to new insights in presentation making, presenting, communication in a formal environment and documentation and Scientific poster preparation skills through the weekly reports, diaries and project reports.
I was also fortunate to interact with Dr B Venkatraman, Director IGCAR and Shri S Raghupati sir, Group Director, IGCAR through the initial and final valedictory ceremonies respectively.
While this experience was highly packed with learnings and positive outcomes for my career, I would have loved to visit IGCAR in Kalpakkam and do my PS-I there, had the circumstances permitted me.
Nonetheless, I hope my work contributes to the centre and the society as I take these learnings and experience from IGCAR forward in my career.

Name: RAGHUVANSH S .(2020B5A70335G)

Student Write-up:

PS-I Project Title: A finite element approach on elastic wave propagation in an isotropic material.

Short Summary of work done: Elastic wave propagation through metallic materials is the fundamental mechanism behind the ultrasonic non-destructive testing. The wave propagation depends on the properties of
materials like density and elastic constants and also on the frequency of the elastic wave. An understanding of the wave interaction with the material medium is necessary to develop suitable methodologies for ultrasonic inspection of materials. In this project,

studies on wave propagation through stainless steel medium (length: 100 mm; width 50 mm and thickness: 10 mm) is proposed. The wave equation needs to be solved in 1D and 2D using a finite element method (FEM). A simple wave defect interaction in the medium is also to be simulated for visualisation. The FEM is implemented using COMSOL.

PS-I experience: Our PS-1 program lasted for a total of 7 weeks. Over the course of the program, I got an in depth understanding of elastic wave propagation in different materials and got comfortable with using different tools available in COMSOL to create simulations. I also interacted and met many different people who were from different campuses including my project partner.

Learning Outcome: I developed a mastery over the basics of COMSOL and got an understanding of elastic wave propagation in different materials. I also learnt the skill of preparing scientific reports and maintaining weekly records which is sure to help me in the future. I also gained the ability to take part in group discussions confidently. I enjoyed the PS-1 program greatly and learnt a lot throughout the duration.

Name: PINAPATI SAKETH .(2020B5A80966P)

Student Write-up:

PS-I Project Title: Real Time Detection of Chopped Nuclear Fuel Length using Image Processing Techniques

Short Summary of work done: Development of a real time object detection and measurement system using YOLO algorithm and OpenCV library of Python. We trained a YOLO object detection model using 250 images for 2000 epochs and deployed this using dnn module of the OpenCV library to detect the length of the required object real time using the bounding rectangle

PS-I experience: PS-1 has acted as a jump start towards machine learning. We were first briefed on what needs to be done. We were given enough time to learn the required concepts. We had to give regular updates to our industry mentor and submit weekly reports. We had multiple presentations of our work with our industry mentor. To describe it in an abstract way it was an enriching experience and has helped to put a lot of things in perspective.

Learning Outcome: PS-1 acted as a jump start towards machine learning. We had to implement object detection for which we learned the concepts of OpenCV and deep

learning. We have learnt about convolutional neural networks. This project has sparked my interest in Natural Language Processing and Reinforcement Learning. I have also started to learn and apply the concepts of machine learning in the field of Physics.

Name: MEHAR CHAWLA .(2020B5AA2006H)

Student Write-up:

PS-I Project Title: A FINITE ELEMENT APPROACH ON ELASTIC WAVE PROPAGATION IN AN ISOTROPIC MATERIAL

Short Summary of work done: Ultrasonic Non-Destructive Testing is a really important technique in many leading industries. Simulating Ultrasonic NDT and analysing its results using COMSOL Multiphysics software using FEM approach was our main goal.
My partner and I both are from a physics background but didn't have in depth knowledge of simulations or elastodynamics in general. During the project we went through a lot of research papers regarding the elastic wave propagation in isotropic substances and how to simulate them.
We were helped immensely by Dr. Saju T. Abraham, our Industry mentor. He gave us a series of assignments that we completed over the duration of the project, starting from really basic simulations building up to simulations where we added PMLs and absorbing layers and simulations which had intentional defects in them to actually simulating an angled piezoelectric transducer probe, we progressed a lot. We compiled and analysed all these results.

PS-I experience: It was really well managed, the cooperation from IGCAR's side was immense and our mentor really helped us a lot. PS-1 definitely did offer exposure into how work in the industry progresses and was really enlightening.

Learning Outcome: An in-depth study of Elastic wave propagation in isotropic materials.
An insight into Non-Destructive testing using ultrasound and how it's implemented.
Simulations using COMSOL Multiphysics-Solid Mechanics Module and Elastic waves, time dependent.
CFL Criteria and various such constraints to keep in mind while running simulations.

Name: NAZEEF .(2020B5AA2406H)

Student Write-up:

PS-I Project Title: Harp based beam profiler using microcontroller

Short Summary of work done: We propose a beam profiler which composes of a microcontroller that will receive and communicates the inputs to the LabView software which is used to control, obtain, and analyze results from the detector in the path of the ion accelerator at IGCAR.

PS-I experience: My work experience as an intern at IGCAR was very fruitful and educational, as not only got exposed to work of an leading research center of the nation, I also got to help them in some capacity. I read multiple papers and acquired various programming and technical skills to contribute to IGCAR, making me much more skilled than I was before PS.

Learning Outcome: I learned how to program a microcontroller especially Arduino UNO, I also learned how to use the LabVIEW interface to create and utilize virtual instruments and perform experiments in sequential manner.

PS-I station: iWorksLab , Hyderabad

Student

Name: SANSKAR SHARMA .(2020A3PS2212H)

Student Write-up:

PS-I Project Title: Battery Management System in Electric Vehicles

Short Summary of work done: To understand the functioning of a Battery Management system in Electric vehicles by using a model in MATLAB- Simulink. We learnt about Battery Management Systems- primarily SOC estimation, Cell Balancing, BMS Algorithms, etc. In the software part, we learned how to use MATLAB, Simulink, and

Simscape to build and simulate models. We even designed a Passive Cell Balancing Model.

PS-I experience: PS Experience was completely fine, we were not overworked at any time, we had regular meets to make agendas for the day and give reports, and the work was pretty much in our domain, we did face some difficulties regarding the resources but it was resolved later on.

Learning Outcome: I learnt how to use MATLAB, Simulink and Simscape to design and simulate models, and also the functions of BMS in EVs

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Name: CHINMAY RANKA .(2020A4PS1888G)

Student Write-up:

PS-I Project Title: Website Development

Short Summary of work done: Website for the company was built, designed, and reorganized using HTML, CSS, and JavaScript.

PS-I experience: For me, it was a teaching moment. I had the chance to demonstrate my abilities and put them to the test on the appropriate stage, and I learned more about how business is conducted.

Learning Outcome: It was fascinating to learn how to conduct business meetings and interact with other participants. Since we had a lot of deadlines to meet, I also learned the value of time management. Great experience, indeed.

Name: PRITESH JAIN .(2020A4PS1898G)

Student Write-up:

PS-I Project Title: Web Development

Short Summary of work done: The work involved web development including both frontend and backend, using technical languages such as HTML, CSS, JavaScript and MERN stack

PS-I experience: The working environment is pretty good here at iWorksLab. The projects are challenging, timings are flexible. All the team members are helpful. The environment is pretty interactive and you can ask for help even outside the team, also you have the liberty to suggest your own ideas.

Learning Outcome: Learned about web development and what all things need to be done for taking a product to production. I also understood how deployment works.

Name: DESHPANDE ATHARV MAHESH .(2020AAPS0302G)

Student Write-up:

PS-I Project Title: Market Research on Electric Vehicles and Government Policies on Startups

Short Summary of work done: The project involved creating a market strategy for Electric Vehicles in India. We calculated the market size by determining the target audience of our product. Then we researched about the existing competitors, government policies, and case studies about the success and failures of the existing EVs in India. Finally, we integrated all these factors to determine the Market strategy in the Financial, Emotional, Performance and Relational quadrants.

PS-I experience: It was a good learning experience and I was happy that the projects were allotted according to our interests. An ample amount of time was provided to research on each topic.

Learning Outcome: I got to learn about the work culture in early-stage startups and the framework for determining market strategy.

Name: AYUSH RAJ .(2020AAPS0439H)

Student Write-up:

PS-I Project Title: Software development (Backend Website development)

Short Summary of work done: The project aimed to design and implement the eCommerce website's backend. I used MERN stack technologies to deploy the backend of the Protein Factory Website, an eCommerce venture by iWorksLab Ltd.

PS-I experience: The overall experience was good, the Operations head used to conduct regular meets and kept track of our work. The workload was quite a bit but overall we ended up learning a lot of stuff. The company also provided us with enough resources and courses to learn all the required technologies.

Learning Outcome: We started by learning about HTML, CSS, JavaScript and related technologies. Then we moved to MERN stack and created a basic node program. We then used ExpressJS for server and HTTP protocol handling. We used middleware like passport, Bcrypt, HBS, etc. to make the website responsive. Then we linked the frontend with the backend and initialised the database. Learnt all leading web development tech required in industry.

Name: ROHIT REDDY PALPUNURI .(2020AAPS1325H)

Student Write-up:

PS-I Project Title: Battery Packs & Battery Management Systems of Electric Vehicles.

Short Summary of work done: The aim of the Battery Management System is to bring efficiency and safety to EV battery packs. We must first understand the working of a BMS, its various components and challenges. Battery Packs are also an essential component of EVs which is monitored by the BMS, hence we must understand its types, their capabilities and potential charging solutions. My project aims to find these solutions and eventually build a practical BMS and battery packs that can be used in future EV products.

PS-I experience: It was a good research oriented experience with ample guidance and advice daily. However, due to the station being a start up you can feel lost sometimes as to how to proceed further in your work.

Learning Outcome: I gained extensive knowledge on EVs and their components, BMS simulations as well as battery pack designs

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Name: YOGYA CHAWLA .(2020AAPS1776H)

Student Write-up:

PS-I Project Title: Automatic Water Bottle Cleaner

Short Summary of work done: The Project is dedicated to ease the process of cleaning the inner walls of a 20L water bottle in our household and industrial applications. Here, we will use food-graded silicon-based pliable brushes that don't degrade over time. In an unfortunate situation, we have added an overload relay to protect our device. If such a situation occurs, the overload relay can be replaced

PS-I experience: The PS station had mentors which are very helpful and patient to students having difficulty in learning on new softwares.
We had regular daily meets and all the team members and mentors shared their views on the project and made suggestions for making the design perfect.

Learning Outcome: In this internship i learned to operate on various softwares like Fusion 360 and Simulink.
I also brushed up on my basics of Electrical and electronics subject.

Name: AKSHAT DASHOTAR .(2020B2A40711P)

Student Write-up:

PS-I Project Title: MARKET RESEARCH

Short Summary of work done: Market research, preparing market strategies for asked business products, market sizing for various business models, m.r. also include customer segmentation, analysis of competition for a model keeping in mind the existing as well as

future, it further involves government policies. I got a chance to analyze and study the case studies of a variety of successful business models, and then draw information from them to make appropriate market strategy.

PS-I experience: It was overall a very pleasant experience in terms of work culture, every day the meetups were very helpful in moving forward with the project, and the pieces of advice given by our industry mentor proved to be good guidance with regards to the project. it was an informative journey to earn and get practical industry experience.

Learning Outcome: I learned to analyze the business qualitatively, to draft the market strategies by calculating market size and studying other viewpoints as well, I came to know about plenty of government norms that are important while considering a business, and I got knowledge about a variety of companies during my research.
I also brushed up on my communication skills and work ethic, while working with my team.

Name: SIDDHARTH JAIN .(2020B2A41955P)

Student Write-up:

PS-I Project Title: Market Research (Market Sizing)

Short Summary of work done: I have performed Market sizing for various markets domains which includes Electrical automobile, E-tractors, Household appliances, and online meat market (e-commerce). Also performed case study on similar domain companies like Sonalika Agro solutions, Licious, and Life's Good(LG).

PS-I experience: It was overall a good learning experience and I was happy with the fact that we were allotted projects based on our interest and the mentors were also very helpful. I also learnt new things in the field of consulting and market research. I got a chance to work with a start-up and got an enriching experience.

Learning Outcome: I learnt about the crucial role of market research in start-ups. Also learned how to solve guesstimates and case-studies. Got insights about start-ups and its work culture.

PS-I station: Jsw Energy (onsite) , Vijaynagar

Faculty Name: S.S. Gupta

Faculty Write-up
JSW ENERGY currently generates 4,559 MW, out of which 3158 MW is thermal power,1391 MW is hydropower and 10 MW solar power , with a capacity of another 8,630MW under implementation and development. The Vijayanagar plant was the first plant which started in the year 2000. This plant consists of two separate business units with a combined capacity of 860 MW. Apart from this company has 4 Captive Power Plants with a total capacity of 830 MW .JSW Energy is one of the most efficient power generation companies in India.

JSW Energy , already the most efficient power plant in India, would want Interns to take up projects to further enhance its efficiency by analyzing each part of the plant and optimize power generation with fluctuation in demand .

Student

Name: RAM NACHIAPPAN N .(2020A4PS0575P)

Student Write-up:

PS-I Project Title: Efficiency Monitoring Shiftwise

Short Summary of work done: A model was supposed to be built to calculate the auxiliary power consumption with help of input parameters. This was then repeated to other components in the power plant. By combining the research knowledge and past six month data the relations were deduced. This was then used in setting the standards and benchmarking of components.

PS-I experience: It was an onsite PS. We were given free accommodation in township. The place is very calm and scenic. The industry professionals were also very helpful and supportive. The industry is huge and gives a great exposure especially to mechanical and manufacturing students.

Learning Outcome: I learnt data analytics, performing regression and correlation in excel, application of statistics, basic python for data visualization and core power plant engineering concepts.

PS-I station: JSW Steel , Vijaynagar

Student

Name: RITIEN MOHAN .(2020A1PS1052P)

Student Write-up:

PS-I Project Title: Modeling of Steel Slab Reheating Process in a Reheating Furnace Area

Short Summary of work done: My work here is majorly about creating a working model in the slab reheating process and running it through various data sets to check its financial feasibility and engineering efficiency. This involves a thorough literature review of various research papers in the field to understand the process initially and then try to replicate the same through a model.

PS-I experience: The project had a lot of scope to learn and the orientation of the project was the most interesting for me. With applications of computational fluid dynamics in the project helped me learn a lot of key concepts in the steel industry and helps me pursue my research interests in the future. I also enjoyed working closely with my batchmates. Reading so many research papers always provided a good learning exposure.

Learning Outcome: There were various learning outcomes-
1) MATLAB
2) Made Excel model
3) Learnt about Heat Transfer Equations
4) Efficient Literature Review
5) Teamwork
6) Working under a time crunch

Name: SIBASISH SUR .(2020A1PS2360H)

Student Write-up:

PS-I Project Title: DEVELOPMENT OF WEB-BASED SYSTEM FOR L & D SECTION OF HR AREA: ONBOARDING AND INDUCTION OF LATERAL EMPLOYEES

Short Summary of work done: Let me first tell about the topic. In JSW STEEL, we had 5 topics. I choose"DEVELOPMENT OF WEB-BASED SYSTEM FOR L & D SECTION OF HR AREA". This topic was taken by 9 people who were further divided into 3 subgroups having one sub-topic each. Our subgroup took the subtopic"Induction and Onboarding of Lateral employees." My groupmates were Anirudh Sammadar and Syed Aga Hani. Syed Aga Hani mainly focussed on Benchmarking and taking
the interview of the HRs of other companies. Me and Anirudh were given various tasks during the span of our PS. I was first given the job of doing Secondary Research on the topic. Then, for further info, I took an interview with one of the officials of their HR department , Then , I helped Syed to prepare a questionnaire for the interviews to be taken by Syed. After this, we were asked to prepare a process flow diagram which was later rejected. Finally , we all sat together and made the final report.

PS-I experience: It was an awesome experience to work in one of the largest Steel Makers of India . Our mentor , Ayaz Ibrahim was very friendly and always helped us in our times of trouble . Looking forward to work with them ,again.

Learning Outcome: Initially , I had problems in talking with unknown people . However, after taking one interview with Upendra Sir, I was able to get rid of some of the the fears. Moreover, I also learnt to coordinate and work properly with unknown people in my group which I felt was very important to me. Moreover, since my project dealt with the HR department which is not exactly connected to the Engineering field, I got an experience in working with another completely different field.

Name: PRIYAL JAIN .(2020A2PS1742P)

Student Write-up:

PS-I Project Title: HR: Development of web based system for L&D section of HR area

Short Summary of work done: Our project, thus aims to create a fully functioning dashboard for the L&D Department of JSW Steel which would result in better data handling and data analysis for the large pool of employees, interns and trainees across departments. We have contacted HRs of various manufacturing firms , in order to set appropriate benchmarks for our dashboard.
Our interview process seeked to gain insights benchmarking processes wherein, we conducted interviews with the HR managers of Maruti Suzuki , Mahindra and General Mills.They shared their experience of creating L&D dashboard and the challenges faced by them in its implementation.

PS-I experience: My PS-I experience was really good. The projects assigned to us impacted the organization as a whole , as the observations we made during the course of our internship would help in future development of L&D dashboards and training programs.
For benchmarking interview
We had connected to many HR through linked and drafted them a message to share their experience with us and give us the inputs that we can also use in our dashboard to make our dashboard more dynamic.

Learning Outcome: During this internship, our team learned how critical the use of dashboards is in an industrial setting. Our project demanded the creation of a simple yet interactive and dynamic dashboard, which can be created through Microsoft Excel.
Our team was asked to go through various youtube playlists to not only learn about the parameters involved in making but also the technical know-how of how to use excel as a whole.
The overall experience was very enriching for us as we learned the use of various commands like Index, Vlookup, and Sumproduct and also how charts and tables could be used effectively in data analysis.Such an experience , is bound to help us in our future endeavors.

Name: GOPESH KUMAR YADAV .(2020A2PS1746P)

Student Write-up:

PS-I Project Title: H.R. based web based dashboard for L&D department

Short Summary of work done: I was involved in development of an online dashboard for the L&D department of H.R . The Learning and Development (L&D)
division of the Human Resources department is in charge of these employees' training. Along with training, it's important to keep track of each employee's performance and learning results for easy analysis. The ability to apply various filters and formulae to the datasheet—which was quite challenging to do in the case of textual records—would have greatly speed up the process of filtering and evaluating the data. We had to work on excel and store the data to perform further operations and then provide visual information to the admin of the dashboard.

We have contacted HRs of various manufacturing firms, in order to set appropriate benchmarks for our dashboard. Our interview process seeked to gain insights benchmarking processes wherein, we conducted interviews with the HR managers of Maruti Suzuki, Mahindra and General mills Industries. They shared their experience of creating L&D dashboard and the challenges faced by them in its implementation. The dashboard creation itself worked on the parameters that were discussing through these benchmarking interviews and with our project buddy and how effectively we could use MS Excel for its successful implementation

PS-I experience: Practice school was a really insightful and a refreshing experience for me after two years of college and academics. I got the opportunity to work with the industry professionals and H.Rs of various other companies which I suppose would be really helpful for me in future.

Learning Outcome: I got to learn about M.S. excel and interviewing industry professionals.

Name: ANIRUDH SAMADDAR .(2020A4PS0181P)

Student Write-up:

PS-I Project Title: Development of web-based system for L&D section of HR area

Short Summary of work done: Responsible for building an HR dashboard for JSW Steel, Vijaynagar Plant. Used MS Excel to create the dashboard using dummy employee data first. Simultaneously, did secondary research and also conducted benchmarking interviews with various stakeholders from Maruti Suzuki, Mahindra and General Mills. Based on the research and our interviews, made recommendations to the HR department about the various ways to onboard new employees and conduct their training programs efficiently.

