INTERNSHIP REPORT

(AS PER APSCHE GUIDELINES)

A REPORT ON

**SEMESTER-LONG INTERNSHIP**

**Name of the student: PENNA MAHESHBABU**

**Name of the college: Vignan’s Institute of Information Technology**

**Period of Internship: From December 2022 to April 2023**

**Year: 2022 - 2023**

**Name and address of the Intern Organization:**

**AICTE IDEA LAB,**

**Vignan’s Institute of Information Technology**

**Besides VSEZ, Duvvada, Vadlapudi Post,**

**Gajuwaka, Visakhapatnam-530049,**

**Andhra Pradesh, India.**

**An Internship Report on**

**FULL SEMESTER INTERNSHIP PROGRAM**

**(VR-19)**

*Submitted in accordance with the requirement for the degree of*

**BACHELOR OF TECHNOLOGY**

**in**

**Electronics and Communication Engineering**

*Under the Faculty Guideship of*

**Mrs. A. Usharani**

*Department of*

**Electronics and Communication Engineering**

**Vignan’s Institute of Information Technology**

**Submitted by:**

|  |  |
| --- | --- |
| **PENNA MAHESHBABU** | **19L31A04O5** |

*Department of* **Electronics and Communication Engineering**

**Vignan’s Institute of Information Technology**

**Student’s Decleration**

I, **PENNA MAHESHBABU (19L31A04O5)** a student of **Bachelor of Technology** from the Department of **Electronics and Communication Engineering, Vignan’s Institute of Information Technology** College do hereby declare that I have completed the mandatory internship from **24thDecember 2022** to **15thApril 2023** in **AICTE IDEA LAB** under the Faculty Guideship of **Mrs.A.Usharani**, Department of **Electronics and Communication Engineering, Vignan’s Institute of Information Technology.**

*(Signature and Date)*

**Offical Certification**

This is to certify that **PENNA MAHESHBABU (19L31A04O5)** has completed their Internship in **Vignan’s institution of information technology** on **IDEA LAB** under my supervision as a part of partial fulfillment of the requirement for the Degree of **B.Tech** in the Department of **Vignan’s institute of information technology**.

This is accepted for evaluation

**Endorsements**

*Faculty Guide*

*Head of the department*

*Principal*

*(Signatory with Date and Seal)*

**Certificate from Inter Organization**

This is to certify that **PENNA MAHESHBABU(19L31A04O5)** of **Vignan’s Institute of Information Technology,** underwent internship in **AICTE IDEA LAB** from Dec 2022 to April 2023.

The overall performance of the intern during their internship is found to be Satisfactory (Satisfactory/Not Satisfactory).

*Authorized Signatory with Date and Seal*

**ACKNOWLEDGEMENT**

We would like to express our gratitude to **Mrs.A.Usharani, Assistant Professor, Internal Mentor** Department of Electronics and Communication Engineering, for his valuable constant support and guidance throughout the course. Her guidance has been a constant source of inspiration for us.

This is to acknowledge and thank **Dr. K. Srinivasa Naik, Mentor of AICTE Idealab and Internship Guide** for giving me the opportunity to do an internship within the organization. I would like to express our gratitude to all the faculty of AICTE Idealab who created an enjoyable working ambience.

We express our sincere thanks to **Dr. L. Rathaiah**, Chairman, Vignan group of institutions, for his co-operation and providing facilities for doing this internship.

We express our sincere thanks to **Dr.V.Madhusudhan Rao**, Rector, **Mr.B.Srikanth**, Executive Director, Vignan Vizag Group, Visakhapatnam for their co-operation and encouragement for completion of this internship.

We express our sincere thanks to **Dr.B.Arundati**, Principal, Vignan’s Institute of Information Technology(A), Visakhapatnam for her co-operation and encouragement on this internship.

We express our sincere thanks to **Dr. B. Prasad Rao**, Head of the Department, Electronics and Communication Engineering, Vignan’s Institute of Information Technology(A), Visakhapatnam for his Valuable suggestions and encouragement for completion of this internship.

It gives an immense pleasure to acknowledge the support and cooperation we have received from the people from various disciplines while undergoing this B. Tech, Full Semester Internship.

Regards

**PENNA MAHESHBABU** **19L31A04O5**

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CHAPTER 1: EXECUTIVE SUMMARY

The company which I am assigned as an intern in Idea Lab is a collaborative workspace or a think tank that provides an environment for creative problem-solving, innovation, and brainstorming. It is a place where individuals or groups can come together to generate, develop, and implement new ideas. Idea labs are commonly found in universities, research institutions, and companies, and they typically have access to various tools and resources, such as technology, funding, and expertise, to help bring innovative ideas to fruition.

The main purpose of this idea lab is to provide a space where people can work together to tackle complex problems, create new products or services, and explore innovative ideas. Idea labs are designed to encourage creativity, collaboration, and experimentation, and they often provide a structured process for idea generation and development.In an idea lab, participants are encouraged to think outside the box and challenge conventional thinking. The focus is on generating new ideas, testing, and refining them, and then implementing them in a real-world setting. Idea labs can be an excellent way to foster innovation and drive progress in a variety of fields, including technology, science, education, and business.