PS-I experience: Great

Learning Outcome: Polished my MS Excel skills, learnt more about organisational structure of different companies and the onboarding process of employees.

Name: APRAJITA GUPTA .(2020A4PS0913P)

Student Write-up:

PS-I Project Title: Study of gas dynamics in a blast furnace under high pellet operation

Short Summary of work done: I worked in a team of four people. First, we were given a training presentation to study. I went through the presentation and learned about facilities associated with iron-making, such as the slag granulation plant and pulverized coal injection. We studied presentations prepared by previous summer interns on similar projects.
Following this, we got one month of input and output data that we studied. After we understood this data, we received more extensive data on two blast furnaces that detailed production and other parameters over two financial years. I developed correlations between pellet percentage and all the other parameters from the summarized data and then did the same for the production of hot metal. Using the correlations developed for pellet percentage and an iterative regression analysis process, we identified the parameters that linked gas dynamics with smooth production.
The final outcome required an analysis of permeability, a process parameter strongly correlated with pellet percentage, using correlations and regression analysis. I studied research papers on permeability in high pellet operation. We developed a model for permeability that had 95% accuracy and generated contour plots for the most important parameters to conclude our work.

PS-I experience: I had a good experience during PS-I. The first week consisted of orientation sessions that helped us understand different aspects of operation at a steelmaking plant. The orientation sessions were interactive and we were encouraged to ask questions. We had the opportunity to choose a project of our interest from the given list of projects, and each project was explained to us before we made our choice.
Along with an industry mentor, we were assigned two buddies who interacted with us. The project was interesting, and all the training materials, data and guidance we received were very instructive. They gave us extra guidance on preparing our final report and presentation at the end. Our faculty mentor also interacted with us frequently to track our progress and guide us as required.

Learning Outcome: At the orientation sessions, I learned about the steelmaking process and the steel industry. I learned how to analyze large quantities of data to develop meaningful correlations from it. I understood the steps involved in the process of the analysis, from studying the data to understand its contents, to conducting regression analyses. This process also gave me an insight into how large organizations maintain and utilize their records.
Interacting with my mentor and buddies taught me how one should interact in a corporate environment. Their invaluable guidance in preparing the final report helped me learn how to properly present my work and highlight its important aspects.

Name: DHRUV SAWANT .(2020A4PS1356G)

Student Write-up:

PS-I Project Title: Study Of Gas Dynamics In A Blast Furnace During High Pellet Operation

Short Summary of work done: The first half of PS-1 majorly focused on developing an understanding of the Steel industry and the Blast Furnace complex process.Then the main project work started after the Midsem evaluation.Six months input and output data of the Blast furnace 3&4 was provided by the Company and a complete data analysis was done in MS Excel by our team.A Multiple Linear Regression model to predict Permeability was made and then some Contour Plots
were plotted to show the changes in the Permeability value with change in Blast furnace input parameters.

PS-I experience: It was a great learning experience.I got an exposure to Iron and Steel sector.

Learning Outcome: Learnt various skills such as Machine Learning and was able to apply them on a project.Learnt how to use MS Excel for data analysis and make a Regression model.
Gained a complete understanding of the processes occuring in an Iron and Steel plant.Group Discussions and Seminars helped in boosting my Communication and Presentation skills.

Name: GODBOLE MADHURA DILIP .(2020A4PS1487G)

Student Write-up:

PS-I Project Title: Iron: Development of gas flow pattern prediction model for high pellet operation at BF Area

Short Summary of work done: In this project, the first objective was to get an in-depth understanding of the Blast Furnace Complex process and the second significant objective was to study the gas flow dynamics during High Pellet operation and make a Multiple Regression model for permeability in order to correlate it with the hot metal production.12 significant parameters were used to make a Multiple Regression model for permeability as a dependent variable. An equation was formed that predicted the permeability values with approx. 98% accuracy. Contour plots relating:
a) Permeability vs PWI, CWI
b) Permeability vs PWI, Total Heat Loss
c) Permeability vs CWI, Total Heat Loss
showed how the permeability varies with these parameters, also we were able to justify how the Permeability values are increased in order to have a smooth Hot Metal Production process during high pellet operation in JSW Blast Furnace-4. The results of this project can be used in the Steel plants to increase the quality and smoothness of the hot metal production in the blast furnace.
In the process of learning the above, I also learnt:
1) About permeability, CWI, PWI, heat loss, their significance, what they depend on and how they're correlated
2) To analyze the given data in MS Excel using functions like CORREL()
3) To find the equation for permeability (y axis on graph) using 12 other parameters (x axis on graph)
4) To find p value and how to decide which parameters to neglect/ consider based on this p value
5) To develop the correlations between the pellet percentage and all the input parameters of the dataset. Correlations are an essential part of any Machine learning model as they help us know how well a given parameter correlates to or explains the other parameter.

PS-I experience: The project was very interesting, the team had done orientation sessions in the beginning of the PS-1 so that we could get familiar with the JSW Steel plant and also learnt the basics of how the industry works from scratch. There was a slight delay after the allotment of the project was done, but then it was sorted with the help of my PS faculty, Dr. Ravi Vidyarthy. He was very supportive throughout my project and helped me clear my doubts and explained to me how I should be in contact with the JSW team, how I should approach the mentor, and this really helped me a lot. My mentor at JSW Steels, Mr. Naveen Singh and his other co-mentors Busireddy Sir and Mohanraj Sir helped me significantly in understanding the concepts, were also humble and always ready to clear my doubts.

Learning Outcome: The following are the most important things I learnt throughout this internship:
1) Blast furnace, it's parts, inputs, outputs and complex working process
2) Making a Multiple Regression model for permeability to correlate it with hot metal production

3) Permeability, CWI, PWI, heat loss, their significance, what they depend on and how they're correlated
4) Analysing given data in MS Excel using functions like CORREL()
5) How to find the equation for permeability (y axis on graph) using 12 other parameters (x axis on graph)
6) Finding p value and how to decide which parameters to neglect/ consider based on this p value
7) Developing the correlations between the pellet percentage and all the input parameters of the dataset. Correlations are an essential part of any machine learning (ML) model as they help us know how well a given parameter correlates to or explains the other parameter.

Name: PUNYA TEWANI .(2020A4PS1903G)

Student Write-up:

PS-I Project Title: Reduction of Steam in CRM-2 from 68kg/ton to 62 kg/ton

Short Summary of work done: The project was very interesting, the team had done orientation sessions in the beginning of the PS-1 so that we could get familiar with the JSW Steel plant and also learnt the basics of how the industry works from scratch. There was a slight delay after the allotment of the project was done, but then it was sorted with the help of my PS faculty. He was very supportive throughout my project and helped me clear my doubts and explained to me how I should be in contact with the JSW team, how I should approach the mentor, and this really helped me a lot. The initial part of my project was learning about the functioning of CRM-2 in the plant, what are the consumers of steam in JSW and how steam is used there. Finally, in the second half I had to think upon the ways in which steam consumption can be reduced in CRM-2. I studied condensate discharge locations and their efficient management.My mentor helped me significantly in understanding the concepts and his supporting team was also humble and were always ready to clear my doubts.

PS-I experience: My PS-1 experience was quite great and overall it was a good learning experience.

Learning Outcome: I learnt about steel plants and their working in detail. Right from RMHS(Raw Material Handling System to finally production of cold rolled steel, it takes immense coordination of the workers at the steel plant. I learnt about how CRM-2 (cold

Roll milling) takes input of HR(Hot rolled coils) and it goes through series of process in these process units like PLTCM(Pickling line cum Tandem Cold Mill), Continuous Annealing Line, Continuous Galvanizing Line, and how Utility which is a non production unit in CRM-2 is important in a plant which recycles water, and supplies mix gas and fuel to the processing units. I learnt in depth about what steam traps are, their working, types of steam traps, current trap population at CRM-2. I was also connected to one of the officials working at Armstrong in Pune who told me about each trap and its application in detail. Furthermore, I studied trap management, its methodology, and suggested the company with a hypothetical case model the cost incurred due to leakage or failure of steam traps, and if trap management will be done efficiently then definitely steam consumption will be reduced and so the operational costs.

Name: ARYAAN PARIDA .(2020B1A40833H)

Student Write-up:

PS-I Project Title: HR: Development of web-based system for L&D

Short Summary of work done: The project I had undertaken in my PS Station involved Development of web - based system for the L&D department which itself had three sub projects which we had to choose from. I choose the project which involved Dashboard development using Excel tools and was grouped with 2 other people. Our work involved learning about dashboard development on MS Excel using internet resources and conducting benchmarking interviews with HR heads of various organization. Our final project involved creating a dynamic and interactive dashboard for GETs , interns and existing employees using the knowledge gained over the duration of the PS.

PS-I experience: Practice School-1 was indeed very insightful for me ,as I was able to learn a lot about the role of L&D department in a professional organization. This was also my first experience to a professional workspace where on the job requirements are very different from an academic setting. Though, I received appropriate feedback and support from my mentors to help me adapt to the completely new environment and learn on the job through projects.

Learning Outcome: I learnt how we can use Microsoft Excel to create dynamic tools (like dashboards) using simple excel formula and how important it is to create raw data into dynamic and interactive tools for better data analysis.

PS-I station: KEC International Ltd. (Onsite) , Jaipur

Student

Name: ARIHANT GARG .(2020A4PS0258P)

Student Write-up:

PS-I Project Title: Hot -dip Galvanization

Short Summary of work done: Understand the industrial process of hot dip galvanization and design innovative solutions to make it environment friendly and reduce the carbon footprint of the plant.

PS-I experience: It was a good learning experience. My mentor was efficient at providing the neccecary data and report regarding the project.

Learning Outcome: It was a great introduction to how the corporate world functions

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PS-I station: Kotak Education Foundation - Content Creation (onsite) , Mumbai

Student

Name: ANSHUMAN AGRAWAL .(2020A4PS0594P)

Student Write-up:

PS-I Project Title: Content Creation

Short Summary of work done: SOCIAL MEDIA MANAGEMENT- My work in social media management includes developing strategies to increase followers, creating and

overseeing social campaigns, producing content, and reviewing analytics. When we do a post, I track its analytics, and based on the data, we implement the changes in the next post.
CONTENT CREATION- In content creation, what we do is create the various posts that were to be uploaded to all the social media handles and again social media management. So these 2 roles are interrelated.
Accounts- In the accounts department, I coordinated with Pooja ma'am to create various dashboards regarding the payment vouchers and their reimbursements. We used Excel to create all the dashboards using multiple sheets in a single document and manipulation of data by using different formulas and pivot tables.

PS-I experience: My PS-1 experience was fully wholesome with lots of learning and I got to interact with a lot of mentors from the station and learn from them.

Learning Outcome: Created cumulative reports of all the social media handles for the months Feb-May 2022. This report helped us in analyzing the key performing indicators, demographic distribution, age, and gender split of our users which in turn helped us get to know our audience in a better way. So gained important knowledge about social media marketing.
Effective research and analysis helped us determine our industry and what kind of content is well suited for our industry.
In content creation, I have worked with my mentor to design various posts including many hiring posts, using photoshop, to be uploaded to our various social media handles.
In the accounts department, I have worked with my mentor to develop a dashboard based on the payment voucher status on the basis of each intervention as a criterion. Learned how to use Excel very effectively and basic data analytics experience.

PS-I station: L & T Heavy Engineering - Electronics (onsite) , Surat

Student

Name: VIBGYOR SINGHVI .(2019B5A30326P)

Student Write-up:

PS-I Project Title: Predictive Maintenance System

Short Summary of work done: Gained a whole understanding of different fabrication processes & large scale heavy manufacturing. Worked on trend identification on data from vibration sensors for monitoring health of a large scale CNC.

PS-I experience: This was one of a kind experience, offered a great industry exposure. Smooth sailing with wonderful team of mentors, HR and management looking forward to bring out the best out of ourselves. An actual university for mechanical/manufacturing and electrical students, though new digital initiatives are undertaken which involve a bit of electronics and IT too.

Learning Outcome: Learnt about applications of IoT, MATLAB, and manufacturing processes.

Name: HARSHIT JODHANI .(2020A8PS0818P)

Student Write-up:

PS-I Project Title: IOT Implementation on EOT Crane, Automation of a 3 Roller Bending Machine

Short Summary of work done: I created Interlocks for an Electric Overhead Transmission Crane and also worked on Automation of Radius Measurement(Real Time) with the help of Motion Cam. Further I did the root cause analysis and found out the parameters affecting Bending process and found sensors which can help us to do the dimensioning automatically.

PS-I experience: It was a great experience and I got exposure to latest technologies used in industries for control engineering applications. All the people were pretty supportive and I highly recommend this PS Station.

Learning Outcome: I learnt about functionality of Programmable Logic Controller and its basic coding by building ladder logic. Also I learnt about industrial machines and their functioning. Overall it was a great experience for me.

Name: PARTH FALGUN CHOKSHI .(2020A8PS1501G)

Student Write-up:

PS-I Project Title: Application of multi-sensor systems for predictive maintenance of IoT stations, Application of Profile and Proximity sensors on drift control and weld height, Application of 5-axis shell cutting water jet CNC machine on tori cones.

Short Summary of work done: In large-scale industries like L&T Heavy Engineering, the upkeep of machines is very important to keep up the efficiency of manufacturing. But there are limitations to places humans can monitor manually. Also ensuring the safety and quality of jobs is a major factor in maintaining the company's reputation. Hence multi-sensor systems are deployed and synced with the cloud to provide analysis for easy use. Sensors were also deployed to prevent drifting of jobs and to measure ESSC weld height. Also considering the volume of work, precision of cutouts is very necessary to save time. I got to learn about the basics of CNC operation, its significance in L&T, and the flow of making cutouts on shell cutting water jet CNC machine, fabricated specially for the use on L&T.

PS-I experience: The mentors are very friendly and keen to help. They are always ready to hear and address our problems. Apart from working on the project, we were also allowed to go around and observe the technologies and workflow at L&T Heavy Engineering to get a broader experience. Apart from that, various visits were arranged to different departments for us to know what technologies are used in the industry (L&T).

Learning Outcome: I learned about control systems, how the PLCs and CNC drive systems differ, and what their significance was. I also got to know two softwares i.e. Solid Edge 2021 and IGEMS. I was also taught how to look for different sensors for specific uses and the varied different types of sensors, and the data they interpret and send as a signal. I could derive that even though these machines have a very big operating scale; their precision is finest which is very important for a company like L&T which manufactures critical equipment.

PS-I station: L&T Heavy Engineering - IT (onsite) , Surat

Student

Name: SHRUTI HALWAI .(2019A7PS0003P)

Student Write-up:

PS-I Project Title: Develop a dashboard using MVC' & 'Create an app using PowerApps platform'

Short Summary of work done: During the entirety of PS-1, I was involved in two projects. I learned about many front-end and back-end programming tools. For dashboard designing, I was provided online industry-based lectures by my mentor to learn and practice MVC and it's components. I learned about handling queries in SQL, developing websites and webpages using HTML, CSS & JavaScript, I also learned OOP languages: Java & little bit of C#. I was introduced to ASP.NET and MVC platform briefly. This project is a little long term project in the IT department of my PS station.
In second project, I learned how to create a domestic business purpose app using PowerApps. First, I got to know about the workings of this platform and then alongwith my project head, I worked on creating a personalized app based on 'less coding-more logic' for the employees working in IT department. The app is just like a normal app but with certain features accessed by certain licensed personnel only.

PS-I experience: PS-1 has been a great learning experience for me. Not only from work perspective but also for personal point of view. I learned a lot of things related to my field of study, got to know about industrial working environment, formal and informal interactions among colleagues and work seniors. I also learned how to adjust living with new people in PG and other things that need to be done while living alone and away from your home. It was a very fruitful experience. I am very thankful to PSD and excited for PS-2.

Learning Outcome: I developed both in professional and personal life during the whole PS-1. It was a very good learning experience and I learned how to work in professional environment, how to handle various issues at workplace, how to interact with others, how to implement all the things learned in college in practical life and also about several issues that need to be catered for while living alone.

PS-I station: L&T Heavy Engineering - Mechanical (onsite) , Surat

Student

Name: AYUSH KISHOR HINSU .(2020A4PS1189G)

Student Write-up:

PS-I Project Title: Simulation of configurable multi axis manipulator in CAD

Short Summary of work done: I had been given the project of simulating a multi axis manipulator with multiple use like gas cutting and welding to verify the program written for the programmable logic control used on the same manipulator such that any error in programming gets eliminated there and then. Also it had to configurable meaning that it had to have changeable dimension of various parts used it CAD model. The simulation was to be controlled using excel and VBA codes and lastly I learnt inverse kinematics to ease programming calculations and minimize errors in coordinates.

PS-I experience: It was totally great to visit and intern at core mechanical PS station like L&T where in I was exposed to new manufacturing tech exclusive or much advance in its class many still new to market and academic curriculum. It helped me to gain insight of what knowledge to apply and where. I also got to know about corporate workforce and task management and developed a lot professionally.

Learning Outcome: New topics like inverse kinematics, new software experience like solid edge, MATLAB, excel and VBA in depth.

Name: AMBALGI PUSHKARAJ VINAY .(2020A4PS1985G)

Student Write-up:

PS-I Project Title: Design of magnetic wheel for locomotive adhesion system.

Short Summary of work done: I had designed a magnetic wheel using the principle of Halbach array for magnetic crawler that will be used for weld inspection by the method of UT. I had researched on the design and also done required calculations and created an excel sheet calculator for the payload sustained by the magnetic wheel. I had also manufactured a prototype for my design. Also I had designed the static and dynamic test assembly setup for the actual testing of the magnetic wheels.

PS-I experience: My PS 1 experience was amazing. The amount of industrial exposure that I recieved as a mechanical engineer was huge. L&T Heavy engineering Hazira is one of the best industries for core mechanical engineering.

Learning Outcome: Rigid body dynamics,Engineering Design, Magnetism, Industrial exposure.

PS-I station: Magic Bus India Foundation (onsite) , New Delhi

Student

Name: MALHAAR KHANNA .(2020A8PS2149H)

Student Write-up:

PS-I Project Title: The research done on the stakeholders in the area and strategies created to increase outreach towards the targeted demography

Short Summary of work done: I researched about the different stakeholders in the community and connected with them so as to increase the outreach of the Magic Bus programme. I also observed as well as took part in the day-to-day working of the NGO. During the internship I also helped create strategies so as to increase the outreach of the programme.

PS-I experience: PS-1 was a good learning experience and I was guided by helpful mentors and a supportive team. The internship was not only research oriented but also involved a lot of interaction with the community and overall was a fun experience.

Learning Outcome: I got insights into the social sector and also developed my research abilities. I also improved my communication skills

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Name: STEPHEN WILSON THOMAS .(2020ABPS1835P)

Student Write-up:

PS-I Project Title: Increase outreach of the company's branch

Short Summary of work done: Collaborated with stakeholders in the close proximity of the company's branch to increase the outreach the company has in certain areas where more number of underprivileged students live.

PS-I experience: Got to experience how corporate culture impacts the day to day functions of the employees in offices and while working for the company. Also got to learn about the NGO sector and how they function.

Learning Outcome: I got to know about the harsh truth about the life underprivileged students live and how it affects. There are more than enough jobs for these students, only issue is the required knowledge which can be easily learnt in just a span of 2 months.

PS-I station: Manikgarh CEMENT , Chandrapur

Student

Name: PRABHSIMRAN SINGH .(2020A8PS1805P)

Student Write-up:

PS-I Project Title: Automation of DCS and PLC by forecasting demand using AI

Short Summary of work done: Automated an aspect of the cement industry that was yet to use computer-based monitoring systems. Using a surface-level AI, we aimed at achieving automation of the determination of metrics involved in the cement industry leading to an increase in the economic output. For this purpose, we designed an AI model that tracked real-time data using a cloud interface. The following had to be done to ensure a functional model:-
We used CDP data to analyse purchase behaviours of various vendors and integrate the same with the marketing/sales software.
Using ETL, we try to get as much software data as possible from various technologies used by the company (example Power BI, tableau, Salesforce)
We mapped all the process within the factory (PCL/DCS) to the AI algorithm so that it can increase efficiency using self learning algorithms (These AI models are open source).
Benchmarked various cement plants.

PS-I experience: My overall PS-I experience was very pleasant. It got hectic and challenging at times, but I received plenty of help from my project guide and PS-I faculty. I also gained a lot of insight into how the cement industry operates and the process of automation in the industry.

Learning Outcome: We gained a basic knowledge of how the cement industry operates. We were introduced to the concept of AI and IoT in the industry. We also developed an understanding of automating control systems like DCS and PLC and how to operate them.

Name: JATIN KUMAR SAXENA .(2020ABPS0640P)

Student Write-up:

PS-I Project Title: Maintenance practices in a Industries, type of maintenance systems, best practices, Examples/ case studies from other industries and their applicability in cement plants

Short Summary of work done: I worked on creating a Machine Learning algorithm for the maintenance of Equipment and Machinery. This project aims to broaden the knowledge of the Predictive Maintenance (PdM) system and how Machine Learning can be used to construct a model which helps in predicting the remaining useful life (RUL) of the machine or equipment based on the machine's components and the parameters which affect their working. Predictive Maintenance can detect faults early in time and help decrease the equipment's downtime, improve spare parts inventory, and maximize equipment lifetime. So the focus is mainly on predicting the RUL of the rotary kiln, an essential piece of equipment in the cement production process.

PS-I experience: I had a great experience during PS-1. I got to learn many things during the expert sessions and our mentor sessions. The most exciting part of the internship was that we actually got to think of solutions which can actually be implemented by the industry, and it was exciting that we got to merge cement manufacturing with Technology.

Learning Outcome: I learned about the functioning of the cement industry and the various components involved in cement manufacturing.
In particular for my project, I learned the different techniques of maintenance practices in cement industry and Machine Learning for creating the model.
Apart from these skills, I also gained confidence in some of the soft skills, namely, Teamwork, Communication skills, Group Discussion, etc.

Name: JHILMIL MODI .(2020B4A12346H)

Student Write-up:

PS-I Project Title: CEMENT MANUFACTURING AND ITS ALTERNATIVE FUELS

Short Summary of work done: •We learned about different types of equipment used in our Manikgarh Cement Industry and how cement is made.

- We learned that we have 2 units and both together have the capacity of 6MTPA.
- We also learned about the safety measures taken in cement industries and other plant facilities.
- We also about the different cement products we made there.

I studied different alternative fuels like:

- BIOMASS
- Waste Tires
- Sewage Sludge
- Plastic wastes
- Waste Tyres as fuels and it's case study in Iran.
- I also studied the research paper about Life Cycle Assessment that our mentor (Dr. Afkham Mir) provided us.
- My group topic is "INDUSTRIAL WASTE (NON-HAZARDOUS)".
- In this topic we have 4 types of fuels to study: waste tires, plastic waste, sewage sludge, and meat & bone meal.

PS-I experience: It was nice as I got to learn a lot about cement industries and how can we contribute to them by giving ideas about using different alternative fuels.
The mentors were really helpful.
I learned a lot about different case studies about alternative fuels.
It helped a lot in increasing my knowledge and developing my personality.

Learning Outcome: I learned a lot about different case studies about alternative fuels.
It helped a lot in increasing my knowledge and developing my personality.
I got to interact with more students too.

PS-I station: Nandi Group (Sujala Pipe Pvt. Ltd) , Nandyal

Student

Name: ADITYA PANKAJ PATEL(2020A1PS1483P)

Student Write-up:

PS-I Project Title: Heat stabilizers for PVC pipes manufacturing

Short Summary of work done: Aim was to find a suitable replacement to replace lead compounds being used as heat stabilizers in the manufacturing of PVC pipes in the company.

PS-I experience: It was mostly reading literature and learning about heat stabilizers and possible replacements. Overall it was not very time consuming, and it depends on how much the student is interested to learn.

Learning Outcome: Learnt about heat stabilizers, possible alternatives and then suggested a method of preparation to prepare a new compound as the alternative.

Name: DANDWATE CHAITANYA CHARUDATTA .(2020A1PS2488H)

Student Write-up:

PS-I Project Title: CALCIUM-ZINC HEAT STABILIZERS IN PVC PIPE MANUFACTURING PROCESS

Short Summary of work done: I had researched about various heat stabilizers used in PVC production, I assessed the pros and cons of those. Then we selected Ca-Zn heat stabilizer for further research as it suited and it provided the required properties. Then we researched about various additives/plasticizers/costabilizers and after assessing all the factors, a suitable substitute was suggested.

PS-I experience: It was a marvelous experience, I got a lot of industry exposure, I learned a lot of things during this process.

Learning Outcome: I learned about heat stabilizers, pvc manufacturing process, and it enhanced my writing skills and presentation skills.

Name: AVINASHE ANSHUL AMOL .(2020A1PS2536H)

Student Write-up:

PS-I Project Title: CALCIUM-ZINC HEAT STABILIZERS IN PVC PIPE MANUFACTURING PROCESS

Short Summary of work done: During PS-1, the company offered us a list of projects to choose and I choose the topic of heat stabilizers. Heat stabilizers are an integral part of the PVC manufacturing process as the PVC is unstable at high temperatures. Currently, many companies still use the conventional lead based heat stabilizers. But the main problem with these types of heat stabilizers is that these are toxic in nature. So, the main work done during PS-1 was to find a suitable alternative to lead based heat stabilizers which are Calcium-Zinc based heat stabilizers. The advantages of these heat stabilizers was also done compared to the lead based heat stabilizers. Also the mechanism and further improvements to be made were discussed. Moreover, study was also conducted on how the company can adapt to these types of heat stabilizers without changing the current working mechanism.

PS-I experience: Practice School-1 helped me gain hands on experience about work. It helped me improve my communication skills which was the result of various activities like presentations and group discussions. It helped me understand how a company functions. After all, PS-1 was a great learning experience for me.

Learning Outcome: I learned how a company manages its Manufacturing as well as it R&D division. I also acquired knowledge about the working process which helped me in developing a professional behavior. It also taught me more about work life balance.

PS-I station: Nathdwara Cement Works , Sirohi

Student

Name: DEVANSH KASHYAP .(2020A1PS1708P)

Student Write-up:

PS-I Project Title: APPLICATION OF LEAN MANUFACTURING IN CEMENT INDUSTRY

Short Summary of work done: Lean Manufacturing is a production method with aims to reduce waste within the production, reduce time consumption of production, and overall make a efficient and lean production line.
Our project was to determine the wastefull and inefficient steps within the entire cement production process, identify the flaw and suggesting solutions for the found inefficiency/flaw. For that we learnt about entire cement production process from mining to delivery/dispatch and lean manufacturing and made suggestions based on our observations, findings and learnings.

PS-I experience: PS1 was very engaging, our PS1 faculty were very supportive and understanding of any problems faced by us and also helped us to learn more about the project.
Our company mentor were very good as well, they helped us learn so much and shared their knowledge with us, they kept regular meetings and allowed us students to learn more about the topic on our own, they promoted creative ideas and taught everyone to think out of the box.
During the project we learnt about project writing, giving effective presentation, making solid reports, team working, taking initiative and much more that can help any student prepare for their working life ahead.
The expert sessions opened our eyes to more broader fields of work and interest and having an expert teach us about was very helpful.
Overall PS1 was an excellent learning experience.

Learning Outcome: I learnt about the cement production process and lean manufacturing process, which has helped me realise and be motivated about a lot of work and research that can be done to make the industry a better place for everyone.
We also learnt a lot of professional skills like presentation, team working and leadership etc. Learning about these helped me know a lot about the industry and how work is done in it.

Name: AMAN RAHMAN .(2020A1PS2089G)

Student Write-up:

PS-I Project Title: Inventory Management

Short Summary of work done: We worked on the inventory management project where we went through the details of inventory management, its importance, its necessity and its impact in the cement industry.

PS-I experience: A very enlightening experience on the cement industry, how they work and their day-to-day tasks.

Learning Outcome: How inventory management works, its importance and impact it has in the cement industry

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Name: VEDANSH BURMAN .(2020A1PS2464H)

Student Write-up:

PS-I Project Title: Water Management System in Cement Industry

Short Summary of work done: During my PS project, I worked on how to manage water consumption and avenues to reduce it. I also learned about how is cement manufactured and relevance of cement industry in the Country's growth.

PS-I experience: It was a really good experience and lot of new things I got to know during my project

Learning Outcome: Water is a very precious thing and we should make efforts to use it carefully in the industry.

Name: KAIRAM SRUTHI .(2020A2PS1729P)

Student Write-up:

PS-I Project Title: Application Of Lean Manufacturing in the cement manufacturing process

Short Summary of work done: I had meetings with my mentor on the topic and went through shared by him. I read various research papers online and gained a good amount of knowledge on Lean method and its utility in cement manufacturing.I attended group discussions conducted by faculty incharge on the topic namely " The environment management of cement industry,it's importance and the current status ".I prepared PPTs for two seminars after mid sem report and final report submission.

PS-I experience: My PS-1 experience was great since it gave me exposure to work and improved my public speaking skills

Learning Outcome: I improved my confidence levels in giving seminars and participating in group discussions.I also gained good amount of knowledge on Lean method of manufacturing and its importance.

Name: YASHRAJ SANTOSH KUMAR JHA .(2020A2PS2437H)

Student Write-up:

PS-I Project Title: Study of Water Managment System and avenues to reduce water Consumption

Short Summary of work done: A detailed study of water management process and various technologies used to reduce water consumption.

PS-I experience: It has been a great experience for me. The experience has given me great insight into the industry and its work. All aspects of the PS-1 were smoothly implemented and well managed by the PSD. My sincere thanks go to Mr. P Raghu, our faculty in charge, for providing guidance and assistance throughout PS-1. In addition, I would like to thank Mr. Avinash Sharma, our mentor, for giving us valuable suggestions and details for our project, enabling us to gain a better understanding of the cement industry.

Learning Outcome: The Cement industry major contribution to the Global market. India's cement manufacturing role in the market, infrastructure, and as a cement exporter. Various processes of cement manufacturing that involve water either in production, cooling or providing energy for the process. How water consumption by the cement industry affects water resources in the long run. Various technologies currently in use or being studied to reduce water consumption.

Name: ARSH RAJ .(2020A2PS2477H)

Student Write-up:

PS-I Project Title: Study of the Water Management System and avenues to reduce water consumption

Short Summary of work done: We had an amazing team, and our assigned mentor was quite supportive. We had three to four subjective format quizzes. Initially, we also had a few discussion meetings where we chose our respective topics to research and make reports on. Our mid-semester and end-semester evaluations consisted of a seminar presentation and the submission of a report. Apart from this, we also had 2 group discussions.

PS-I experience: It was an eye-opening and amazing experience.Overall, the journey of 54 days in PS-1 was engaging, remarkable, and productive. I was given the opportunity to learn new things and think about pre-existing things in the concrete industry from a different perspective.

Learning Outcome: 1.I learned how to write well-researched reports.
2.I was also able to work upon my communication skills by actively participating in group discussions.

Name: SIDDHANT SOMVANSHI .(2020B2A11951G)

Student Write-up:

PS-I Project Title: Water Management System and avenues to reduce water consumption

Short Summary of work done: I firstly learnt about cement manufacturing process. Then studied about importance of water in different stages of cement production. I analyzed the usage of water and waste water generation and studied about them in research articles and through the sources provided the alloted PS mentor. Finally compiled a report describing the facts and figures of cement industry and the water related issues it is facing, alongwith ways to mitigate water consumption and waste water genration.

PS-I experience: PS-I allowed me to experience the work environment in company. The project I worked on, helped me to learn new stuff and taught me the way to give better presentations.
The expert lectures scheduled every week provided the opportunity to connect with the experts of different domains and learn about new innovations in every domain.

Learning Outcome: Connecting to people
Knowledge increment
Became better at giving presentations
Analytical skills got improved.

PS-I station: National Chemical Laboratory-Chemical , Pune

Student

Name: KARODE PRAKHAR VISHAL .(2020A1PS0822G)

Student Write-up:

PS-I Project Title: Digital twins

Short Summary of work done: We worked on creating a database and simulating the data to determine whether a given reaction is runaway or not, we determined the conditions of reaction like temprature, pressure, catalyst and studied the properties of common molecules involved in the reactions

PS-I experience: PS-1 exposed me to a new area of interest which is Digital twins and runaway reaction

Learning Outcome: Working in a team, looking into the research papers

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Name: KARODE PRAKHAR VISHAL .(2020A1PS0822G)

Student Write-up:

PS-I Project Title: Digital twins in chemical processes

Short Summary of work done: We built a database of properties of molecules which act as markers for runaway reaction and simulated the reactions to identify if the reactions are runaway or not

PS-I experience: It was intriguing to learn about new technology of digital twins

Learning Outcome: Group communication, patience , Digital twins

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Name: VED GURUDATT ZATEKAR .(2020A1PS1958G)

Student Write-up:

PS-I Project Title: Digital Twin Application for Process Safety against Thermal Runaway

Short Summary of work done: The project in NCL aimed at creating a website that would predict, based on initial parameters, if a Chemical Reaction is Runaway(thermally unstable) or not. Hence it required a collaborative effort of Computer Science and Chemical Engineering students, with our part designing a database containing a list of molecules involved in runaway reactions and their properties. For this, I had to learn what properties could be related to the thermal stability of a molecule. This involved studying various literature on 'Thermal Runaway' and specific studies of Thermally unstable compounds. I also learned about multiple representations like SMILES format and CAS

registry numbers used in the Chemical Engineering field. This database would then serve as an input for creating a model and establishing functional relationships using ML to create a web interface to predict if a reaction is Runaway or not.

PS-I experience: Overall experience was excellent. Working in such a large organization was quite overwhelming for me to be honest. The PS member Dr. Karthikeyan was very supportive and informative always motivating us to discover more and more into the field of the project and inspiring us with his unique examples.

Learning Outcome: PS-I experience has significantly improved my knowledge about the research field also it has enhanced my communications skill as well as presentation skills.

Name: VENKATESH RAVINDRAN .(2020A1PS2504H)

Student Write-up:

PS-I Project Title: DIGITAL TWIN APPLICATIONS IN CHEMICAL PROCESS SAFETY AGAINST THERMAL RUNAWAY

Short Summary of work done: We compiled raw data on runaway reactions from Scifinder(by CAS) and were
involved in the process of compiling and jotting down data in order to figure out whether the filtered reactions as runaway or not. Upon further filtration of research papers/publications we discover that there are a total of 576 molecules that facilitate the 88 reactions. Curated data was extracted out of literature result and was expressed in SMILES format for 576 molecules with 20 parameters and other necessary reaction parameters and conditions. We then used this collected data to build a website. Runaway reactions are hazardous and have historically paved the way to numerous industrial accidents. Our website (& model/digital twin in the future) is aimed at providing an easy accessibility of the knowledge on a first-hand basis to future users.

PS-I experience: Overall experience was great. The organization in itself is pretty layered and the scope for research and development seems to be very high. I feel obliged in taking this opportunity to sincerely thank my Industry mentor Dr. M Karthikeyan who has been a source of constant guidance and paramount support, enlightening us and answering our queries throughout the course of the project. I would also like to thank my fellow students for their partnership and willingness to help me out with their abilities. PS-1 helped connect with many bright minds across campuses.

Learning Outcome: Gained exposure to different chemical plants. Got acquainted with Runaway reactions and Digital twin catalyzing the amalgamation of chemical engineering

with AI/ML. Was exposed to multiple high-end software's some of them being Scifinder, MarvinSketch etc.

Name: NIKHIL AMARISH PRADHAN .(2020A7PS1205P)

Student Write-up:

PS-I Project Title: AI based digital twins platform for chemical plants to support flow chemistry

Short Summary of work done: We had to make a website that was linked to a database that contained information on a certain type of reactions called runaway reactions.

PS-I experience: My work involved writing a python program to convert an excel sheet to a mysql table, connecting the table to the website and making the front end for the table

Learning Outcome: Apart from the technical knowledge gained, I learned to how to work in a team and to work with other teams

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Name: KHAKHI SHREY ALPESH .(2020A7PS1720G)

Student Write-up:

PS-I Project Title: Determination of Runaway Reactions

Short Summary of work done: I worked on making the website that would show information about various factors required for determining runaway reactions. Django was used for the backend and HTML,CSS were used for the front end. MySQL was used for the database management.

PS-I experience: Work load was not very heavy and industry mentors were always supportive and helpful. Overall it was a great learning experience for me as it was my first ever industry experience.

Learning Outcome: Technical skills Gained: Python, Django, HTML, CSS,MySQL
Apart from these technical skills I also learnt the principle of team work and how does collaboration happen at industry level between different people.

Name: SANCHIT GUPTA .(2020A7PS2069H)

Student Write-up:

PS-I Project Title: AI based Digital Twins platform for Chemical plants to support FlowChemistry

Short Summary of work done: Task - To build a CRUD web application to store chemical processes involving Runaway reactions and conditions to enable simulations to learn, predict and build alert system.

PS-I experience: Gained irreplaceable Industry experience and exposure to various ways of working of organization in the real world. I saw it as a perfect opportunity to grow and surf through a steep learning curve, which made me better equipped with technical knowledge, and also helped me consolidate my theoretical ideas into practice.

Learning Outcome: Learnt MySQL, Django, HTML,CSS, Bootstrap

Name: ANANTH VENKATESH .(2020B4A70834P)

Student Write-up:

PS-I Project Title: Digital Twins platform for Chemical plants to support Flow Chemistry

Short Summary of work done: The work was building an AI model to simulate the workings of a chenical reactor in order to identify runaway reactions. The project is in its early stages. Hence, we are tasked with building an interface for entering reaction data. This can be used to create a database. The data can then be simulated to create a dataset which be used for training and testing AI models.

PS-I experience: This was a great learning experience and provided an introduction into the work done in one of India's premiere research institutes.

Learning Outcome: I had the opportunity to gain a working experience of python. We also worked and created a project using the Django framework and mySQL. This also involved usage of html. Moreover, an introduction was gicen for machine learning and artificial intelligence.

PS-I station: Navork Innovations Pvt. Ltd - Branding & Marketing , Mumbai

Student

Name: SWARANJALI SHRIVASTAVA .(2020A1PS1718P)

Student Write-up:

PS-I Project Title: EXTENSION OF SHELF LIFE OF FRUITS AND VEGETABLES USING PLANT EXTRACTS

Short Summary of work done: As a part of the branding and marketing department, I was asked to make a database containing the contact information of mushroom farmers and sellers across the country as their new product helps to increase the shelf life of mushrooms by two times by reducing their internal activity and thus making them respirate slowly. This slowing in respiration helps keep the moisture intact, thus delaying the ripening process. After this, I was asked to prepare a sales call pitch to help promote the product among farmers and sellers.

PS-I experience: The experience was relatively smooth as my PS faculty and the company experts were cooperative and approachable.

Learning Outcome: I gained experience of working with company professionals and gained knowledge about the private industry world.

PS-I station: Navork Innovations Pvt. Ltd - R&D , Mumbai

Student

Name: NIKHIL GIRISH RATNAPARKHI .(2020B1A11226P)

Student Write-up:

PS-I Project Title: Improving the shelf-life of bananas using edible coats

Short Summary of work done: Online PS. Consisted of reading literature on various edible coating materials to see if they could work on bananas. We went through various polysaccharides, proteins, lipids and composites and reported our findings to the company. Regular meets were held where we would discuss practical results and our theoretical studies.