AICTE IDEALAB is an idea implementation platform in Vignan’s Institute of Information Technology, Beside VSEZ, Duvvada, Visakhapatnam, Andhra Pradesh, India. Established in 2022, it is the best flatform at where every branch student can learn PCB designing, Lasor cutting, 3D Printing, wooden graving, 3D Scanning. AICTE under faculties and the IDEALAB teacher will teach about all these courses and their designing from basics. The Author trained in the field of PCB designing and Production work. The internship objective was to train their interns to enhance their skills and making them confident for role of industry ready engineer. During the internship period the author was involved in working with Lasor cutting, 3D printing, Wooden graving, 3D scanning production works. Furthermore, the author gained experience in project management, industry practices, and the internal external activities of the internship Lab.

Once ideas have been generated, an idea lab may provide resources and support for prototyping and testing those ideas. This can involve access to materials, tools, and equipment, as well as guidance on how to develop and test prototypes

CHAPTER 2: OVERVIEW OF THE ORGANIZATION

**Introduction of the Organization:**

The AICTE IDEALAB has the idea implementation platform where it makes Real Time product designing. I was worked as an intern in the role Graduate Engineer Trainee. The internship was divided into four phases which involves the production work and product designing. The first phase of internship they visited us to various departments in the IDEALAB. In the second phase they explained us the important of the maintenance department and how the department plays a vital role in the IDEALAB. In the third phase we have learned some basics topics which helps us to learn about the equipment used in the IDEALAB. The fourth phase involves the Intern Product designing.

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**VISION:**

* To provide a self-sustainable platform and train next generation of young minds, to execute their Innovative Ideas, complimented with holistic knowledge across disciplines. Upgrade the lab to a firm, in next decade and two, initially supported by AICTE, with investments thereon by us.
* Improvise the Centre of Innovation of our Institute that produced 100s of projects so far, leveraging on the technical and knowledge support of AICTE.
* Host Ideation workshops, and encourage students and faculty to learn new technologies, through Industry Collaboration.
* Build commercially viable products, catering socio economic needs thus nurturing innovativeness and encouraging entrepreneurship in student community, close by.

**MISSION:**

* Introducing innovative practices of teaching & learning.
* Undertaking Research & Development in thrust areas.
* Continuously collaborating with industry.
* Promoting strong set of ethical values.
* Serving the surrounding region and the nation at large.

**METHODOLOGIES**

The procedures and rules are quite different in internship. The IDEALAB recruit’s students as an intern through the proposal of idea given by the students. The selected intern students will get internship training for four months which includes giving them knowledge on various aspects like making them implement basic projects by teaching them all the necessary concepts required for it and make them do real time project at the end which helps them in considering it as a final year academic project along with the internship certificate which would be helpful for the students. They make students do the projects with multidisciplinary approach, so that students from different streams working together and will put their knowledge on project which will make easier to implement a project.

The main objectives and scope of the IDEALAB is as follows:

**Brainstorming and ideation**: Idea labs are often used as a space for individuals or teams to generate and develop new ideas. This can involve brainstorming sessions, workshops, or other activities aimed at sparking creativity and generating new solutions to problems.**Prototyping and testing**: Once ideas have been generated, an idea lab may provide resources and support for prototyping and testing those ideas. This can involve access to materials, tools, and equipment, as well as guidance on how to develop and test prototypes.

**Collaboration and networking:** Idea labs can also serve as a space for individuals and teams to collaborate and network with others who share their interests and goals. This can help to create a supportive community of innovators and problem-solvers.**Skill-building and training**: Idea labs may offer training and skill-building opportunities to help individuals and teams develop the skills they need to bring their ideas to fruition. This can include workshops or courses on topics like design thinking, project management, or entrepreneurs

CHAPTER 3: INTERNSHIP PART

As an intern at Idea Lab, I was responsible for a range of activities and tasks related to 3D printing, PCB design, and laser cutting. My daily tasks varied depending on the specific project I was working on, but I was expected to work closely with the rest of the team to complete tasks and contribute to the overall success of the organization.

Working conditions at Idea Lab were typically fast-paced and dynamic. I worked in a creative and collaborative environment alongside experienced professionals, which provided me with opportunities to learn and develop new skills. The work schedule was typically 9-5 Monday through Friday, although this varied depending on the specific project I was working on.

During my internship, I used a variety of tools and equipment, including 3D printers, PCB design software, laser cutting machines, and other specialized tools. I received training on how to use these tools safely and effectively, and I was expected to adhere to all safety protocols at all times.

In terms of tasks, my responsibilities included designing and prototyping new products, troubleshooting and maintaining equipment, assisting with quality control, and conducting research on new materials and technologies. I was also responsible for collaborating with other team members on group projects, communicating with clients or suppliers, and presenting my work to stakeholders.