PS-I experience: A continuous work setting. The meets were every other day for 1.5 hours. Not very stressful but we had to put in a few hours of work every day to keep up

Learning Outcome: How to present information concisely. Theory of polymers and Biochemistry

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Name: ISHITTA TARUN SARDA .(2020B1A11888P)

Student Write-up:

PS-I Project Title: Edible coating for Banana

Short Summary of work done: We went through different research articles on edible coating for bananas, to find out the most viable coating for the same from different perspectives like financial, sustainability, etc

PS-I experience: It was good, had PS meetings with Navork almost every alternate day, and the industry mentor did help us whenever needed.

Learning Outcome: It was a great learning experience, learned how to skim through research articles to look for appropriate details, learnt about the financial aspect of the industry and how important it is to commercialize the product.

PS-I station: NCCBM , Ballabgarh

Student

Name: NOYONIKA GHOSH .(2020A1PS2010G)

Student Write-up:

PS-I Project Title: Feasibility of cement power plants utilization as steam generators

Short Summary of work done: I was engaged in a project named, Feasibility of cement power plants utilization as steam generators. The growing shift of industries from coal and other non-renewable sources to renewable energy sources has lead to a reduction in the need for captive power plants. However, the complete shift to grid power despite moving towards decarbonization is an unpredictable source of power. The use of both sources of power grants us the benefits of both sources. The additional cost of the endeavour can be allayed by the sale of steam to process steam sensitive industries.
For the project I first looked up the need of process steam in industries that use it as a raw material. I then identified an established community boiler and steam distributor to gain information about steam distribution. The next objective was to analyse the sale of steam under two cases:
In the first case we identified a well established cement plant and drew up a 15km radius to identify steam sensitive industries within the same. The second case was studied under two sub cases- calculations based on a hypothetical plant 10km away and calculations based on the construction of a fertilizer plant within 2km of a cement plant. The cost and payback period was calculated for the two cases and a conclusion was drawn.
The implementation of this over cement plants across the country could make a huge impact on industrial decarbonization.

PS-I experience: My PS-1experience was a pleasant one. I was allotted a mentor a day before the start of PS 1 and had an understanding of the project within the first week. The orientation sessions gave a lot of insight into the industry. My mentor was always available to solve any queries I had. Despite the online setting of the Practice School, the project was very engaging and helped me develop new skills.

Learning Outcome: 1. General learning regarding the industry
2. Use of Process Steam in Steam sensitive industries
3. Soft skills like communicating with clients
4. Market Research
5. Calculating payback period and other parameters for simulations

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Name: PRANAV LEKSHMINARAYANAN .(2020AAPS1021G)

Student Write-up:

PS-I Project Title: Latest Technologies and Performance Improvements in Solar Panels

Short Summary of work done: I have gathered information on various technologies regarding solar panels and renewable energy. Different ways to improve efficiencies of solar panels and what different countries are researching in order to make their country independent of non-renewable sources of energy were also part of my research.

PS-I experience: It was a great experience and I also learnt many things which I did not know about regarding how companies work, how they write reports, how meetings are held, etc.

Learning Outcome: I learnt how to write reports, how to address one another in a company, and the importance of working continuously but steadily instead of finishing all your work right before the deadline.

PS-I station: Nirmaan Organization - HR , Hyderabad

Student

Name: ROHAN SRISAI KANNEGULLA .(2020A7PS1302H)

Student Write-up:

PS-I Project Title: DEVELOPMENTAL PATTERNS OF PERSONS WITH DISABILITIES SCHEMES AND THEIR IMPLEMENTATIONS

Short Summary of work done: I was assigned the work of backend development of existing Nirmaan portals which included bug fixes and other backend work.

PS-I experience: My experience at Nirmaan was good; I had communication from the beginning and got to see the various projects at Nirmaan and how they are implemented and executed by Nirmaan.

Learning Outcome: I learned that social service and technology don't have to be exclusive and can work hand in hand with each benefiting from the other.
I enhanced my backend developmental skills.

Name: CHINMAY HEGDE(2020A8PS1902H)

Student Write-up:

PS-I Project Title: Women In Technology

Short Summary of work done: I worked under the project 'Women In Technology' which aims to prepare underprivileged women for their placement interview and help them secure a job in the IT sector (Web and App Development). My task was to prepare these women for their placement interview by enhancing their soft skills and searching for job openings. I designed some simple activities for the students so that they could come out of their fear and speak, which are Story/Paragraph reading, Casual Discussion, Group Discussion on a problem, and quizzes on various topics like history, politics, mythology, religion, science, and technology.
I prepared a list of questions for their mock interview. I researched sample interviews from the internet and collected the most commonly asked questions at interviews conducted by the MNCs that have partnered with Nirmaan. I also personally conducted the interviews of about forty students individually, spanning about three hours. At the end of

each interview, I gave feedback of their performance, suggested improvements to some answers, possible answers to the questions they could not answer, grammatical errors, right body language to be maintained.
I conducted a session on 'Resume Building' where I discussed writing an ideal resume and its impact on job opportunities. I gave them three important points: the resume must not exceed one page, proof read the resume before final submission, never lie in your resume. Next, I showed them an ideal resume, compared it with the ones that the students had written and pointed out the mistakes and offered corrections.

PS-I experience: It was a pleasant, humbling and impactful experience.

Learning Outcome: I understood the working of corporates and more specifically the structure and operation of an NGO. I could work at the grass-root level and understand the challenges faced by both the community and the NGO and offer whatever resources I could to help.

PS-I station: Nirmaan Organization - Marketing , Hyderabad

Student

Name: VIVEK DAS .(2020A4PS1475H)

Student Write-up:

PS-I Project Title: GAMIFICATION IN EDUCATION AND ITS IMPACT WITH SPECIAL REFERENCE TO CHILDREN

Short Summary of work done: My work in PS-1 consisted of researching about what gamification is, exploring different apps and websites that implement the same, and coming up with ideas of gamifying the learning portal in Nirmaan.

PS-I experience: It was an enriching and learning experience, boosted by the aid of my faculty in charge Anhiti Patnaik. I got to explore a completely new and interesting topic, and was curious to explore more about the same.

Learning Outcome: During my time at PS-1, I learnt how to research about a topic in a more streamlined manner. I also learnt how to give presentations that respect the time of the listener and not go overboard with unnecessary information.

PS-I station: Nirmaan Organization - IT , Hyderabad

Student

Name: BADAL CHANDHARIYAVI(2020A3PS1768G)

Student Write-up:

PS-I Project Title: Skills Portal

Short Summary of work done: I built a registration form for the skills portal of the Nirmaan Organisation. The skills portal is a Nirmaan initiative for the skill upliftment of the underprivileged youth. I worked on both frontend as well as backend.

PS-I experience: The CEO as well as also the employees at Nirmaan are very kind and always ready to help. Special sessions were conducted for the interns with the industry experts by Nirmaan for exposure and building network. Overall it was a great learning experience.

Learning Outcome: I learnt various technologies such as HTML, Bootstrap, Php using XAMPP.

PS-I station: Preto Tooling Systems , Hyderabad

Student

Name: GAURAV VIJIT NAIR .(2020A4PS1870G)

Student Write-up:

PS-I Project Title: To study the use and design of a long member central upper component and to study its manufacturing process.

Short Summary of work done: During my time as working as an intern at Preto Tooling Systems I learned about the various processes required to produce various automobile components and where these components are used. By looking at the 2D model of the of the component we got to know how to design these components on softwares such as Solidworks. Further, we get to know the various considerations required while manufacturing these components in real life.

PS-I experience: The experience has been decent enough to make me learn more about a company and how it works and how it follows the professional ethics and codes. Despite some difficulties, it has helped me learn more about the designing industry and how components are designed and the various manufacturing processes needed to manufacture the components.

Learning Outcome: As college student from a technical point of view, I learnt about the various manufacturing process while manufacturing the components and 3D designing. From a student's point of view, I learnt how the relationship between a client and the company is, it's work ethics and principles.

Name: NIKUNJ SINGHAL .(2020B1A41912P)

Student Write-up:

PS-I Project Title: Tooling Operations for Cylinder Cover

Short Summary of work done: The aim of the project was to design a tool so as to efficiently and precisely manufacture cylinder caps for oxygen cylinders and was assigned to Preto Tooling in the month of April and since then they have been working on making an efficient design for the same. This involved being able to understand basic manufacturing process, and understanding where which process can be used for maximum efficiency.

PS-I experience: This project was technical in nature, giving practical knowledge about the domain of sheet metal manufacturing and various tools and processes their importance in the manufacturing industry. These projects have helped me induce a practical approach to tackle the problems. The project has also given us an insight into the beautiful, challenging and interesting world or

Manufacturing Industry, Helping me complete my future tasks
and dive deeper into the core sector.

Learning Outcome: 1.Learned how heavy machinery is applied and utilized in an assembly
line.
2. Learned how to effectively design a tool so as to minimize wastage of material
3. Learned about multi stage tools so as to reduce the time required for manufacturing
4. Learned how to use software like CAD software and Analysis software for analysis and improving ad optimizing our designs
5. Attention to detail is a skill that is very important in the tooling industry and we learned the same by keeping in mind the machine errors in our design
6. Knowledge of raw materials, production processes, quality control, costs, and other techniques for maximizing the effective manufacture and distribution of goods.

Name: KULKARNI ANISH SHAILESH .(2020B1A42416H)

Student Write-up:

PS-I Project Title: Long Member Central Upper Component of Automobile

Short Summary of work done: Our aim was to study the design and Manufacturing processes involved in forming a Long Member Central Upper Component.
We designed and it on 3D CAD software called Solidworks under the guidance of Faculty & Company mentors.

PS-I experience: It was a good learning experience to understand how companies like PRETO TOOLING recieve orders from their clients and complete with full honesty and commitment.
We learned how company works and ethics followed.

Learning Outcome: So far, this Practice School has taught me a lot about corporate responsibility, corporate culture, and best practices for the industry. Throughout my Practice School, I have learned new skills such

as Solid Works CAD software , I was able to apply my design development skills in this project. Moreover I have improved my communication skills.
These skills will be valuable for my future career.

PS-I station: Rajshree Cement-Chemical , Malkhed

Faculty Name: Joyjit Mukherjee

Faculty Write-up
Rajshree Cement Works: This station is a Cement manufacturing unit under the Aditya Birla group located in Malkhed, Karnataka. The projects involved Digitization with respect to IoT, Load management system and Power system protection.

Industry looking for in a -I intern

The technical industry look for some specific basic knowhow from the students in terms of the courses they study that are kind of pre-requisite for the projects they might execute. Like the Cement sector is looking for knowledge in Machines and Power system from an EEE student and Instrumentation and DCS from an ENI student. Projects allotted by Pacify Technologies required varying skills like mechanical design, web design, etc. in the students.

Student

Name: RISHAB MANOJ SINHA .(2020A1PS1716P)

Student Write-up:

PS-I Project Title: Analysis of raw material through volumetric and gravimetric analysis

Short Summary of work done: Attend meets, prepare for group discussion and quiz, attend industry expert sessions, write midsem and final report regarding the project

PS-I experience: Good

Learning Outcome: Enhanced my knowledge and skills

Name: RITAVYA RAWAT .(2020B3A10484G)

Student Write-up:

PS-I Project Title: Power consumption reduction of Kiln-2

Short Summary of work done: We learnt about cement manufacturing process and studied each of its components in detail. We also analysed the data provided by out project guide and worked on methods for reducing the power consumption of Rajashree Cement plant.

PS-I experience: My PS1 experience was very good. I learnt a lot is these few weeks. It gave me an insight to the cement industry.

Learning Outcome: I learnt the basics of cement manufacturing and power consumption of Kilns

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PS-I station: Rajshree Cement-Electrical & Electronics , Malkhed

Student

Name: AVI TEWARI .(2020A3PS1220P)

Student Write-up:

PS-I Project Title: Study of Load Management System

Short Summary of work done: We were given an introduction to the cement industries. We then shifted our focus to the various electrical equipment used in this industry and learned about the importance of implementing a load management system to prevent failure in extreme circumstances. We also studied about single line diagrams to easily analyse a given factory's equipment and consumption.

PS-I experience: It was a great experience. It was fantastic to connect and collaborate with students from the Goa and Hyderabad campuses and to be under Prof Joyjit Mukherjee from Hyderabad campus. The meets with Mr Prashant Saxena from RCW were also invaluable and this has been a golden opportunity for me.

Learning Outcome: Over the course of the PS, I learned many things about the cement industry. We also had various meets where we were taught about load management systems and various equipments used and their power consumption. But my learnings were not restricted to engineering and industry, I also learned valuable lessons on how to communicate effectively in a professional environment, how to give seminars and how to develop organisational skills.

PS-I station: Reddipalayam Cement Works , Reddipalayam

Student

Name: ABHIGYAN KUMAR .(2020A4PS0226P)

Student Write-up:

PS-I Project Title: False Air and its effects on coal and raw mills

Short Summary of work done: We were divided in groups of twos and made to prepare a report and a presentation on the topic of False air and its effects on raw mill and coal mill. The industry mentor and the faculty in charge conducted regular meets to guide us and know about our progress in the project. Overall learnt a lot of things from this experience.

PS-I experience: PS-1 helped me learn a lot about the cement industry and professional etiquettes. At points it was difficult but overall it was in enjoyable experience.

Learning Outcome: 1)Substantial potential for energy efficiency improvement exists in the cement industry and individual plants.
2) The steps towards arresting "false air" can contribute immensely toward the cost-cutting of cement manufacturing and improving energy efficiency.
3) Efforts to improve energy efficiency will also minimize greenhouse gas and mitigate the environmental problems associated with cement production.

4) Technologies like ultrasonic leak detectors and zirconia oxygen analyzers

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Name: NAKKA YASHWANTH .(2020A4PS1082P)

Student Write-up:

PS-I Project Title: Boiler efficiency of TPP

Short Summary of work done: Work was done on what is boiler efficiency , types of boilers , factors on which boiler efficiency depends , how to increase boiler efficiency.

PS-I experience: The mentor and faculty in charge were very helpful.
And they gave us critical inputs and helped us whenever needed.

Learning Outcome: Boilers are important part in a thermal power plant.
Having higher efficiency boiler helps in less energy wastage.

Name: JITARTH BHAVESH PATEL .(2020AAPS1407G)

Student Write-up:

PS-I Project Title: Industry 4.0

Short Summary of work done: I learned about the cement industry, how it works, how cement production is facilitated and how it can be improved in the future. I learned about Industry 4.0 and I found out how it can be used in the cement industry. I learned how it can help reduce the cost of cement manufacture and how it can improve the overall cement industry.

PS-I experience: PS-1 was new and necessary exposure to the professional life. It provided an adequate idea to what my skills are, what my goals are and how I must work and improve myself to reach there.

Learning Outcome: Advantages of 4.0 Manufacturing benefits and its applications

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PS-I station: SAMIL (onsite) , Hyderabad

Student

Name: ABDULLAH ASHRAF .(2020A1PS2395H)

Student Write-up:

PS-I Project Title: Business Process of SAMIL

Short Summary of work done: coordinating with the clients and customers, create cases, follow up and update clients (mostly banks and NBFC's).

PS-I experience: experience was good overall exept the ps station was a little far off from my house. got a lot of work to do and made contacts.

Learning Outcome: learnt how a company as big as SAMIL works and the work envirnment of such companies.
also learnt how banks and financial institutions get vehicles verified before providing policies, how car auctions work etc.

Name: VALIVERU SAI SRIKAR(2020B5PS0905P)

Student Write-up:

PS-I Project Title: A report on the business processes of SAMIL, Hyderabad

Short Summary of work done: During my PS, I have observed SAMIL, Hyderabad's workings and gained insights into how such a company functions. My work was in the domain of business processes and analytics. I regularly visited their offices and interacted with their employees. I gained exposure to various departments like sales, management, accounting etc. I prepared a report outlining the noted business processes.

PS-I experience: Insightful into the domain of business analytics and managent.

Learning Outcome: Learning about working and business processes of the company.

PS-I station: SAMIL (onsite) , New Delhi

Student

Name: ANNIKA GARG(2020A5PS2025P)

Student Write-up:

PS-I Project Title: SOP Creation: Learning and Development Department

Short Summary of work done: I was under the HR Department of the company, I was given the task to make various PowerPoint presentations and Word Documents. I also learnt about certain softwares used to demonstrate a portal.

PS-I experience: My PS-I experience was great. I would recommend this station for further years to come. The HR department managers, whom I was under, were quite friendly and I got to learn a lot from them.

Learning Outcome: I got the learnings of various apps that Microsoft offers.

Name: ALI AYMAN MALIK .(2020B4A20737P)

Student Write-up:

PS-I Project Title: INSURANCE SALVAGE

Short Summary of work done: The project, as mentioned above, focussed on creating a structure for immediate and long term execution for the organisation to help them with their role of smoothening out the auction process, especially with the part involving pre-auction. As this project mainly involves with the various data about the cars that are sold more often and the type of cars that has lost his value in the past years. All kinds of data have to be filtered out so that the whole process speeds up.

PS-I experience: Had the understanding of the market functionality on the grass root level, learned the major office ettiquettes

Learning Outcome: improvement in the communication skills

PS-I station: Sampark Foundation , Noida

Student

Name: MITUL CHADHA .(2020A7PS1510P)

Student Write-up:

PS-I Project Title: Data Asset Management

Short Summary of work done: So basically sampark foundation is an NGO. The institution's main goal is to provide quality education to those who are under-privileged or are studying in government schools where the standard of education imparted is not very up to the mark. so, the NGO makes videos which can be used by teachers across India to teach these children. my role as an intern in the company was to create a structure based on DAM(data asset management) on CELUM such that we can store/retrieve data(scripts, voice over etc. which are used in creating a video) in a much smoother and faster manner. our job was also to provide some basic level of automation in the workflow to the employees working on the video. There was another person from with me who worked alongside me for this project.

PS-I experience: I would say that I was happy with it, it wasn't too much work and the personnel who were appointed to us from sampark foundation were very kind and helpful.

Learning Outcome: i definitely learned a thing or two about workflow management might as well help me in future.

Name: NIRMAY KISHOR NAIK .(2020AAPS1425G)

Student Write-up:

PS-I Project Title: Livelihood Project

Short Summary of work done: Identified soft skills course for training students of class 9 to 12. Performed in depth research of courses available on the net.
Implementing the course in the Smart Shala app: Performed in depth research of soft skill providing apps, to get innovative ideas about features and their implementation.
Designed a pedagogic approach to deliver the course to the students.
Designed final pitch PPT and presented it to Sampark Livelihood head, and will be used in proposal to the State Government.

PS-I experience: PS-1 experience was nice. Mentor allotted was very helpful and provided lots of guidance. Research on soft skills and it's implementation along with the presentations and group discussions helped me develop my soft skills as well.

Learning Outcome: Improved my soft skills, got industrial exposure.

PS-I station: SEWAGRAM CEMENT WORKS , Kutch

Faculty Name: Mithun Mondal

Faculty Write-up
UltraTech Cement Limited, the Aditya Birla Group's cement flagship company, is India's largest producer of grey cement and ready-mix concrete (RMC) and one of the top

producers of white cement. Except for China, it is the world's third-largest cement manufacturer, with operations in the UAE, Bahrain, Sri Lanka, and India. UltraTech owns and operates 22 integrated manufacturing units, 27 grinding units, one clinkerization unit, and eight bulk packaging terminals. UltraTech has over one lakh channel partners in the country, giving it a market share of more than 80%. Birla White is the brand name for UltraTech's white cement.