Through my internship at Idea Lab, I acquired a range of valuable skills that are applicable in a variety of industries. These include technical skills such as 3D printing, PCB design, and laser cutting, as well as soft skills such as collaboration, communication, and problem-solving. I also gained experience working in a fast-paced and dynamic environment, which helped me develop a strong work ethic and adaptability. Overall, my internship at Idea Lab provided me with valuable real-world experience and prepared me for a successful career in the field of product design and development.

**ACTIVITY LOG FOR THE FIRST WEEK**

|  |  |  |  |
| --- | --- | --- | --- |
| **Day & Date** | **Brief description of the**  **daily activity** | **Learning Outcome** | **Person In- Charge Signature** |
| **Day – 1** | Installing Eagle Software | Successfully installed Eagle software |  |
| **Day - 2** | Creating a schematic and converting  it to a PCB | Created schematic diagram of PCB |  |
| **Day – 3** | Converting PCB Schematic into layout | Created layout of PCB circuit |  |
| **Day – 4** | Arranging the components and routing | Arranged components for routing |  |
| **Day – 5** | Using vias in single-layer PCBs | Used vias in PCB layer |  |
| **Day –6** | Producing Gerber files | Gerber files are generated. |  |

**WEEKLY REPORT**

**WEEK – 1(From Dt 24/12/2022 to Dt 30/12/2022 )**

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| **Objective of the Activity Done:** Installing and designing PCB in Eagle Software |
| **Detailed Report:** |
| **Installing Eagle Software:** |
| Eagle software is an open-source software used to design PCB. The software can be |
| downloaded in any type of browser by selecting operating system in windows or Mac. |
|  |
| **Designing PCB layouts in Eagle Software:** |
| The first step is to open Eagle Software. You have to log in in that after logging in, we’ll |
| get a terminal in which we have to get select new file in that file. We need to create a project |
| name after creating project. We need to design a schematic diagram. In that schematic, we go |
| with circuit diagram after completion of schematic view. We designed a layout layout should |
| be designed carefully. Once layout is completed, design also completed. |
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**ACTIVITY LOG FOR THE SECOND WEEK**

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| **Day & Date** | **Brief description of the daily activity** | **Learning Outcome** | **Person In- Charge Signature** |
| **Day – 1** | Introduction to LIVWIRE Software | Known LIVEWIRE Software |  |
| **Day - 2** | Introduction to PCBWIZARD Software | Known about PCBWIZARD software |  |
| **Day – 3** | Installing the LIVE WIRE Software | Successfully installed LIVEWIRE software |  |
| **Day – 4** | Installing the PCBWIZARD Software | Successfully installed PCBWIZARD software |  |
| **Day – 5** | Creating a Schematic in LIVWIRE | Created schematic diagram of PCB |  |
| **Day –6** | Schematic to layout Conversion using LIVWIRE & PCBWIZARD | Converted schematic into layout |  |

**WEEKLY REPORT**

**WEEK – 2. (From Dt 31/12/2022 to Dt 6/01/2023)**

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| **Objective of the Activity Done:** Designing PCB in live wire software. |
| **Detailed Report:** |
| Initially browse the liveware software in Google Chrome, based on required operating system. |
| Download the software after completion or installations software open the liveware software |
| in the laptop. We can able to see more number of tools to design PCB open the file. Click on |
| new create a project name of creating project. We need to design schematic of the PCB. Select |
| the required components of the screen. Based on the tools designed a schematic after that, we |
| need to design A layout for that schematic. The layout part we have to compact the PCB |
| schematic. We need to place all the components in a particular manner in liveware software. |
| We have one major advantage. That is, we can simulate the circuit, whether it is giving |
| the required components of the screen. Based on the tools designed a schematic after that, we |
| need to design A layout for that schematic. The layout part we have to compact the PCB |
| schematic. We need to place all the components in a particular manner in liveware software. |
| We have one major advantage. That is, we can simulate the circuit, whether it is giving |
| the required components of the screen. Based on the tools designed a schematic after that, we |
| need to design A layout for that schematic. |
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**ACTIVITY LOG FOR THE THIRD WEEK**

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| **Day & Date** | **Brief description of the daily activity** | **Learning Outcome** | **Person In- Charge Signature** |
| **Day – 1** | Designing some basic circuits. | Designed basic electronic circuits |  |
| **Day - 2** | Designed circuits using 555Timer, MUX, etc. | Designed 555 timer |  |
| **Day – 3** | Designed own circuits in LIVEWIRE software. | Designed general circuit using LIVEWIRE software |  |
| **Day – 4** | Learn about different layers in PCB. | Known about layers in PCB |  |
| **Day – 5** | Performed routing vias in PCB. | Arranged components for routing |  |
| **Day –6** | Produced gerberfiles. | Generated gerberfiles |  |