Student

Name: ANKRIT SETH .(2020A2PS0650P)

Student Write-up:

PS-I Project Title: Civil Infrastructure

Short Summary of work done: Initially, I studied about the various construction activities involved in construction of a building. Later, my focus was on studying about tender, contracts and Bill of quantity. I also learned about details of structural drawing and layout and how to do the calculations for BOQ using these drawings. I worked on calculations for reinforced cement concrete and bar bending schedule in an excel sheet and verify them with the quantities of various sections as mentioned in the BOQ.

PS-I experience: I had a great experience working with Sewagram Cement Works. I interacted with senior officials and felt that PS1 made me an industry ready person and a better civil engineer.

Learning Outcome: I learned about various construction processes and BOQ, RCC, BBS, cement industry and safety measures in cement plant. I learned how to interact with senior officials, make good reports, give good presentation, take valuable feedback and constructive criticism and interact with my colleagues in the company/organization.

Name: Aryaman Dave(2020B3TS1269P)

Student Write-up:

PS-I Project Title: A Study of Environmental Pollution from the Cement Industry in India with a focus on reducing CO2 emissions

Short Summary of work done: I was assigned a project related to the environment and environmental regulations. In the initial days, I developed my understanding of the Indian cement industry in general and UltraTech cement in particular. I started working on my project and researched CO2 emissions from cement plants and the latest technologies to reduce them. Post-midsem submission, I studied Multicriteria Decision Making (MCDM) and Analytical Hierarchy Process (AHP), which are used to rank different parameters and make faster decisions. The AHP survey, which involves matrices, has to be filled by experts. Hence, I proposed that AHP be used by UltraTech and included an explanation and illustrations. This method can be used by UltraTech to select the best CO2 emission reduction technique/equipment. Finally, I worked on a cost-benefit analysis (CBA) of complying with the Environmental regulations and concluded that AHP could be applied to enhance CBA.

PS-I experience: PS-1 was my first-hand exposure to the industry and the corporate world. I got exposed to the cement industry and the working of a cement plant. Though it was online, I learned a lot from the daily diary writing and preparing the reports and presentations. Throughout the PS-1, I interacted with technical experts and HR personnel at the cement plant. Moreover, I learned a new technique called Analytical Hierarchy Process (AHP) and the software used to implement it. It has also helped me in the research on Smart City that I am currently doing. Overall it was an enriching experience.

Learning Outcome: 1. Learned about Multicriteria Decision Making and Operations research
2. Identified the causes of CO2 emissions from the Cement industry
3. Read literature review on the latest technologies to reduce CO2 emissions
4. Developed understanding of the Cement Manufacturing process in detail
5. Studied the use of AHP matrices and use of AHP software
6. Learned about the process of Cost-Benefit analysis
7. Overall, I developed my understanding of business strategies in the Cement Industry

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PS-I station: Sidhi Cement Works-Electrical , Sidhi (MP)

Faculty Name: Jay Pandey

Faculty Write-up
Sidhi Cements, MP, as my second PS-1 station, allotted total 3 projects along with two industry mentors for executing projects. Overall the project quality was good that helped inters to understand actual problems in process industries and how to approach to solve the problems. Sidhi Cements is known to be one of the biggest organizations in cement

manufacturing and working with such a big organization is enriching experience for interns.

Industry looking for in a -I intern

Any industry always looks for a highly motivated, hard-working and student with solving problem aptitude. The intern should be quick in taking up the problems and come up with feasible solutions

Student

Name: TANAY RANJAN .(2020A3PS0483H)

Student Write-up:

PS-I Project Title: Operation & Maintenance of ACB/VCB

Short Summary of work done: In this PS-1, we learnt about circuit breakers. We learnt about various types of circuit breakers exist. Through the PS station, we got to know what kind of circuit breakers are used there. Then we learn about operation of ACB (Air Circuit Breaker) and VCB (Vacuum Circuit Breaker) and also learnt about their maintenance.

PS-I experience: It was very nice, we frequently interacted with PS Station's members and mentors assigned from their side. They guided us and helped in clearing our doubts.

Learning Outcome: This project helped me to gain experiences on
To learn what kinds of circuit breakers are used in industries
To experience maintenance of circuit breakers at industrial level
To experience how theories are applied today in modern industries
To experience the working environment maintained in today's industries

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Name: VANSH PALIWAL .(2020A3PS1751G)

Student Write-up:

PS-I Project Title: Operation and maintenance of acb and vcb

Short Summary of work done: I have learnt about different components of acb and vcb, how acb and vcb works, advantages and disadvantages of acb and vcb, made a midsem presentation and report. Then i proceed to construct part of acb and vcb, and then how to maintain acb and vcb which parts to be taken care of, which test should be performed to ensure better performance of acb and vcb. And then finally i made a end sem report and end sem presentation.

PS-I experience: It was a very nice experience. Got experience of team work, Industrial experience

Learning Outcome: I have learnt about how to handle machines in industry, at what time do we have to check for maintenance etc.

Name: URVASHI SHARMA .(2020A7PS0017P)

Student Write-up:

PS-I Project Title: Develop an Interface for trainee system

Short Summary of work done: The project “Development of an interface for the trainee Program” would automate the existing manual process thereby increasing its pace and efficiency. It would enable the users to see their progress in the registered training program. The user would also be able to view their score. It also discussed the free and open-source software. Towards the end, successful in making an interface for the trainee system. Admin has not to write data in excel sheet manually, they can just allow trainees to fill the form and data will automatically stored in a database. Successful in making the views with Django for the retrieval of data. Only the admin can access the database, and any changes in the database can be made with Admin permission.
Overall, it was an insightful learning experience here at Sidhi Cement Plant which I would cherish for my life

PS-I experience: As we wrap up our PS-1, I wanted to thank my instructor R.K Tiwari Sir for being a wonderful guide these past weeks. We have really enjoyed building our project with the sidhi cement plant, and can’t wait to take the skills and best practices. We are grateful we had the opportunity to work on this project. We learned many skills throughout, it gave a practical insight into working in an organization...It has been an invaluable experience for me and I hope we were able to provide some value to the Sidhi cement plant as well. As we move forward in our professional endeavor. we will take with us all that we learned under your guidance.

Learning Outcome: The coordinated friendly guidance and work approach at Sidhi Plant has enlightened and motivated me. It helped us to learn many skills, and managerial qualities and gave a practical insight into working in an organization. It helped us in personality development and analyzing things from a wider perspective. The internship at Sidhi Plant has made us more practical and understanding of what would be required of us in any work organization. It has helped us equip ourselves with better problem-solving methods in any industry. I learned a lot about databases, web applications, python, and Django. A deep understanding of these topics, Databases, Python, Django, and models.

Name: ABHIRAM REDDY CHALLARAM .(2020A7PS1117H)

Student Write-up:

PS-I Project Title: Develop an interface for trainees

Short Summary of work done: Learnt html and django and developed a trainee interface for eas of access and efforts.

PS-I experience: It was a very good experience. I learnt a lot about the industry and had good exposure to the outside world.

Learning Outcome: Learnt html and developed project on it.

Name: GEETIKA BANSAL .(2020AAPS0303H)

Student Write-up:

PS-I Project Title: Maintenance of Transformers

Short Summary of work done: My work involved learning about the different causes of transformer failures and discussing the different management strategies for daily, monthly, yearly maintenance.

PS-I experience: The experience was good. Till now we had only learnt about the theoretical concepts associated with transformers, PS1 showed the industrial aspects.

Learning Outcome: Making presentations, cooling principles of Transformers, visual inspection methods, part wise failure analysis, etc

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PS-I station: Sidhi Cement Works-Mechanical , Sidhi (MP)

Student

Name: VURADI PRADHIK REDDY .(2020A4PS0779H)

Student Write-up:

PS-I Project Title: A STUDY ON COOLER MAINTENANCE, HYDRAULICS SYSTEM MAINTENANCE AND TROUBLE SHOOTING IN CEMENT INDUSTRY

Short Summary of work done: We were taught about the basic process of cement making. We learned about various types of coolers used in the cement industry. We learned about their structures and working. We researched various methods of troubleshooting and maintenance which we submitted in the final report. We compiled all the information we have learned in the final report. We suggested ideas to improve the efficiency of the coolers.

PS-I experience: It was a great experience that helped me understand the importance of leadership and work ethic in the work environment. I was assigned the position of group leader for our group project. I feel my leadership qualities have improved and it is easier to associate with my peers. The most important experience was that of the work environment which I think will help me for the rest of my life.

Learning Outcome: 1. I learned the basics of the cement industry and the company.
2. I learned the basics of cement manufacturing.
3. I learned the basic working principles of Cooler.
4. I learned their maintenance, and hydraulics system maintenance.
5. I learned about troubleshooting coolers in the cement industry.

6. I learned how to behave in the work environment.

Name: SANDESH KANTIMAHANTI .(2020A4PS1002G)

Student Write-up:

PS-I Project Title: Separator maintenance

Short Summary of work done: Research regarding separators, their use in the cement manufacturing industry, and how to use predictive maintenance using AI(Artificial Intelligence) to make a maintenance manual to prevent breakdown of the machine which may lead to disruption of production.Therefore by using predictive maintenance we can change or service parts without stopping production for a long period of time.

PS-I experience: Great learning experience.

Learning Outcome: Gained valuable industry knowledge. Learned the working principles of different types of separators and how Artificial Intelligence can also be used in this industry. gained report writing and presentation skills as well

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Name: ANANYA BHARATI PINAPATI .(2020A4PS1347H)

Student Write-up:

PS-I Project Title: Study on Separator maintenance and troubleshooting in cement industry

Short Summary of work done: Sidhi Cement Works is a unit of UltraTech Cement in MP. They sorted us into groups of 5 and assigned each with a project. They allotted my group a project on “Separator maintenance and troubleshooting” and asked us to write a report on the same. The function of separators in the cement industry is to separate fine particles from coarse particles to obtain good, quality cement. Due to excessive usage,

the equipment tends to wear out and requires repair. Repairing the equipment after it shows symptoms of wear and tear is expensive and time-consuming, considering the duration it remains unusable during the repair. By predicting the repair requirement time of a separator before it breaks down, the industry saves extra expenses and time; this is the concept of Predictive maintenance in laypeople's terms. Predictive maintenance helps anticipate when specific equipment might require maintenance depending on the time it has been running. We make the necessary repairs, ensuring the equipment is durable for extended periods. As part of the project, we learned about various separators used in the cement industry and the different types of predictive maintenance used for each kind. We also explored separators beyond those used in the Sidhi Cement Works industry for our better understanding. We completed our report in time with constant guidance from our PS Faculty in charge and our mentor from the industry. On the whole, it has been an educational experience.

PS-I experience: PS-1 has been a fantastic experience. It was a new experience interacting with peers from the three Indian campuses and has been a mini simulation of a real-time workspace. Having to schedule meets, work on the assigned project, and ensure everyone contributed equally were strenuous tasks, but eventually, we got the hang of it. I'm always passionate about learning new things, and to learn about the cement industry that was new to me was a fascinating experience. The PS faculty in charge and the mentor from the industry were constantly guiding us, patiently clearing our doubts and ensuring we closed conversations with a note of clarity. All-in-all it has been a wonderful experience.

Learning Outcome: PS-1 has helped me learn about the cement industry and its various processes. The project assigned required all of us to do extensive research, and it was so fascinating throughout. Teamwork, communication, presentation skills, and the zeal to learn more are some soft skills I've learned through these two months of PS-1. On the whole, it has been an eye-opening experience.

Name: SANKALP SINGH .(2020A4PS1974H)

Student Write-up:

PS-I Project Title: A STUDY ON COOLER MAINTENANCE, HYDRAULICS SYSTEM MAINTENANCE AND TROUBLE SHOOTING IN CEMENT INDUSTRY

Short Summary of work done: In the 50 days, we were working in Sidhi Cements, we got to learn about how cement factories work. We interacted with some industry experts and in every interaction, we were taught about the company and the various methods and

techniques involved in the cement industry. We learned about different types of blocks of cement like Portland cement, Quick setting cement, Rapid hardening cement, etc., and were taught about the cases when one of them is used than the other. We had to create a project on 'Cooler maintenance and hydraulic systems' in cement factories. After some guidance from the industry mentors, we learned about the coolers in these factories and how important role they have in such industries.
We were shown the various components of a cement factory and how each component plays an important role in the various stages of cement manufacturing. The functioning, design, and working of the components were explained and demonstrated to us.
In our report, we studied ETA Coolers used in Sidhi Cements and how it is better than most of the other coolers found in the industries nowadays.
Overall, the entire experience was very informative and I learnt many new things which will surely help me in the future.

PS-I experience: The experience was very informative and I learned many new things which will surely help me in the future. The mentors and PS faculty were very cooperative and provided their guidance from time to time.

Learning Outcome: To understand the mechanism of the basic working principle of a cooler in the cement industry, look into the existing maintenance problems or limiting factors reducing the efficiency of the cooler and understand troubleshooting of said part.

Name: PRATYUSH GUPTA .(2020A4PS2228H)

Student Write-up:

PS-I Project Title: A study on Separator Maintenance & Trouble Shooting in cement industry

Short Summary of work done: I have learned a lot about making reports and how to work in a company.

PS-I experience: I have learned a lot about making reports and how to work in a company.

Learning Outcome: 1. To learn basics of cement industry and company
2. To learn basics of cement manufacturing
3. To learn about working principles of separator
4. To learn predictive maintenance of separator

Name: SOMANI RISHABH MANISH .(2020B1A42122G)

Student Write-up:

PS-I Project Title: Packer and Truck Loader Maintenance

Short Summary of work done: Understanding the technical and organizational work required for packing of cement and then loading onto trucks for being supplied. Learning about the different components of the process required such as equipment , different processes and manual tasks. After looking into the process , developing AI models to make automated process autonomous and trying to optimize the supply chain logistics through various third party software such as Microsoft Bonsai.

PS-I experience: Fun to learn and work in the industry for the first time. Extremely helpful mentors made it easier to ease into the given tasks and the guidance received is quite handy. Overall an amazing hands on work experience getting to know the industry and working on models to optimize the current systems

Learning Outcome: The complete process of production of cement and the various machinery, processes and logistics used .

PS-I station: Sidhi Cements - Instrumentation , Sidhi (MP)

Student

Name: VAISHNAV PRASAD R K .(2020A8PS0728G)

Student Write-up:

PS-I Project Title: PROFIBUS Network and Troubleshooting

Short Summary of work done: We did FMECA of PROFIBUS Network which helps engineers troubleshoot problems more efficiently

PS-I experience: It was good.

Learning Outcome: Learnt about PROFIBUS Protocols and about FMECA

Name: CHINMAYEE SOMESHWAR SELUKAR .(2020A8PS0735H)

Student Write-up:

PS-I Project Title: XRF MAINTENANCE, TROUBLESHOOTING, AND CALIBRATION.

Short Summary of work done: Throughout PS, I studied the function of the ENI department in cement plants, the fundamentals of XRF, EDX, and WDX spectrometers, how to use the ARL 9900 Spectrometer, and how to identify the different system components and studied their working. I also learned about the maintenance of the instrument, the software used for the cement analysis, and about software data security of the system. In the end, I performed the system's failure mode and criticality analysis(FMECA) analyzing the various failure modes of the system an solutions to reduce the risk.

PS-I experience: Through this project, I could comprehend the interdependence between cement plants and the various digital technologies used. I studied the multiple applications of XRF for the elemental analysis of samples. When it comes to XRF spectroscopy, I went through its principles and the different types of spectrometers: WDX and EDX. After reviewing the various sample preparation methods, I studied the operation of the entire instrument and its components. Then performed the system's failure mode, effects, and criticality analysis. The project was very informative, and I was guided throughout the project by Dr. Suparna Chakraborty Ma'am and my mentors, Mr. Lavanya Sharma and Dr. Sauvik Roy. Through this project, I learned many new things and considered myself lucky to have this internship opportunity.

Learning Outcome: During this PS-1, I learned the processes of cement manufacturing, the different types of cement, and the relationship between cement consumption and a country's GDP. I also learned how cement analysis is performed using the X-Ray fluorescence technique and the different methods for sample preparation. I understood the working of each of the components of the system and analyzed the working and failure modes of the spectrometer, as well as suggested measures to reduce the risk of system failure.

Name: SATHVIK R SHETTY .(2020A8PS1492G)

Student Write-up:

PS-I Project Title: Profibus Networking

Short Summary of work done: It was a study project on Profibus Networking and troubleshooting, emphasizing on troubleshooting and maintenance of networking components of Profibus network for the automation of cement factory

PS-I experience: It was a great experience, got to learn a lot from all the mentors and faculty and also experienced of the how things work in an industry, how to work in teams and also learnt about different networking systems used in the cement industries

Learning Outcome: The PS-1 was a great opportunity to work and learn in the industry, one of the greatest outcome is exposure and also how vast are the technologies used in the industry and there is still lot of development going on

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Name: RAJDEEP DAS .(2020A8PS1609G)

Student Write-up:

PS-I Project Title: Gas analyzers

Short Summary of work done: The objective of this project was to understand fully the Gas Analyzer systems in the Plant and suggest a better way of utilizing them in terms of efficiency and utility. The 2 months long internship allowed me to see, experience, and learn about the contribution of Gas Analyzers systems in the Cement Industry. I learned about the principles that govern the operation of Gas Analyzers. Then I got a practical demonstration of working with ABB A02000 URAS 26 CO analyzer After learning the operating techniques of the device, I studied about the internal structure of URAS -26 in detail and then performed the FMECA principle on it. At the end a comprehensive table

of major failure modes of the device and its corrective measures were compiled for future reference.

PS-I experience: The overall experience was good, everyone in the organization was cooperative and helpful. The time spent here allowed me to improve my interpersonal skills and learn about new engineering domains.

Learning Outcome: Through this PS, I got a good overview of Indian Cement Industry. I got to learn the factors affecting the Cement Industry. I learned how a cement plant operates and how day-to-day tasks are executed.
With respect to my project, I learned how to operate, maintain and troubleshoot gas analyzers such as MAGNOS-27 and URAS-26, their functions and importance in a cement plant.
Apart from the above technical skills, weekly interactions, group discussions and seminars helped me in developing soft skills such as communication skills and presentation skills

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Name: RAJDEEP DAS .(2020A8PS1609G)

Student Write-up:

PS-I Project Title: Gas Analyzers

Short Summary of work done: The objective of the project was to understand the Gas Analyzer systems in the Plant and suggest a better way of utilizing them in terms of efficiency and utility. The 2 months of practice school program allowed me to see, experience, and learn about the contribution of Gas Analyzers systems in the Cement Industry. I learned about the principles that govern the operation of Gas Analyzers. After understanding theoretical aspect of Gas analyzers, I learned about the working ABB A02000 URAS 26 CO analyzer and learned the methods to maintain, operate and troubleshoot it. Then I learned about FMECA principle and applied it on the device. At the end to a comprehensive table of major failure modes of the device and its corrective measures was submitted to the organization.

PS-I experience: It was a good PS station in terms of interaction within the Organization and my experience with this station was good

Learning Outcome: I gained a good understanding of Indian Cement Industry and its functioning. I completely understood how a cement plant operates to complete its day--to-day objectives factors affecting it.

I gained a comprehensive knowledge of the gas analyzer systems that is used in a cement plant and its importance At the end of this PS, I can now fully operate and maintain a gas analyzer system of a cement plant.
Apart from technical skills, regular interaction with the employees helped me develop soft skills like communication skills and presentation skills.

PS-I station: Sidhi Cements - Process , Sidhi (MP)

Student

Name: YUGANSH SHARMA(2020A2PS1759P)

Student Write-up:

PS-I Project Title: Basic Operation & maintenance of VRM and power optimization

Short Summary of work done: The objective of the PS, was to draw attention to the need of Cement grinding process optimization to minimize power consumption and achieve higher productivity. In the study the advantages of vertical roller mill are discussed over ball mills. VRM construction, its process and parameters which affects the performance and productivity of vertical roller mill are discussed. Also, the consequences of variations in parameter explained. With proper optimization of these parameters, the productivity of vertical roller mill can be improved and performance stability can be achieved by addressing root causes. This study can benefit the organizations using VRM and are not able to utilize its full productivity due to some bottlenecks or constraints.

PS-I experience: My overall PS-1 experience was really good. My mentor & faculty guided me in every possible to complete my project. It was an incredible opportunity, giving me exposure to various things about the working of a company along side giving me practical knowledge.

Learning Outcome: PS -I helped me get a first-hand experience on how the industry works and the work culture. This aided me immensely in getting a better understanding of the industry. This provided a practical learning of the core and other related cement processes.

Name: SUDEEP PUSPA KUMAR .(2020A2PS1763P)

Student Write-up:

PS-I Project Title: Basic Operation and Maintenance of VRM and Power Optimization

Short Summary of work done: Learned the basic operations of different components of a VRM (grinding table, rollers, fans, main drive, classifier, baghouse). Worked on the detailed operational principles and procedures in the classifier and the estimation of feed rate and production. Studied power consumption pattern in classifier and its relationship with other operational factors such as feed size, product fineness (P80), classifier rotor feed, and recirculation rate of the dynamic classifier feed. Developed mathematical relationships to establish ideal values for the rotor speed and power consumption in the classifier, and compared the values with the values obtained from the industry. Suggested ways to optimize the process in the classifier and the main drive (by limiting the dynamic classification reject and thus, reducing feed recirculation). Studied maintenance procedures in the industry.

PS-I experience: It was fruitful in gaining knowledge of the functioning of the cement industry. Got an opportunity to study and understand VRM (Vertical Roller Mills) in detail throughout the project through interactions with the faculty and industry mentor). The lectures by the industry experts were insightful.

Learning Outcome: Understanding of the operations of VRM. Learned the function, working principle, and energy consumption pattern of the classifier in the VRM. Learned about the various factors affecting power consumption in the classifier and suggested solutions for it.

PS-I station: Starflex Sealing India Pvt. Ltd. , Goa

Student

Name: YASH PUROHIT .(2020B3A40946P)

Student Write-up:

PS-I Project Title: Inventory Management Module(Quality Check Automation)

Short Summary of work done: The work assigned by Starflex Sealing India Pvt. Ltd. was to build a quality inventory management system which helps the company to keep track of the flow of inventory right from the receiving of raw materials and consumables to semi-finished goods to finished goods. The aim of the project was to make the work easy for management and ensure no loss in the raw material and improve the efficiency. Inventory management was expected to be done in this project at all the 3 levels, which are input, process, and output. Apart from that, the project also aims to reduce wastage, reduce defects and rejections, in order to increase the inventory efficiency.
In the material management process, the rejections or defects, if any were to be tracked with the reasons for the rejections. For accomplishing this, we used few tools like 7 QC tools, and Root Cause Analysis(RCA). After this, suitable CAPA(Corrective Action Preventive Action) was to be made to investigate and solve problems, identify causes, take corrective action and prevent recurrence of the root causes of the rejections.
Apart from that, there was an element to introduce Bar-Code Scanning to the inventory management system to automate the process and speed up the process of tracking inventories as well as semi-finished goods at different stages of production more efficiently.

PS-I experience: Working as a part of Starflex was really beneficial in learning how to navigate a corporate structure and interact with various organization members. I now understand interpersonal dynamics and how an organization works. The open learning environment that existed between the team members and within the organization was very encouraging. I adjusted well in the team I was assigned to and strike the right balance between work and life. I believe that my PS1 assignment was a relevant and valuable contribution to the organization.

Learning Outcome: PS1 has enabled me to apply my theoretical knowledge and my skillset to practical real-life problem statements. The project assigned was consistent with my interests and my skillset. The assessments conducted by BITS allowed me to enhance my interpersonal, communication and presentation skills.
I learned about various kinds of gaskets and their production processes and uses.
I learned about various Quality Check tools and processes like QC tools(Fishbone diagram, Check Sheet, Stratification, Control Chart, Scatter Diagram, Pareto Chart, and Histogram), Root Cause Analysis, CAPA, etc. and further learned to apply them in an inventory management system for quality check automation.
I also learned about how to work in a team, and developed core skills like Time Management, leadership, etc.

Name: KOSURI GYAN SUMANYU .(2020B5A42176H)

Student Write-up:

PS-I Project Title: inventory management module

Short Summary of work done: Inventory Management in a company-
In any business or organisation, all functions are interlinked and connected to each other and are often overlapping. Some key aspects like supply chain management logistics and inventory form the backbone of the business delivery function. Therefore these functions are extremely important to marketing managers as well as finance controllers.
Why Inventory Management?
1. Tracking Inventory
2. Manage Planning & Forecasting
3. Control Your Costs
4. Improve Your Delivery
5. Reduce the Time for Managing Inventory
Barcode Inventory Management System-
A barcode inventory system is a method that helps businesses track inventory faster and easier. When a product has a barcode, it's scanned with a handheld mobile device and synchronised with inventory management software in real- time.
Why Use Barcode Based System?
As Starflex's business is at a large scale and is more complex with wide variety of inventory at different levels of production, there are certain tasks that need to be automated in order to keep up with demand.
Working of this Inventory Management System
Investments Required
Working Process of the Physical Hardware
Working of the Database

PS-I experience: -> Working as a part of Starflex was beneficial in learning how to navigate a corporate
structure and interact with various organisation members.
-> We now better understand the interpersonal dynamics and how an organisation works.
->The open learning environment that existed between the team members and within the organisation was very encouraging.
-> I adjusted well in the team I was assigned to and strike the right balance between work and life.
-> I believe that my PS1 assignment was a relevant and valuable contribution to the organisation.
->This experience was really useful in incorporating management skills in real life problems.

Learning Outcome: We learnt about:
1.) The processes involved in a manufacturing facility.
2.) Gaskets and their production and uses.
3.) Various types of inventory management systems and how to incorporate them into manufacturing facility.
4.) Various QC tools like Check Sheets, Control Charts, etc. and their uses in an organization to determine quality check and prevent recurrence of defects and rejections.

PS-I station: Sud-Chemie India Pvt. Ltd - Chemistry , Vadodara

Faculty Name: Ashwin K P

Faculty Write-up
Sud-Chemie India Pvt Ltd: This is a chemical engineering industry, which has a lot of process engineering related works. The three students alloted to the station were allocated three mentors. Since the industry is chemical process engineering, conducting internship in online mode was challenging. So the mentors mostly gave study projects to the students.

Industry looking for in a -I intern

1) Professionalism
2) Diligence
3) Ability to take up responsibility
4) Ability to co-relate theory with practice

Student

Name: K B S VASHIST .(2020B2A12379H)

Student Write-up:

PS-I Project Title: USE OF ELECTRON MICROSCOPY TECHNIQUES FOR BETTER UNDERSTANDING NHT CATALYST/ALUMINA BASED CATALYST MATERIAL

Short Summary of work done: In the Project, there were a lot of things which we needed to study about, including various spectroscopic techniques, catalysis processes and much

more. The work mainly on the applications of these in the crude oil refinery, so I had to make a lot of literature reviews on the journal articles which dealt with the catalysis in the NHT process which was quite important during the duration of the project and also had learned about the various catalyst characterization and manufacturing processes which formed the fundamental part of the project.

PS-I experience: The experience was quite good, as it was pretty flexible with their approach and it helped to gain valuable experience like how things function in the industry and could gain valuable knowledge.

Learning Outcome: Learned about various processes used in the crude oil refinery namely the NHT process, and learned about the spectroscopic use and application process as my knowledge about it was very limited at that time and the catalysis process in general which was pretty helpful as i got to know about the catalysts are used in the industry.

Name: ADITI PRABHU .(2020B2A12454H)

Student Write-up:

PS-I Project Title: literature survey for low temperature ammonia decomposition catalyst to hydrogen

Short Summary of work done: The work being a literature review required me to focus on creating review reports for articles published on this concept in recent years. The report consisted of various sub-topics which dealt with topics ranging from abstract to preparation conditions to observation and summary. The report was reviewed by my mentor in our weekly meetings and was modified/improved accordingly. Since the research focused on non-noble metal catalysts, special emphasis was laid on Fe, Ni and cobalt and standard supports like Al2O3, metal-oxide perovskites, and MxOy type support. The efficiency was improved by adding an extra column in the report, which was a brief overview of the temperature-dependent conversion of the catalyst to help provide a faster summary consisting of important and necessary points only.

PS-I experience: it was a very fulfilling experience. i managed to learn a lot. catalyst and catalysis is a completely new domain so all the knowledge gained was on something i had not known about before. my mentor had guided me and helped clear my doubts, making me work efficiently.

Learning Outcome: a deep understanding of catalyst development was gained. ammonia decomposition and all related topics were well understood. a thorough knowledge of non-noble metal catalysts and supports was obtained.

Name: RITIK YADAV .(2020B2A21940P)

Student Write-up:

PS-I Project Title: Octahedral molecular sieve processes and applications

Short Summary of work done: I had to research on various octahedra molecular sieve processes , their different properties and discuss about their various application areas.

PS-I experience: PS 1 was a really great experience with joyful learning. The schedule was very flexible yet challenging at times. Meet different kind of people here working in the industry. Gained a lot of valuable insights

Learning Outcome: A nice blend of technical as well as social skills.

Name: BOLLAPRAGADA ADITYA SRIVARDHAN .(2020B2A42410H)

Student Write-up:

PS-I Project Title: Extraction of precious metals from Automotive catalysts

Short Summary of work done: I have researched extensively about the essence and importance of Precious metals in our day to day lives and the necessity to extract them from Automotive catalysts. An innovative and eco friendly procedure has been devised and proposed to the company for application

PS-I experience: The PS1 experience was very enriching and knowledge gaining for me. It made me explore many new fields which have future necessities. Added to this, The

PS Faculty, both at the institute and the station were very genuine and friendly with me, and thus, enriching my communication skills.

Learning Outcome: I have learned about various advanced techniques of extraction of Precious metals like Hydrometallurgy, Pyrometallurgy and many more, often methods which are cutting edge and are in experimental stage. I have also learned about Solvometallurgical techniques, and their advantages in extraction of precious metals.

Name: BOLLAPRAGADA ADITYA SRIVARDHAN .(2020B2A42410H)

Student Write-up:

PS-I Project Title: Extraction of Precious Metals from Automotive Catalysts

Short Summary of work done: Extensive research was done about the importance of extraction of the platinum group metals from spent automotive catalysts .An innovative and eco-friendly solvometallurgical process is proposed for the extraction.

PS-I experience: PS-1 experience is very informative and enriching for me. It has made me gain a new set of communication and presentation skills. Both the mentors at Station and College were very helpful and resourceful for me. This experience made me content and gave new insights to me.

Learning Outcome: I have learned about the wide range of extraction techniques used in the recovery industry, like Hydrometallurgy, Pyrometallurgy etc. I have also learned more about Solvometallurgy as a technique and it's industry requirements.

PS-I station: Sud-Chemie India Pvt. Ltd - Instrumentation , Vadodara

Student

Name: MANN JAGDISH SHAH .(2020A8PS1825P)

Student Write-up:

PS-I Project Title: Building the process visibility and control through automated control system in BCT business area

Short Summary of work done: Here we first learned about different types of loops in control system, which forms the base of all the blocks. Then we moved to understand what system architecture is and the role of its different components and why each one of them is important for us. Then we started to enhance our knowledge and deep dive into different types of blocks as they are very essential while developing any control system.

PS-I experience: I had a good experience overall.

Learning Outcome: I was able to learn about control systems and get industry relevant experience in the field.

PS-I station: Sud-Chemie India Pvt. Ltd - Mechanical , Vadodara

Student

Name: KAUSHIK.M .(2020A4PS0661H)

Student Write-up:

PS-I Project Title: MAPPING OF COMPRESSED AIR DISTRIBUTION AND OPTIMIZING THE USAGE

Short Summary of work done: a sustained, optimized compressed air system, it requires new processes and procedures that are both technical and people focused. These activities include real time system performance feedback, active demand side management, focus on controls, not compressors, and operator training on the compressed air system. Managing the system, the people and continual improvement of the compressed air system through new technology has allowed companies to increase efficiency of the system as well as limit the overall cost of the operation.

PS-I experience: Multiple literature reading and reviews to decide the suitable approach according to the circumstances.

Learning Outcome: Learnt about compressed air distribution and a comparative study of different compressor installations to help in cost reduction owing to optimizing usage of compressed air.

Name: VINEET KUMAR .(2020A4PS1823G)

Student Write-up:

PS-I Project Title: DEVELOPING SCHEME FOR AUTOMATED FEEDING SYSTEM FOR BOILER

Short Summary of work done: At the end of my internship in Sud – Chemie India Pvt. Ltd, Vadodara, I have understood the following:
• How use of biomass is more economical and environment friendly than other fuels
• Each step that occurs from the unloading of the truck with biomass till it is fed into the boiler
• Different factors can affect the biomass system and why each system in different cities and countries vary from each other making it unique
• Why Pneumatic Injection is much more used and appreciated than mechanical feed in the industry
• The processes of feeding from both mechanical and pneumatic perspective.
• What increases the wear life of the metering screws

PS-I experience: Really enjoyed learning about my project which was something I had a interest in already. The PS faculty, Dr. Chanchal Chakraborty was very friendly and supportive during the entire duration of the PS and also our industry mentor, Mr. M. Prejith was very encouraging and ready to clear my doubts at anytime.

Learning Outcome: I now have a well terained knowledge on boilers and all of it's processes. How fuels vary from each other and how each of them are unique to different boilers. From the moment biomass is loaded in the trucks to the point where it used in the boiler each step is witnessed how it occurs in space of the industry.

Name: KRISHAY NANGIA .(2020A4PS1873P)

Student Write-up:

PS-I Project Title: Machinery Spares Inventory Optimization

Short Summary of work done: During my PS-1 I researched various techniques of inventory classification.Some of the techniques were - ABC analysis, XYZ analysis and ABC-XYZ analysis. From those techniques I chose a suitable technique which was applicable to the inventory at hand. I got the information regarding the inventory from my company mentor and performed the inventory classification using excel. I had multiple discussions with my company mentor to understand the workings of Sud-Chemie and to understand my role and how I would be contributing to the company. I also made a powerpoint presentation to summarise my findings and presented it to my company mentor.

PS-I experience: During my PS-1 I had a good interaction with students and teachers from different BITS campuses. I got my first experience of how a corporation functions. My faculty in-charge was excellent. He was clear in giving us instructions and timelines for our assignments. In case of any problems he would help us out and in cases where the company mentor was not responding he took action. Even though my PS-1 was online I had a healthy interaction with my company mentor. He gave me a good understanding of how Sud-Chemie functions and explained the importance of my role to me, this made me realize that I am making a significant contribution to his team. My company mentor was always supportive and clear in his communication. He made sure that I understood everything and provided me with the necessary data.

Learning Outcome: During my PS-1 I learnt how a corporation functions. I learned the various applications and importance of excel. I understood the importance of inventory management and how it is important to maintain an inventory in such a way that the necessary items are available but there is no overstocking.

PS-I station: Sud-Chemie India Pvt.Ltd - Electrical , Vadodara

Student

Name: KAUSHAL SAGAR KIRPEKAR .(2020A3PS0828P)

Student Write-up:

PS-I Project Title: Energy conservation initiatives in Continuous Belt Dryer

Short Summary of work done: Conducted research on continuous belt dryer, its working and different components involved- blowers and VFD. Came up with solutions to conserve energy in the process using logical approach and considering different scenarios.

PS-I experience: It was my first role in a professional capacity. I got an insight into a company's working and obtained great help from both my company mentor and institute mentor. It was a great kickstart to my professional career.

Learning Outcome: I learned many concepts of the belt dryer and how catalysts are dried. I learnt energy saving techniques in the industry. I also learnt how to write an official project report.

Name: NITANT TARANG KOTHARI .(2020A3PS1779P)

Student Write-up:

PS-I Project Title: Reduction of the Electrical power consumption in the utility area of the plant

Short Summary of work done: The objective of the project is to take the readings of the various electrical (kWh) equipment such as the chillers, air compressors, cooling towers, boilers etc. The main aim of this project is to check the efficiency of the current equipment and ensure maximum utilization of the resources. Each individual current equipment has to be checked so as to keep the wastage from them at a minimum and to keep an eye on the design of the equipment and suggest any practical changes, if possible, to enhance the efficiency of the system, to take preventive measures for leakages and faults.

PS-I experience: My PS-1 experience has helped me grow a lot. I would like to thank Sud-Chemie India Pvt. Ltd. for giving me this opportunity to grow and gain industrial knowledge and experience. This has helped me a lot and I will strive to inculcate the values imparted to me in the real world. It has helped me become a better person and a better colleague.

Learning Outcome: No machine in this world can work at 100 percent efficiency. But there is always a scope for improvement. The machines can run at a practical maximum

efficiency to reduce the costs of electrical consumption. The vision of this project is to address the electrical consumption and to reduce and keep a check on the efficiency of the system.

PS-I station: Survey of India - Geoid Modelling (Onsite) , Dehradun

Student

Name: ATHARVA NAMJOSHI .(2020A2PS1496P)

Student Write-up:

PS-I Project Title: Geoid modeling

Short Summary of work done: Working on software to help the station in their day to day working

PS-I experience: My ps work experience was a very nice time i spent working in a department and working on a project that may help in the future

Learning Outcome: Learning the python code and working in the department with a regular schedule

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PS-I station: Survey of India - GNSS Survey using CORS Network (onsite) , Dehradun

Student

Name: ABHIVADHYA VATSA .(2020A2PS1738P)

Student Write-up:

PS-I Project Title: Identification Of Springs In Himalayan Region Using ORI, DEM And LiDAR Point Cloud Data

Short Summary of work done: The project was a research based project, and primarily aimed to find the positions of flow and discharge of groundwater springs in the Agast Muni Region, situated in Rudraprayag, Himalayas. Use of geology was to be avoided. We were given LiDAR Point Cloud Data and the DEM (Digital Elevation Model) for the region, and had to find out a suitable method for deriving the positions. No direct methods were derived or available before.
For evaluation of the DEM, ArcGIS and ArcGIS Pro were used and various models were put to test whether they could prove to be useful, or not.
The research involved a lot a literature review and there was less information available across the internet, hence a lot of self study and exploration of the software was also done.
A good project to go for if someone is interested in research or data processing or hydrology.

PS-I experience: In the first meet with the director, we were reassigned the projects according to our preferences and discipline. Being an onsite station, it was a great experience and we got to witness the work culture here in the office. It was great coordinating with the mentors regularly, having regular conferences with the director, communicating and discussing one to one about the project.

Learning Outcome: Softwares - ArcGIS, ArcGIS Pro; working on DEM and LiDAR data; onsite GPS data collection using external Trimble and Leica GPS; operating a field data collector (FDC); presentation and communication skills

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Name: KUSHAGRA ROHELA(2020A2PS2532H)

Student Write-up:

PS-I Project Title: NATIONAL MISSION FOR CLEAN GANGA

Short Summary of work done: My project specifically deals with the workings of a Geographic information system (GIS), a software that helps in creating, managing, analyzing, and mapping all types of data. I use the data mapped by the Survey of India to define the various state and district boundaries as my test data and started experimenting with it in ArcGIS pro.

The GIS software that I use is called ArcGIS Pro & QGIS, they both functions as a geographic information system (GIS) software, that allows users to analyze and edit spatial information, in addition to composing and exporting graphical maps. QGIS supports raster, vector, and mesh layers. Vector data is stored as either point, line, or polygon features. Multiple formats of raster images are supported, and the software can georeferenced images.
The plugin that I used to increase the efficiency using the software are Oriented imagery plugin for ArcGIS pro and Equirectangular Viewer plugin for QGIS, which helped in navigating between different 360° images along with worked on Map matching with the new Geo analytics tool Snap Tracks.
I worked with Deep learning models that were pretrained for certain tasks like automatic building extraction, road extraction, scene text parsing etc. I read about the models, they all were amazing, I was able to successfully apply them than half of the work will be finished using AI itself.
The project contributes to helping solve problems faced in the NMCG project which helps at a broader level in the conservation of the river Ganga.