**WEEKLY REPORT**

**WEEK – 3 (From Dt 7/01/2023 to Dt 13/01/2023)**

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| **Objective of the Activity Done:** Project decided |
| **Detailed Report:** |
| Based on our capabilities and our knowledge, we all are decided to do a project that is smart |
| shoe. This project is mainly helps for older people in order to do this. We have learned and |
| completed PCB design and gain knowledge on different sensors. Wife. And some other |
| electronic devices. |
| The theme of the project is gate monitoring. In order to do this, we read the more research We |
| papers and more reports, and also we practiced older things that we have learned previously. |
| gather more info on Wi-fi module. |
| And also gathered basic information about Gyroscope, Accelerometer and FSR sensors. FSR censors |
| work based on pressure gyroscope and accelerometer observes the tilt angle and motion detection. |
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**ACTIVITY LOG FOR THE FORTH WEEK**

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| **Day & Date** | **Brief description of the daily activity** | **Learning Outcome** | **Person In-Charge Signature** |
| **Day – 1** | Introduction to AUTOCAD software | Known about AUTOCAD |  |
| **Day - 2** | Installed AUTOCAD Fusion 360 software | Successfully installed AUTOCAD Fusion 360 software |  |
| **Day – 3** | Learned about the interface in AUTOCAD | Known interfaces present in AUTOCAD |  |
| **Day – 4** | Created new project folder and designed basic models. | Created basic circuit models |  |
| **Day – 5** | Designed some other basic design | Designed other basic designs |  |
| **Day –6** | Modified the dimensions of the models. | Dimensions are modified |  |

**WEEKLY REPORT**

**WEEK – 4 (From Dt 18/01/2023 to Dt 23/01/2023)**

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| **Objective of the Activity Done:** Interaction with project guide. |
| **Detailed Report:** |
| In the fourth week, starting day met our project guide. Our project guide gave are advised |
| more better suggestions towards after that, I practices some basic designs of the PCB in the |
| Wizard and liveware software. |
| We performed how to develop a design of the PCBCB design involves 7 steps. PCB to design |
| schematic is the most important in order to design A real time PCB. We learn more accurately |
| PCB schematic on the last days of the week. We purchased basic components required for our |
| project. The PCB design must be saved in Garber file format. On the final day, we need to test |
| the PCB ensure that it works as expected. This involves using specialized testing equipment to |
| check the functionality of the circuit. |
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**ACTIVITY LOG FOR THE FIFTH WEEK**

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| **Day & Date** | **Brief description of the daily activity** | **Learning Outcome** | **Person-In-Charge Signature** |
| **Day – 1** | Designed own 3D models in AUTOCAD | 3D models are designed |  |
| **Day - 2** | G code file conversion has been done. | G code files are converted |  |
| **Day – 3** | Slicing using CURA software. | Performed slicing operations in CURA software |  |
| **Day – 4** | Learned about measurements | known about measurements |  |
| **Day – 5** | Learned about 3D printing materials | Known about 3D printing materials |  |
| **Day –6** | Hands-on work in 3D printers | Designed 3D printing models |  |

**WEEKLY REPORT**

**WEEK – 5 (From Dt 24/01/23023 to Dt 31/01/2023)**

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| **Objective of the Activity Done:** Designed printed circuit board on eagle software. |
| **Detailed Report:** |
| Eagle software has a user-friendly interface that makes it easy to learn and |
| use even for beginners’ wide range of components. Eagle comes with a vast Library of |
| predesigned components, making it easy to learn and use. |
| Eagle allows you to create custom components so you can design your own PCB. And also, it |
| allows you to design or create schematics for your circuit designs, which can help you |
| visualize and plan connections. Eagle provides a range of powerful tools. For laying out |
| species, including auto routing and manual routing to ensure that the board is optimized or |
| not. |
| Overall eagle is a powerful and flexible PCB design tool that is suitable for both beginners |
| and experienced designers. |
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**ACTIVITY LOG FOR THE SIXTH WEEK**

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| **Day & Date** | **Brief description of the daily activity** | **Learning Outcome** | **Person In- Charge Signature** |
| Day – 1 | Interaction class with principal madam | Interacted with principle mam and taken advices |  |
| Day - 2 | 3D printer demonstration and discussion with lab teacher | Know about of PCB |  |
| Day – 3 | Connecting project components and normal testing of working | Assembled the project components a circuit |  |
| Day – 4 | Arduino code testing and testing prototype | Arduino code testing and observed mistakes |  |
| Day – 5 | Testing prototype and code checking | Tested a prototype and code checks |  |
| Day –6 | Laser cutting engraving by member of idea lab internship | Know about laser cutting |  |

**WEEKLY REPORT**

**WEEK – 6 (From Dt 1/02/2023to Dt 8/01/2023)**

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| **Objective of the Activity Done:** Introduction to 3D printing and Laser cutting |
| **Detailed Report:** |
| On the starting day, interacted with principal madam. |
| **Introduction to 3D printing:** |
| 3D printing, also known as additive manufacturing is also a process of creating 3 dimensional |
| objects from a digital model, 3D printing allows customization of options Objects based on |
| specific requirements, such as size, shape and function. 3D printing can produce objects |
| quickly and efficiently, allowing for faster prototyping and production. |
| Overall 3D printing offers numerous benefits and advantages over traditional manufacturing. |
| **Introduction to laser cutting:** |
| Laser cutting is a manufacturing process that uses a high-powered laser beam to cut or |
| engrave materials such as metal, wood, plastic and fabric. This laser beam is focused a lens |
| and directed onto materials where it heats and melts, or vaporize the material. |
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**ACTIVITY LOG FOR THE SEVEN WEEK**

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| **Day & Date** | **Brief description of the daily activity** | **Learning Outcome** | **Person In- Charge Signature** |
| Day – 1 | Introduction about AutoCAD software. | Know about new software |  |
| Day - 2 | Installing autocad and fusion 360 and performing basing designs. | Learned how to use the software |  |
| Day – 3 | Learning about interfaces in AutoCAD and close look on all tools. | Learned about tools presenting in the software. |  |
| Day – 4 | Creating basic designs and basic models. | Design the models based on my knowledge. |  |
| Day – 5 | Asking doubts about regarding to AutoCAD Design and clarifying those doubts. | Clarity basics and unknown doubts. |  |
| Day –6 | Modifying the dimensions of the model | Troubleshooted basic things. |  |

**WEEKLY REPORT**

**WEEK – 7 (From Dt 8/02/2023to Dt 16/02/2023)**

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| **Objective of the Activity Done:** Installing and designing 3D models |
| **Detailed Report: Installing AutoCAD Fusion 360.** |
| AutoCAD fusion 360 is the most popular software for creating 3D models |
| The 3D models are basically used in so lot of use cases. By using AutoCAD, We can design |
| perfectly. And more accurately what we need in order to apply on real time environments, |
| The first basic thing is to design 3D model in AutoCAD. |
|  |
| **Designing new 3D models.** |
| To create a new 3D model, we should first draw or take the measures and dimensions. |
| Of the required model after taking measurements create the model and deploy in real time |
| Environment Put the file in the Pen drive attach the Pen drive to the. System and apply the 3D |
| printing design to the model. |
| Fusion 360 offers a wide range of features and tools that enable designers to create highly be |
| detailed and precise 3D models. The Sketch workspace allows for the creation of accurate 2D |
| sketches, which can then be extruded and refined using a variety of modeling tools such as |
| Revolve, Sweep, or Loft. Materials and textures can be applied to the model to create a |
| Realistic rendering that accurately represents the finished product. Once the design is |
| complete, it can exported in a variety of file formats for use in other applications or for 3D |
| printing. By following these steps, designers can create high-quality 3D models that are both |
| Visually appealing and functional. |

**ACTIVITY LOG FOR THE EIGTH WEEK**

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| --- | --- | --- | --- |
| **Day & Date** | **Brief description of the daily activity** | **Learning Outcome** | **Person In- Charge Signature** |
| Day – 1 | Introducing a laser cad software. | Learned about laser cad software |  |
| Day - 2 | Installation of Laser cad Software and learning basic principle of laser cutting. | Learn how to install the software and installed software. |  |
| Day – 3 | Design basic models on the Laser cad | Design the basic blocks |  |
| Day – 4 | Working on different models in Laser cad. | Design new models. |  |
| Day – 5 | Real time laser cutting and engraving performed based on our design models. | Real time product made. |  |
| Day –6 | Creating some more models and applied on laser cutting machine. | Based on our knowledge designed more real time products. |  |

**WEEKLY REPORT**

**WEEK – 8 (From Dt 17/02/2023to Dt 24/02/2023)**

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| **Objective of the Activity Done:** Laser cutting and wood Engraving |
| **Detailed Report:** |
| **LASER CAD:** |
| Laser cad is a popular software to design A laser cutting models, laser cad is a user friendly |
| software by using laser cad software. We can able to design accurate models for our project. |
| Whatever the models we have designed, we should save that model in DWR or DXF format. |
| AutoCAD and Mast Cam and also supported in Laser cad is a cost effective laser motion |
| control software running under windows, which is user friendly. |
| **LASER CUTTING:** |
| Laser cutting is mainly a thermal process in which a focused laser beam is used to cut the |
| material CNC laser cutter features a laser head containing a laser focusing nozzle. This head |
| and nozzle assembly focus a laser beam. |
| Laser cutting is a technology that uses a laser beam to cut or engrave materials such as wood, |
| plastic, and metal. The process involves directing a high-powered laser beam at the material to |
| be cut, which melts, burns, or vaporizes the material to create the desired shape or pattern. |
| Laser cutting is a precise and versatile method for cutting a variety of materials, and is |
| commonly used in manufacturing, art, and engineering. The quality and speed of laser cutting |
| depends on factors such as the power and type of laser, the thickness and type of material |
| being cut, and the complexity of the design. |