PS-I experience: I worked with some of the sharpest mind of the country, it was great experience to work with some advanced technologies which you can't think of to have like lidar, Field data collector and other expensive software. My seniors were very supportive and the work atmosphere was also pretty good. we used to have 5 days working with 2 days off. I worked with countries confidential maps and other data, which general public can not access.

Learning Outcome: My project exposed me to GIS Software which is important in my discipline while also helping us in understanding the real-life applications of these technologies and the theoretical knowledge.

PS-I station: Survey of India - Tidal Data Analysis (onsite) , Dehradun

Student

Name: ANGAD SINGH KWATRA .(2020A3PS0505P)

Student Write-up:

PS-I Project Title: Tidal Data Analysis

Short Summary of work done: Understanding how analysis is performed, wrote programs calculating solar and lunar constants , calculating the mean sea level from data collected from the ports

PS-I experience: Honestly, it was wonderful and something I'd remember for the rest of my life. Not entirely because of my project but the environment and setup included. Moving to a new city was memorable in itself, but the work environment was impressive. The people, the museum , everything made the place so amazing and the campus was very green, clean and peaceful.

Learning Outcome: I honed my programming skills, gained insight into the data analysis process. Learnt to use various libraries in python and use programming to perform real world tasks and innovate the processes of the department.

PS-I station: Suzlon Foundation - Documentation and Analysis , Pune

Student

Name: AIKAGRA AGARWAL .(2020A1PS0294P)

Student Write-up:

PS-I Project Title: CSR Winners

Short Summary of work done: Sorted and picked out eligible entries from a pool of organized data and prepared the final list.

PS-I experience: It was an enriching experience.

Learning Outcome: I learned problem-solving and handling real-life situations.

Name: PRASAST SINGH .(2020A2PS1740P)

Student Write-up:

PS-I Project Title: Employee Satisfaction Survey

Short Summary of work done: The survey was created to provide Suzlon Foundation an understanding of how Suzlonians feel the Foundation is now functioning and how they would like to see it performing in the future in order to achieve its overall goal. The survey was spread via mail and WhatsApp to the employees through google form. A lot of close ended and open ended questions were asked which included questions like satisfaction in term of communication, coverage, sustainability, relevance, implementation etc. Suggestions to improve CSR programs and other recommendation were also asked and form received great number of responses(464 responses). Later based on the analysis on data, I had to make recommendations for the company.

PS-I experience: It was great experience with great learning period for us interns

Learning Outcome: Learning the value of/knowledge of CSR and its very importance. Also I got to hone my excel skills

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PS-I station: Ultratech Cement Limited , Tadpathri

Student

Name: SAIEESH KAPIL SUKHRANI(2020A1PS1970G)

Student Write-up:

PS-I Project Title: Cement Manufacturing and it's Process

Short Summary of work done: We learnt about the whole cement process in detail, how first limestone is extracted, crushed and grinded, then it and other raw materials such as iron ore, shale and so on are react in the kiln and transform into clinker. Clinker is then cooled and stored. It then, with the mixture of other materials such as gypsum and fly ash composes of cement that is finally transported and used. We also learnt about the heat calculations required in the Raw Mill and the amount of deducting gases. Lastly, we learnt about the PLC system that is used to control the plant efficiently.

PS-I experience: Since the station is a plant, thus, off-site we could only study about the process and understand a bit. The full extensive experience was my last week which I'm very grateful for as I built connections, understood the process in much more detail, understood how much more there is to learn and understand, thank you for that.

Learning Outcome: Collecting data related to the time of running of each piece of equipment is necessary, as the components should not overheat or overwork themselves and get damaged.
Understanding heat calculations of the raw mill is necessary to understand where we could improve the raw mill.
Flow of hot gases required is 6.0143 106 Nm3/ hr.
The heat required from Hot gases is 21.6755 106 kcal/ hr.
Each component would always have errors, such as false air. Thus, we would not always meet the theoretical values.
Using alternate fuels such as Municipal Wastes such as paper and manure can help reduce the coal requirement and burn unnecessary waste.
The equipment can be kept in certain conditions to reduce heat loss due to various factors. As a result, a lesser heat requirement is necessary from the hot gas.
A six-stage cyclonic preheater is used to improve the efficiency of the process.
The carbon-di-oxide released from the process and be stored and used in other processes. It can also be solidified and sent to other industries for use.
All the dust generated from the process is duly collected and stored on the plant to not affect any employee working there.
The above mentioned were all the learning outcomes

Name: NISHITH KUMAR GUPTA .(2020A4PS2336H)

Student Write-up:

PS-I Project Title: Basics of Kiln and Hot Kiln Alignment

Short Summary of work done: Understanding the working of Kiln and its parts was the main objective of my work. Our project also included Kiln Maintenance and Hot Kiln Alignment. Apart from this we also discussed and closely worked on topics like- various modifications/changes that are carried out to increase sustainability in the cement industry sector, an advanced Cement Kiln System that is cost-effective and less pollutive, how to reduce carbon dioxide emissions in the cement plant, and use of alternative fuels in cement industry and in Kiln.

PS-I experience: PS-1 being my first ever industry exposure was great and I had a lot to learn daily. Hence it made my summer term quite valuable and memorable. Working under the guidance of industry people was indeed a unique experience. For the first time, I felt that I was less focused on the marks and more on the learnings that I was gaining from this experience. I wish I had received this experience in an offline term and had gone to the industry and looked at the working of the machines that I saw during the online plant tour.

Learning Outcome: Understood the difference between theoretical and industrial applications.
The present state-of-the-art approach adopted in the cement industry
Learning about the cement manufacturing process and various modifications/changes that are carried out to increase sustainability. Getting extensive knowledge on kilns and their applications.

Name: ARJUN NAG .(2020A8PS2085G)

Student Write-up:

PS-I Project Title: CO2 INERTISATION IN THE COAL MILL SECTION OF A CEMENT PLANT

Short Summary of work done: During PS-I, we delved into how the Cement Industry works. We mainly studied about Programmable Logic Controllers (PLCs) since it is one of the very few things that links a field like Electronics and Instrumentation Engineering to such an industry. We learnt about how PLCs are used to programme and drive devices used in factories. We also learnt about methods that could be used in the Cement Industry to reduce the contributions made by various manufacturing processes to environmental footprints.

PS-I experience: My internship experience was extremely insightful. I was delighted to have gotten the opportunity to work with an organisation like Ultratech Cement. The hands-on industry experience that I gained was really invaluable and the internship was an important step for my professional career.

Learning Outcome: Through our project, we got to broaden our horizons in the following subject matters:
- The main processes involved during cement production.
- The extraction and processing of raw materials

- The combustion process, cement grinding, quality control and storage, and cement distribution.
- The machines used in the cement industry and their working.
- The automated systems used in industry processes and their efficiency.
- The steps used to ensure the safety of operating personnel.
- The practices followed to increase the longevity of plant equipment.

Name: Avinash Singh(2020B3TS1268P)

Student Write-up:

PS-I Project Title: Working Capital Management

Short Summary of work done: A detailed study on the process of working capital management in the cement industry and an analysis of the factors impacting it. The study included calculation of various ratios associated with working capital to determine the financial health of the company and make suggestions for changes required to improve financial health. In the later part the study revolved around sustainability in the cement industry during current times.

PS-I experience: My PS-1 experience was very fruitful in terms of bridging the gap between Industry and Academia. The project was associated with my previous coursework (ECON F211) and hence helped in bringing out the practical aspects of financial accounting.

Learning Outcome: A thorough study on Inventory management, cash management & receivables management, Application of accounting concepts, Application of financial ratios, Intrinsic valuation using working capital and future cash flows, What role working capital management plays in a company, and why is it important, Sustainable future of the cement industry and how Ultratech is investing in various technologies

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Name: SARVAGYA GARG .(2020B5A41336P)

Student Write-up:

PS-I Project Title: KILN BASICS AND HOT KILN ALIGNMENT

Short Summary of work done: The area in which I was allotted the project was Kiln & It's Alignment because I am a student of mechanical engineering and wanted to have experience in Mechanical Core
Field. I was assigned to work in APCW(Andhra Pradesh Cement Works) which is a cement processing factory of Ultratech Cements. The title of project I was allotted was "Kiln Basics and Hot Kiln Alignment.I was able to do a study oriented project regarding the importance of Kilns in a Cement processing factory and ways to protect the Kiln from internal and external faults that may occur in everyday life.".

PS-I experience: We were able to learn through different interactive session and through group project, we were able learn teamwork, and was able to gain confidence. There was an unexpected Shutdown at the plant, due to which people over there were not able to conduct many sessions. The PS1 faculty allotted helped along each step of the Practice School.

Learning Outcome: 1.) Gaining industry experience in the core Mechanical field
2.) Gaining knowledge about the work style and helped me to know how corporate culture works.
3.) Learning about the cement manufacturing process and various modifications/changes that are carried out to increase sustainability.

PS-I station: Ultratech Cement Ltd. , Kotputli

Student

Name: UTKAARSH BHAGAT .(2020A1PS1725P)

Student Write-up:

PS-I Project Title: Reserch Intern - Reducing special power consumption in post clinkerization processes.

Short Summary of work done: This research project was aimed at researching on ways to reduce the special power consumption of post clinkerization processes. It seeks to

determine the ways of enhancing performance and methods for power and energy savings in stages of fuel preparation, clinker formation and finish grinding. I got insights on the position of UltraTech cements in the industry, being one of the global leaders in building materials, their efforts for environment sustainability and greater empowerment to women force. Further on how replacing the traditional ball mills with various newer technologies like the VRM'S, HRM'S, HPRP'S have led to reduced power consumption and ease of manufacturing in the cement sector across various countries. Seeing the great use of cement in constuction businesses and India accounting for a large share in cement production, environment sustainability becomes of sore concers, hence ways to lower the gas emmsions reduce power consumption are of great importance.
For effective learning and good experience you need to keep your industry and faculty mentors aware of your progress. You need to make constant efforts to oraganise a call with your industry mentor and gain insights on report making and the details of the project.

PS-I experience: In all it was a fine learning experience. You need to make constant efforts to oraganise a call with your industry mentor and gain insights on report making and the details of the project. Your faculty mentor helps you in every way he can and you can reach out to him anytime for queries.

Learning Outcome: Seeing the great use of cement in constuction businesses and India accounting for a large share in cement production across the world, environment sustainability becomes of sore concers, hence ways to lower the gas emmsions, reduce power consumption are of great importance. Hence reading on this topic I got to know the current situation of the cement plants, the equipment used for grinding and optimisation/upgradation done if any in the equipments for grinding. My topic focussed mainly on the Vertical Roller Machine used for power consumption reduction.

Name: SHIKHAR SRIVASTAVA .(2020A2PS0242P)

Student Write-up:

PS-I Project Title: Construction of Rigid Pavements

Short Summary of work done: In the due course of Practice School 1, I learnt different things regarding how to work in an organisation but specific to my topic, I learnt what different types of Pavement exist and how they differ from each other. I also came across different parameters which affect construction of rigid pavement. I also learnt the different steps involved in construction of rigid pavement. I also learnt about different types of joints that are used in pavement. I learnt how the simple seeing process of Construction of road

is more technical and how much back-end research and soil experiments need to be done before construction of pavement

PS-I experience: PS-1 was a great experience entirely the people were new and welcoming, they provided with great insights of the different aspects of a working organisation.

Learning Outcome: The different working parts of the process in the making of cement. Also, the various tests and research that goes in the making of a rigid pavement were very insightful and interesting.

Name: PRAKHAR GUPTA .(2020A2PS1750P)

Student Write-up:

PS-I Project Title: Construction of Rigid Pavement

Short Summary of work done: "Construction of Rigid Pavement" such as why and where we adopt the Rigid Pavement and what are its advantages over Flexible Pavement. We also saw different types of Rigid pavement with a brief introduction of each type. Then, we move ahead with factors governing the design of Rigid Pavement which was a the most important part of the report as it showed the necessary things and different condition which are required for the "Construction of Rigid Pavement" in this we saw how little things such as temperature difference and daily amount of traffic can have such a significant difference in type of material, hence changing the whole pavement. We also saw different types of tests that are required to be done before the "Construction of Rigid Pavement" takes place. After that the report followed the different steps in brief that are required for Construction of Rigid Pavement these steps are recommended by Indian Government in Guidelines for the design of Plain Jointed Rigid pavement.

PS-I experience: it was very good, I learned very much and gained a lot of cooperative experience on how these orgainisation works.

Learning Outcome: In the due course of Practice School 1, I learnt different things regarding how to work in an organisation but specific to my topic, I learnt what different types of Pavement exist and how they differ from each other. I also came across different parameters which affects construction of rigid pavement. I also learnt the different steps involved in construction of rigid pavement. I also learnt about different types of joints that are used in pavement. I learnt how the simple seeing process of Construction of road is

more technical and how much back-end research and soil experiments need to be done before construction of pavement.

PS-I station: Vikram Cement Works , Neemuch

Student

Name: CHINMAY B MOTHE .(2020A1PS1720P)

Student Write-up:

PS-I Project Title: PINGME PROJECT

Short Summary of work done: Have completed the daily projects where in we have to make a workbook of 3 pages on the topic taught (video lecture) everyday and to make short informative videos on applications like word, excel, outlook etc. Have also tried to learn coding while doing the ps project. It helped me gain a lot of confidence in myself.

PS-I experience: PS-1 experience has been good so far. It made me gain exposure on how the companies work in real life and gained an industry experience which was really helpful. Was in constant touch with companny mentors which helped with the projects and guided us.

Learning Outcome: I gained exposure on how the day to day routine is in companies and how they manage their time to be as efficient as possible.Daily meetings and submissions help us interact with mentors and stay in touch constantly.This also helped me to improve my communicative skills and made me more confident. Also learned the responsibilities of an HR team in companies and their functionalities

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Name: CHINMAY B MOTHE .(2020A1PS1720P)

Student Write-up:

PS-I Project Title: PINGME PROJECT

Short Summary of work done: I am under HR department and my role is to learn how HR really functions in real life and to get an industry experience how HR makes efforts so that the overall conditions and workrate of employees are improving which overall benefits the company. We are also shown the how the HR takes care of employees by ensuring that all the safety protocals are followed and safety measures are taken.My work is to make informative videos and ppt which would spread awareness about safety protocal and safety measures which would make it easy for HR to make employees understand the importance of following safety protocals at a workplace.Have completed the daily projects where in we have to make a workbook of 3 pages on the topic taught (video lecture) everyday and to make short informative videos on applications like word, excel, outlook etc. The workbook is to be in both English and Hindi. Still working on the PINGME project which is for the whole duration of the PS-1

PS-I experience: It was good got to learn quite a lot while interacting with industry specialists and those who work in companies . Got to know how a day looks in working environment. Got into coding because of PS-1 . Daily meetings improved my communication skills

Learning Outcome: I gained exposure on how the day to day routine is in companies and how they manage their time to be as efficient as possible.Daily meetings and submissions help us interact with mentors and stay in touch constantly.This also helped me to improve my communicative skills and made me more confident. Also learned the responsibilities of an HR team in companies and their functionalities

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Name: SRIKAR KAMBALADINNE .(2020A3PS2120H)

Student Write-up:

PS-I Project Title: Sustainability at Ultratech cement

Short Summary of work done: This project is based on creating awareness and making new sustainable practises in the cement industry. It is under the inspiration of EP100 program in Ultratech which plans to bring in sustainable practices and methods to double the production in 25 years. This project mainly deals with the employees working in the organisation , by raising their awareness about sustainable practices and giving our

methods to build a sustainable workplace. This research seeks to understand what sustainable policies are already in place and are not yet being followed by the employees. The ways of raising awareness to employees include calling them up personally, making presentations about the implementation and uses of sustainable practices. This project helps to undertake very efficient and ecological friendly methods to increase productivity and efficiency.

PS-I experience: It was a new experience working for a company and meeting new people. It was interesting to work with Company mentors and team members.

Learning Outcome: • As we proceeded with the Sustainability Development project, we learned various disadvantages of Cement Industry and how they are a threat to the environment

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Name: DHANUSH SOMA .(2020A7PS0050P)

Student Write-up:

PS-I Project Title: Automation of Calling Facilities

Short Summary of work done: We were each given a main project to work on. I got a project based on app development , where I had to make an app to automate calling for the employees, who have to regularly call other employees. The app will automate dial in and call employees to reduce manual input along with other functions. We were also given small tasks to keep us engaged based on what was regularly taught.

PS-I experience: It was eye-opening to see how companies work in real time and experience it first-hand. The instructors at the PS stations were very helpful and reliable and were always open to discussions. They helped a lot during the project as well.

Learning Outcome: I have learnt a lot about management and work ethics in a professional scene. I also learnt about topics related to my project regarding app development. I also got to know more about the cement industry and the details behind each procedure in the process of cement manufacturing.

Name: SURYANSH SINGHAI .(2020A7PS0127G)

Student Write-up:

PS-I Project Title: Sustainability at UltraTech

Short Summary of work done: Our project was mainly aimed at creating awareness on sustainability among the employees and to ensure they follow and implement sustainable practices. The awareness was spread by directly calling the employees, making presentations and reports and sending them to the employees to make them know what are the methods and how to implement them. It makes the company more efficient and sustainable. Along with that we were given a few side projects of making workbooks on basic methodologies and procedures followed in an industry and making short trick videos on Microsoft Tools for the workers to understand easily.

PS-I experience: PS-I was a great experience, I gained a lot of experience about the industry various works to be done on cement factory. The lectures and videos provided were very informative and regular.

Learning Outcome: I learned various procedures and activities and the ways that should be performed in a cement industry for example, Lock out Tag out, Scaffolding, Material Lifting, Electrical Safety, Railway Safety etc. As I proceeded with my project I learned various disadvantages of Cement Industry and how they are a threat to the environment. We discussed about the sustainable ways to decrease this as much as we can and explained the workers to proceed in a sustainable way. Explaining the importance of sustainability and appreciating workers towards sustainable development honed my communication skills. Also the side projects helped me get a better understanding about cement industry and also helped advance my Microsoft skills.

Name: MAANAV RAMESH(2020A7PS1007G)

Student Write-up:

PS-I Project Title: NPTEL, MS Office videos, Workbooks

Short Summary of work done: My role at the department is to create awareness and encourage employees of the benefits and need of various initiatives of the company

especially the NPTEL courses. Furthermore I also make workbooks on topics related to the company processes like permit to work for example . Besides this I also create short videos on Microsoft Office applications like Word and Excel.

PS-I experience: The internship went smoothly and the mentors help whenever you reach out to them. Overall I would say the the experience was decent.

Learning Outcome: The internship gives me the confidence to network with people and interact with them to get things done be it calls, emails or messages. Exposure on how the day to day routine is in Vikram Cement Works and how a company functions in reality. Daily meetings and submissions help us interact with mentors and stay in touch constantly keeping me at up to date and ready to work daily. Making videos helps me improve my editing skills and freshens my touch with the features of Microsoft applications.

Name: RAUNAK KUMAR .(2020A7PS1699G)

Student Write-up:

PS-I Project Title: PingMe-a feedback taking system

Short Summary of work done: There were three kinds of works.
First main project - PingME - a feedback taking system
Secondly - Daily sessions Workbooks
Lastly - A microlearning videos of 60s for employees of word excel ppt.

PS-I experience: Got to work on my communications skills.