**ACTIVITY LOG FOR THE NINETH WEEK**

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| --- | --- | --- | --- |
| **Day & Date** | **Brief description of the daily activity** | **Learning Outcome** | **Person In- Charge Signature** |
| Day – 1 | Creation of .STL file for a project using fusion 360. | Designed a .STL file. |  |
| Day - 2 | Creation of .STL File and designed a small box to place components | Generated a .STL file infusion 360. |  |
| Day – 3 | Created design is given to 3D printing machine and observed the calibration of design. | Calibrations are observed |  |
| Day – 4 | After careful observation, we designed a cuboid boxes from 3D printing. | Successfully designed a box using 3D printing |  |
| Day – 5 | To get the correct shapes, we have polished the box with sandpaper. | Got a correct shape after polishing. |  |
| Day –6 | After polishing. We got the correct shape and accurate shapes of boxes | Box design successfully completed by using 3D printing. |  |

**WEEKLY REPORT**

**WEEK – 9 (From Dt 25 02/2023to Dt 4/03/2023)**

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| **Objective of the Activity Done:** Creation of .STL file |
| **Detailed Report:** |
| **Creation of STL file:** |
| For the creation of. STL files, we have downloaded fusion 360 in Fusion 360 open a new then |
| document and create our design using the layer tool. Click the window tab on the top menu, |
| select workspace and 3D layer panel choose your design and then 3D entrusion on the 3D tab. |
| You can now adjust the scale and depth of your model if we need to export the file for the |
| printing. Select 3D printing settings and click the scene button to show the full design. Shut |
| print and printer dropdowns to local and STL file, respectively. Finally, click export to save |
| the file to your computer. We have created STL files for parts of box using 3D printing. |
| Design the 3D model: Create a 3D model using a 3D modeling software |
| Export the 3D model as an STL file: Once the 3D model is complete, export it as an STL file |
| using the 3D modeling software |
| Check the STL file for errors: Use a tool such as Netfabb or MeshLab to check the STL file |
| for errors, such as non-manifold edges or inverted normals |
| Prepare the STL file for 3D printing or CAM: Use a slicer software, such as Cura or Slic3r, to |
| prepare the STL file for 3D printing or CAM |
| Print or machine the 3D model: Load the prepared G-code into the 3D printer or CAM |
| software, and follow the instructions to print or machine the 3D model. |

**ACTIVITY LOG FOR THE TENTH WEEK**

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| --- | --- | --- | --- |
| **Day & Date** | **Brief description of the daily activity** | **Learning Outcome** | **Person In- Charge Signature** |
| Day – 1 | Designing of PCB for our project circuit using eagle software. | Successfully designed a rough design of PCB. |  |
| Day - 2 | Create a new schematic of our circuit using Eagle Software. | Schematic circuit is generated. |  |
| Day – 3 | Then created schematic converted into layout. | The layout of Circuit is created |  |
| Day – 4 | After creating layout and arrange the components for routing. | Arranged components for routing |  |
| Day – 5 | Generated garbage files of our design. | Generated a Gerber file. |  |
| Day –6 | Finally give the garbage file to PCB machine. It will create PCB. | Successfully created a PCB board by using Eagle software. |  |

**WEEKLY REPORT**

**WEEK – 10 (From Dt 6/03/2023 to Dt 11/03/2023)**

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| **Objective of the Activity Done:** Design of PCB. |
| **Detailed Report:** |
| Eagle software is open software to design A PCB. The first step is to open eagle software after |
| opening. We have to log in into that after login successfully select the new file in that file. We |
| need to create a project name after creating a project name. We have to design A schematic |
| diagram of our PCB. |
| In Eagle Software creates a schematic diagram of the PCB offer completion of schematic |
| design layout of the PCB from the schematic after completion of the layout, the component |
| should be routed, then generate a garbage file, divided file to the PCB machine, set the |
| calibrations you need. You need finally, we designed a PCB board for our product. |
| Open Eagle and create a new schematic file. Place the components on the schematic and |
| connect them with nets. |
| Once the schematic is complete, switch to the board view and define the board shape and size. |
| Generate a netlist from the schematic to transfer the component connections to the board. |
| Place the components on the board and arrange them in a logical and space-efficient manner. |
| Route the traces to connect the components according to the schematic and design rules. |

**ACTIVITY LOG FOR THE ELEVENTH WEEK**

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| **Day & Date** | **Brief description of the daily activity** | **Learning Outcome** | **Person In- Charge Signature** |
| Day – 1 | Purchased all hardware components that are required for the project. | All the hardware components are purchased. |  |
| Day - 2 | Tested all the hardware components whether they are working properly or not. | Successfully tested all the hardware components. |  |
| Day – 3 | Learn about the advantages, disadvantages and specifications of the hardware components. | Successfully land about the advantages, disadvantages, and specifications of a particular hardware component. |  |
| Day – 4 | All the hardware components have been connected according to the circuit diagram. | The circuit diagram has been designed by connecting all the. Hardware components. |  |
| Day – 5 | All the components which are connected in the circuit. Could be inserted in the designed Circuit case box. | Circuit diagram which is designed is inserted into a. Circuit case box. |  |
| Day –6 | Successfully. The heartbeat components have been connected in the circuit. | Circuit designing using the hardware components have been successfully completed. |  |

**WEEKLY REPORT**

**WEEK – 11 (From Dt 13/03/2023 to Dt 18/03/2023)**

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| **Objective of the Activity Done: Designing circuit** |
| **Detailed Report:** |
| All the required components are purchased. You purchased FSR sensors, ESP.  32, C3, accelerometer, gyroscope, bad rechargeable battery, electrical wires. Registers,  switches, EC on the next day we tested all the components are working properly or not.    Successfully all the components are worked properly. On the next day we gained detailed  knowledge on the purchased components. Fr stands for force sensing resistor. The next day we  have learned about the sensors, disadvantages, there disadvantages and the specifications of  each and every component which is used in this project.  The relation between force and pressure  is inversely proportional. As the pressure increases, the resistance decreases. ESP 32 C3 is a  WiFi module. It is used to connect the cloud. Gyroscope and accelerometer is used to find the  angular velocity of the person. The easiest way to connect to an FSR is to use a breadboard.  This works great for prototyping and testing. If you need a more permanent solution, I highly  recommend the Economy FCI Clincher Connector. You can just claim these connectors around  the silver traces of the connector and easily attached jump or due point cable. |

**ACTIVITY LOG FOR THE TWELVETH WEEK**

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| **Day & Date** | **Brief description of the daily activity** | **Learning Outcome** | **Person In- Charge Signature** |
| Day – 1 | Installation of Arduino software. | Successfully installed Arduino software. |  |
| Day - 2 | Install ESP 32 C3 module package in Arduino software. | Install ESP 32 C3 package in Arduino software. |  |
| Day – 3 | Write a code to connect ESP 32 C3 into cloud. | Written code for ESP 32 C3 module. |  |
| Day – 4 | Write a code to attach Google sheet to store data. | Successfully written a code for Arduino. |  |
| Day – 5 | Attach the code to ESP 32 C3 module to get the data. | Dumped code into ESP 32 C3 successfully. |  |
| Day –6 | Connect to the FS sensor to the shoes. | Connections of FSR sensors are done successfully. |  |

**WEEKLY REPORT**

**WEEK – 12 (From Dt 20/03/2023 to Dt 25/03/2023)**

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| **Objective of the Activity Done:** Arduino installation. |
| **Detailed Report:** |
| Install Arduino software in PC. Watch the Arduino interface terminal on the screen. Install the  ESP 32 C3 module package. In the Arduino software write Arduino code regarding to gyroscope  and accelerometer. The code is for the connect to SP 32. C3. To connect the cloud. Arduino is  a free environment software to connect the cloud. Write a code to attach the Google sheet, copy  the enrollment ID and generate a code for the. To connect the Google sheet into the cloud, attach  the code into SP 32 C3 mini one to get the sensors data. Google Sheets is designed to be a  collaborative tool allowing multiple users to edit and view the same spreadsheet simultaneously \  in real time.  Google Sheets is a cloud based application, meaning that it is a accessible from anywhere with  an Internet connection and data is stored in. Securely in the cloud, eliminating the errors and  the need for local storage, Google Sheets offer a wide range of builtin functions and formulas  which can be used to perform complex calculations and data analysis tasks. It includes tools  such as. Macros and app scripts which can be used to automate repetitive tasks and streamline  workflows. It can be customized using. Add ONS and scripts, allowing users to tailor the  software to their specific needs. It is accessible to users with disabilities with features such as  screen reader support and keyboard shortcuts. Google Sheets is build with security in mind with.  Robust data encryption, 2 factor authentication, and other security features to protect sensitive  Data. |

**ACTIVITY LOG FOR THE THIRTEENTH WEEK**

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| **Day & Date** | **Brief description of the daily activity** | **Learning Outcome** | **Person In-Charge Signature** |
| Day – 1 | Parking on Google Sheets to collect the sensors data. | Learn how to work on Google Sheet. |  |
| Day - 2 | Arranged all the necessary parameters in the Google Sheets to collect the data as a titles. | Arranged all the necessary parameters in Google Sheets. |  |
| Day – 3 | Deployment ID should be added to the Arduino code to upload the data into the cloud. | Deployment ID and password are kept in Arduino code. |  |
| Day – 4 | Testing the code. Whether the data is uploaded into the excel sheet in the cloud or not. | Testing on data successfully completed. |  |
| Day – 5 | Plot the example graphs based on the centuries data. | Rough graphs are plotted. |  |
| Day –6 | Designed full formal of Google Sheets to store data. | Successfully designed a Google Sheet. |  |