Learning Outcome: Understood the importance of feedback.

Name: SRESHT AYYAPPATH .(2020AAPS2102H)

Student Write-up:

PS-I Project Title: Stories On Group Purpose

Short Summary of work done: Making stories on the employees who used group purpose in their daily lives and making short tutorial videos on Microsoft Office for the employees.

PS-I experience: Through PS-1 I learnt how to work in a team and also some communication skills.

Learning Outcome: Communication Skills and video editing.

Name: ADITYA RATLEY .(2020B2A42005G)

Student Write-up:

PS-I Project Title: Safety Awareness and Employee Productivity

Short Summary of work done: During the internship, proper sessions were provided regarding the functioning of the organization and the overview of different departments; We can choose under which department we can do projects, and based on that projects were allotted, I worked in the HR department and my projects were related to safety awareness, employee productivity and work related to the contribution in the yearly booklet.

PS-I experience: I had a good learning experience and working experience, where I learned about the organization and workflow of the operations. I enjoyed doing the project in a professional working environment and had a productive time during the internship.

Learning Outcome: The sessions and project helped me to understand a deep knowledge of this industry. They helped me to improve my skills and exhibit professional ethics by displaying a positive disposition during this internship.

PS-I station: Viram Technologies Enterprises , Pune

Faculty Name: Kundan Kumar Singh

Faculty Write-up

PS-I offered for various students at Viram Technologies was a good learning experience for the students. The PS station offered the industrial-relevant project to students. Different industrial projects helped students understand the practices adopted by industry for the completion of various tasks of the project. Understanding different projects/product drawings were a good learning experience for the student. The students also understood different industrial relevant standards and how to access the same. They learned an approach to the formulation of product development design through various research articles and the PS station. They also learned the method to the solution of different formulated designs to get a product's most relevant design parameters. The students were able to solve the given problem analytically and numerically; hence, they developed problem-solving skills.

Industry looking for in a -I intern

The industry expects an intern to apply new methods or technology to help develop an innovative product. They always try to get information on the latest practices and new ongoing research updates from the intern. The industry also wants information on what new method can be applied to their project, so they give that task to interns. The expectation from the intern is that they should try to complete some part of the project which the industry may be working on.

Student

Name: ANISH CHANDRASHEKHAR PARALIKAR .(2020A4PS1591G)

Student Write-up:

PS-I Project Title: Process Design of De-aerators

Short Summary of work done: After the orientation, we were given project titles and groups. I worked on the Process Design of De-aerators which focused on designing the parameters keeping in mind the design requirements given by the company. We progressed with research review and calculations. We had weekly presentations and group meetings with company representative we solved all our doubts. We submitted diary weekly, midterm report and final report. GD was conducted twice and was on topics related to current industry situations.

PS-I experience: It was a fun and knowledgeable experience to work as an intern in a company. We learned a lot through meetings and presentations and the application of knowledge learned in class. It helped to broaden my outlook in the industry and helped me realize my strengths and weakness related to industry standards.

Learning Outcome: We learned multiple things including presentation skills, teamwork, work ethics, productivity and punctuality.

Name: AYUSH FIRODIYA .(2020A4PS1871P)

Student Write-up:

PS-I Project Title: Expansion Joint analysis in Heat Exchanger

Short Summary of work done: Our work was to research about expansion joints, reading articles, publications to gather preliminary information. Then from the design file shareed with us of expansion joint we had to design a 3-D CAD model of the same and use ANSYS in determining the stresses developed under constant internal pressure and high temperature.

PS-I experience: Both the faculty advisor and the station coordinator were always willing to help us in any problems we had, they shared more than enough resources and ensured that our PS went as smoothly as possible. They were always ready to share their immense knowledge, which helped us in many ways. Overall it was a journey worth remembering

Learning Outcome: Got experience of using professional softwares like Fusion360, ANSYS along with an industrial experience of mechanical sector.

Name: NANDIRAJU VENKATA SAI KARTIK .(2020A4PS1998H)

Student Write-up:

PS-I Project Title: Thermal Design of a Heat Exchanger

Short Summary of work done: We were told to make groups of 3-4 and choose a project out of their project list. Then, every week we had to show our progress in a ppt and present

it. The PS Mentor provides the necessary data via mail. The Mentor and our Faculty-in-Charge were always there to help. For Mid-Semester evaluation, we were told to draft a report which included the work we did till the Mid-Sem. For the End-Semester, we have to make a final presentation ppt and along with that, the Final Report of our project. In between, we had 2 Quizzes and 2 Group Discussion sessions. Coming to our project, Thermal Design of Heat Exchanger, we were supposed to design a heat exchanger with the given design and operating parameters. We designed an AEU-R type heat exchanger, typically used in petrochemical industries. We browsed various journals, books, and research papers for additional data required for sizing the heat exchanger. Then we also had to use AutoCAD to show the front and rear views of the Tube Sheets and also the Baffles in the Heat Exchanger.

PS-I experience: I enjoyed and learnt a lot during my PS-1. The mentor and our faculty-in-charge were always there to help and if needed, were also ready for holding one to one sessions with the groups.

Learning Outcome: After having completed the Heat Transfer course in 2-2 before the PS and as my project dealt with heat exchangers in detail, it was easy to adapt and work on the project without having to revise any concepts. I learned how to design a heat exchanger with the given design and operating parameters. Understood the importance of heat exchangers and why they are widely used.
And as the project involved using CAD, I was able to recollect the important concepts taught in our first year and it proved to be very helpful.

Name: UTKARSH SINGHVI .(2020ABPS1848P)

Student Write-up:

PS-I Project Title: Expansion joint in heat exchanger analysis

Short Summary of work done: The title of our project was "Expansion joint in heat exchanger analysis". We had to research on the structure and functionality of expansion joints and create a model in Fusion360 and simulate the same in ANSYS. The simulation required proper meshing along with failure limits to run in accordance with industrial limits. Created weekly progress slides with two presentations and one report for the PS-I.

PS-I experience: It was an amazing experience. It gave us insights into the work done in companies and the industrial applications of these products and services. I learnt a lot

during these 6 weeks of internship. Understood the importance of team work in collecting, processing and analyzing data to infer results while submitting it before deadlines.

Learning Outcome: Learnt how to make reports.
Learnt to make presentation slides.
Increased confidence during group discussions and weekly presentations.
Worked with new software like ANSYS and Fusion360.
Understood the mechanical domain industry.

Name: PAWAR ABHINAV MARUTI .(2020B4A41844G)

Student Write-up:

PS-I Project Title: Storage Tank Rafter Design.

Short Summary of work done: We were supplemented with a general arrangement drawing of a naphtha tank. Our task was to select and design an appropriate rafter scheme such that it conforms to the requirements
given in API 650 (the American standard for welded mild steel storage tanks) and in ASME for structural steel establishments. "Guide to storage tanks & equipment" - By long and garner was also an important reference throughout the project. Weekly progress meetings with our PS mentor helped us improve our project and guided us in the correct direction.

PS-I experience: Anticipated more of a mechanical domain focused project but was more a civil/manf. focused one. Project was convenient enough to start from zero knowledge about the topic. Weekly meets guided us in correct direction and where to go for advancing further. PS coordinator also provided supplementary material regularly.

Learning Outcome: Learnt about structural steel establishments and how allowable stresses are checked for various castings, forgings, fittings etc.

PS-I station: Wadia Institute Of Himalayan Geology , Dehradun

Student

Name: ANIKET SRIVASTAVA .(2020A2PS0293P)

Student Write-up:

PS-I Project Title: Study and Design of earthquake resistant structures for the Himalayas

Short Summary of work done: I collected data about the earthquake occurrences and their destruction in the Himalayas. I did case studies of different regions which are earthquake-prone (for ex: Nepal, Kashmir, and Kutch) to understand how these regions have adapted to the frequent earthquakes and how the locals of the region have designed structures to endure the earthquakes. Many noteworthy observations about the vernacular or local structures performing better than RC structures led to the ideation of suitable materials and shapes for an earthquake-resistant structure. Another important aspect to take care of was the cost-effectiveness of such earthquake-resistant structures. The study and collection of many low-cost earthquake-resistant techniques for structures were done. Then I made several designs on Autodesk Revit and compared the designs with each other to see which design performed the best in earthquake scenarios. The designs were made on the basis of knowledge gained from the case studies and other useful research papers. Final conclusions were drawn to give and idea for a low-cost earthquake resistant structure for the Himalayas.

PS-I experience: A fruitful learning experience.

Learning Outcome: I learned about materials suitable for earthquake resistance, learned how to use Autodesk Revit, learned about structural analysis software.

Name: SACHIN SHANKAR .(2020A2PS1744P)

Student Write-up:

PS-I Project Title: Study and design of earthquake resistant structures for himalayas.

Short Summary of work done: We went through a lot of research papers and other online sources to come up with a solution for building a seismic resistant structure, but keeping cost efficiency in mind as well. Keeping that in mind we suggested various sorts

of different materials and structural adaptations that could be adopted and incorporated in the construction phase to build these structures with full accuracy and paramount safety of the people living in the Himalayas. Finally we prepared a design on autocad revit software keeping in mind those aspects which we highlighted and did the scheduling and cost estimation of 3 types of structural buildings to find out which one of them will be the best cost-effective. It was a comparative study.

PS-I experience: The PS 1 experience was wonderful and will be reminiscing for us. It gave us a valuable opportunity to understand and experience the working of a research institute.

Learning Outcome: Our learning outcomes have been phenomenal in terms of the knowledge we've gained and finding out the new methodologies to deal with a problem we have been given to solve.

PS-I station: WeSwap Mobility Solutions Pvt. Ltd - Mechanical , Indore

Student

Name: VAIBHAV VIKAS .(2020A4PS0538P)

Student Write-up:

PS-I Project Title: FORCE ANALYSIS ON THE CHASSIS OF L5 CATEGORY ELECTRIC VEHICLES

Short Summary of work done: Our project was designing of chassis of an L5 electric vehicle. I was given the task of force analysis on the chassis and simulating the chassis model under those loads. I started with first studying the basic standards that apply on chassis design of ARAI and ICAT and then proceeded with the force analyses. I was studying the dynamic analysis and for minimizing the errors in the calculations I referred to research papers from reliable sources and standard vehicle dynamics books. The startup company for whom I was working were developing an innovative solution for electric vehicles so the chassis design had to specify those requirements. My team did the work together of the cad modelling and loads calculation and came up with a good design. Finally, the simulations were performed on the chassis cad model using Ansys and we got satisfactory results. Our design got a good feedback from the company. With this, we made a report on our analysis and presented our work in the final seminar.

PS-I experience: We swap mobility solutions Pvt Ltd is a startup company with an innovative idea on battery swapping techniques in electric vehicles. This was really a good experience for me as I was given the task of designing model with new requirements and in this process I got to interact with various people and give presentations regularly which helped me improve my communication skills.

Learning Outcome: I got to learn about the working of a company and got a chance to improve my communication and presentation skills. On the technical side I learnt various vehicle dynamics concepts and to apply them in real life scenarios.

Name: BOTU ROHITH(2020A4PS1882P)

Student Write-up:

PS-I Project Title: Chassis and Suspension design for a 3 - wheeled electric vehicle

Short Summary of work done: This project is aimed to develop a chassis and suspension system for an electric 3-wheeler of the L5 category or an E-Rickshaw for mass production by WeSwap Mobility Solution Pvt. Ltd. It mainly deals with designing a modular chassis that can be used for passenger and cargo, and a suspension system. We have created a CAD model on Fusion 360 of the modular Chassis and suspension system. In addition to this, we have used ANSYS to perform simulations and validate our design.

PS-I experience: It was good. I was able to design the Chassis and Suspension system considering the industry-level standards.

Learning Outcome: Automobile Chassis Design, Fusion 360, ANSYS, Suspension Design

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Name: B.ARVIND .(2020ABPS1837P)

Student Write-up:

PS-I Project Title: Chassis and Suspension design of L5 category electric vehicle

Short Summary of work done: This project is aimed to develop a chassis and suspension system for an electric 3-wheeler of the L5 category or an E-Rickshaw for mass production by WeSwap Mobility Solution Pvt. Ltd. The project mainly deals with designing a modular chassis that can be used for passenger and cargo, and a suspension system. We have created a CAD model on Fusion 360 and researched different suspension systems. Also, identification of material for the Chassis was undertaken. The material must provide enough strength and Torsional rigidity and be cheap and viable for mass production. So, Steel has been chosen for the Chassis.
Considering the weight reduction, we have chosen a trailing arm suspension system instead of a conventional leaf spring suspension system. Electric vehicles are usually heavy because of the battery packs; optimizing weight is necessary. Leaf springs are heavy compared to other suspension systems, and a wishbone suspension would be difficult to implement as we don't get enough ground clearance. So, we have designed a trailing arm suspension system.

PS-I experience: It was very nice to be part of the Chassis team. I learnt how to coordinate with teammates, split work, keep up deadlines. This experience taught me how work in done in a fast-paced manner in startups as opposed to big MNCs. We discussed and deliberated a lot on the Design aspects as a team. I loved working in a highly collaborative way as we had a lot of ideas, made a few mistakes, learnt and moved on quickly regarding the chassis design. We learnt a lot about Chassis together as a team. We worked together on Fusion 360 and I was able to realise how important the cloud feature of Fusion 360 was when working with teams. Overall, it was a very nice experiential learning opportunity.

Learning Outcome: I understand the details of a vehicle chassis very intimately now. I am able to understand the importance of chassis design not only in aesthetics but also how it helps in integrating other systems of the car. I am able to understand why and when to choose a particular design for a vehicle. I learnt about new technologies in Electric Vehicles like Modular Platforms and why they increase productivity in manufacturing. I also learnt about materials used to make the chassis and how to choose the best one suited to our applications.

PS-I station: Zecomy , Noida

Student

Name: SHREYAS BAJIRAO .(2020A2PS2434H)

Student Write-up:

PS-I Project Title: Pathway for Circularity of Construction and Demolition Waste

Short Summary of work done: My team firstly learned about the benefits of Circularity and circular economy and how to apply it in C&D sector.
We studied about the present status and presently available rules and regulations and what the authorities are supposed to do.
We highlighted the duties of different authorities concerned and the right way for disposal, collection and direction of C&D waste towards Circularity.
We provided information about various technologies available and what future technologies that can be implied.
We discussed about various actors involved,their working and did economic analysis of Circularity in this sector.
Finally we proposed our model for Circularity in C&D sector.

PS-I experience: It was a cool experience working under Zecomy. There was no burdening or work pressure from their sides and working was also very smooth

Learning Outcome: My team firstly learned about the benefits of Circularity and circular economy and how to apply it in C&D sector.
We understood the role of various authorities and the hurdles in their way
We studied about presently available technologies and actors involved along with economic evaluation and cost analysis

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Name: GARRE VATHSALYA .(2020A2PS2535H)

Student Write-up:

PS-I Project Title: Project report on state-of-the-art MRF

Short Summary of work done: Our work was to collect all the information that is that is required to establish a new material recovery facility. For that, we formed a basic framework of an MRF and started to research about the state-of-the-art technologies, The

areas in which we can establish the proposed capacity of MRF and the financial analysis since we were also given the task of keeping capital and operational expenditures in mind while researching about the equipment and labour needed.

PS-I experience: We enjoyed a lot working on this project since learning aboutthe establishment of an MRF is a completely fresh experience for us.

Learning Outcome: I learnt about what aspects are to be concidered before constructing an industrial structure, Calculating the market value of the products that are being produced and calculating the net revenue from that and comparing it with operational and maintenance costs involved to analyze the feasibility of the industry

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Name: RIYA ANANT UNDE .(2020A3PS1228P)

Student Write-up:

PS-I Project Title: Building a multi-sided digital platform for the reuse, repurpose, remanufacture and repair of industrial products.

Short Summary of work done: I worked with my team of four members to build a multi-sided digital platform for the reuse, repurpose, remanufacture and repair of industrial products. We primarily focused on the sectors of IT Assets and E-Waste, and worked to create a modified E-waste model that involved higher R hierarchies for slowing down the flow, comprising : Maintenance, Reliability and Shared Economy.

PS-I experience: It was positive experience, and both the company and my faculty mentor were very helpful.

Learning Outcome: I learnt how to build a multi sided platform that could act as a single tool for running an entire circular business and also manage all services, employees, customers, and partners on one platform, bringing the various stakeholders together and providing a customizable and scalable solution for the organisation and markets.

Name: POTTIGARI SREENIDHI .(2020A4PS1164H)

Student Write-up:

PS-I Project Title: PATHWAY FOR CIRCULARITY IN CONSTRUCTION AND DEMOLITION SECTOR

Short Summary of work done: I have done a research on construction and demolition waste management using case studies and how collecting and recycling of construction and demolition Waste takes place at an industry . I have studied on the processes and machinery used for recycling and reusing of construction and demolition waste management and also researched on their costs and vendors providing it .I have researched on products produced from construction and demolition waste and their feasibility. I Have tried to know about the actors involved in construction and demolition waste management . I have learnt how smart technology can be used in construction and demolition waste management .I have learnt about 2016 CPWD Guidelines given on construction and demolition waste management.

PS-I experience: It was a very good experience with ZECOMY. Zecomy officials were very welcoming and constantly guiding us. They were always open to our ideas and opinions . They provided us with different reference materials, research papers. Our PS Faculty Dr. Chanchal Chakraborty(Assistant Professor, Dept. of Chemistry, BITS Pilani - Hyderabad Campus) has been a source of constant guidance and paramount support throughout the project.

Learning Outcome: I have learnt about how construction and demolition waste management can be done in a sustainable way by applying circularity and the machinery used for it. Gained knowledge about the technology needed for reusing and recycling of CND waste and how it was processed , the feasibility of the products made by using CND waste . I have also learned how to manage a team and work in a group .

Name: ANSHUL KANODIA .(2020A7PS0174H)

Student Write-up:

PS-I Project Title: Sustainability Impact of Recycling

Short Summary of work done: My work was mostly concerned with making a framework to compute the assets saved during recycling of e waste rather than simply dumping them.

PS-I experience: It was an overall great experience for me. The company mentors and faculty instructors were very helpful and guided us throughout the project. My team members were very cooperative as well and we had a great time together working on the project.

Learning Outcome: Throughout the project, I learned about circular economy and the impact of recycling. While developing the framework, I also learned a bit about Excel formulas such as VLOOKUP.

Name: AKSHAT KOTHARI .(2020ABPS1861P)

Student Write-up:

PS-I Project Title: MULTI SIDED DIGITAL PLATFORM (MARKETPLACE) FOR RE USE, REPURPOSE, REMANUFACTURE AND REPAIR OF INDUSTRIAL PRODUCTS

Short Summary of work done: At zecomy, they currently focused only on the recycling business and wanted to enter into the reuse, refurbish side as well. Therefore, we focused on 2 sectors: IT Assets and E Waste sectors, created models that showed how to enter the reuse and refurbish company, identified specific organizations that might be contacted for the business, and also worked on how to integrate all of these into the Zecomy website.
We created a modified E waste pickup process model, which made the existing process completely follow the circular economy model(gives maximum efficiency).Also we did make a sample consumer help portal model which was missing in zecomy website.
We also worked on the IT Assets disposal system and reuse and recycling process of lithium ion battery .

PS-I experience: During the eight weeks of PS-1, I loved working on a project that covered multiple domains, including business and strategy development, research, etc. PS-1 provided me with my first-ever experience to the industry.
Throughout the practice school, the subject matter experts from the industry and our professor in charge were very helpful and gave us a lot of materials to assist us learn the company's waste management business and have a good understanding of the project.

Learning Outcome: The PS-1 assisted me in learning the work ethics required in the corporate sector, as well as skills like teamwork, time management, and presentation skills. It also assisted me in developing my problem-solving and creative thinking capabilities.

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