**WEEKLY REPORT**

**WEEK – 13 (From Dt 27/03/2023 to Dt 1/04/2023)**

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| **Objective of the Activity Done:** Working on Google Sheets. |
| **Detailed Report:** |
| Worked on Google Sheets to get the census data. Arrange all the  necessary parameters in the Google sheet to collect the data. Deployment code should be  placed in Arduino code. Test on data weather Arduino. Weather obtaining correctly or not  plotted example based on sensor data. Designed full format of Google sheet to store the data.  Sensors act as a master and ESP 32 3 module act as a slave. Hence master and slave  communication will happen. Sensor collects the data and it will give to the ESP 32 C3. It will  set the data in Google sheet. ESP 32 module there are 2 I2C communication modules and 2  ISP. As accelerometer and gyroscope sensor was connected and it will act as a slave to the US  with 32 Mathur. Show the communication will occur between the ESP 32 module and  accelerometer and gyroscopic sensor. So, the accelerometer and gyroscope sensor will detect  the angular velocity as well as the angle of the food which is put on the floor. So according to  that the values XYZ of accelerometer and gyroscope sensor were noted into the Google  sheet. So from that we can get the. Graph. From the values of accelerometer and gyroscopic  sensor output. So finally, according to the graph analysis, the patient could know about his gait  analysis. |

**ACTIVITY LOG FOR THE FOURTEENTH WEEK**

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| **Day & Date** | **Brief description of the daily activity** | **Learning Outcome** | **Person In-Charge Signature** |
| Day – 1 | Dump the Arduino code into ESP 32 C3 module. | Successfully dumped Arduino code. |  |
| Day - 2 | Set the Wi-Fi ID and password in the ordinary code, then dumping into ESP 32 C3 module. | Set Wi-Fi ID and password. |  |
| Day – 3 | Tested Arduino code whether it is working properly or not. | Successfully tested Arduino code. |  |
| Day – 4 | Observe the data in Google sheet whether it is up to the requirements or not. | Observed the sensor data. |  |
| Day – 5 | Plotted the graphs based on sensor data. | Plotted graphs based on sensors data. |  |
| Day –6 | Observed the graphs whether the slopes are accurate or not. | Grapes are observed. Hey. |  |

**WEEKLY REPORT**

**WEEK – 14 (From Dt 2/04/2023 to Dt 8/04/2023)**

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| **Objective of the Activity Done:** Dumping of Arduino code in ESP 32 C3 module. |
| **Detailed Report:** |
| Dump the Arduino code into ESP 32 C3 module. Set the Wi-Fi ID and password in the |
| Arduino code. Then again dump code into ESP 32 C3 module. Test the Arduino code |
| whether it is working properly or not. Observe the Google sheet data whether the sensors |
| producing data in correct manner or not. Observe the data in Google Sheets plot the graph |
| based on sensors data observe the graph after plotting observe carefully. Where the slops |
| Indicates that whether the person walking style is perfect or not. But if your computer  couldn’t identify the device then you have to install the virtual com port drivers from the  official website of the Arduino so you can visit the link and download appropriate driver for  your operating system. Accelerometer and gyroscope sensor values are being uploaded to  Google sheet through Google cloud. Collect accelerometer plus gyroscope values and map  those values to the patients movement. Based on angle plus acceleration of patient and upload  them using WiFi module inside the ESP 32 C3. These values can be monitored anywhere,  anytime with patients cloud storage for years. This device and corresponding Google sheet  data help in remote monitoring of patient. Viral vital parameters thereby with diagnosis helps  in specific speedy recovery and avoids human dependencies and is much more lifesaving. |

**ACTIVITY LOG FOR THE FIFTEENTH WEEK**

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| **Day & Date** | **Brief description of the daily activity** | **Learning Outcome** | **Person In- Charge Signature** |
| Day – 1 | Checking loose connections in Smart shoe. | Loose connections are  checked. |  |
| Day - 2 | Checking the FSR and accelerometer gyroscope sensors. | Gathered sensor data and analyzed. |  |
| Day – 3 | Testing and working process of smart shoe. | Tested how much accuracy result it is giving. |  |
| Day – 4 | Testing and working process of smart shoe. | Hardware connections are checked on smart shoe. |  |
| Day – 5 | Trials on smart shoe. | Tails are done successfully. |  |
| Day –6 | Observed working of smart shoe in trails | Smart shoe is successfully completed. |  |

**WEEKLY REPORT**

**WEEK – 15 (From Dt 10/04/2023 to Dt 15/04/2023)**

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| **Objective of the Activity Done:** Working Process of smart school. |
| **Detailed Report:** |
| Once the Arduino code is dumped into the ESP 32. Arrange the AFSAR  sensors under the 4th soul. Connect the ESP 32 C3 to the Google sheet attached. The both the \  sensors applied pressure on Fr sensor. As the pressure increases, the resistance of the accessor  sensor decreases. The access sensor are attached to ESP 32 C3. Find all the respective data in  Google sheet. Observe the. Accelerometer data and gyroscopic sensor data and episode sensor  data. Plot the graph for each sensor data individually. At the last plot the graph by overall  data.Observe the graph where the slopes are occurred.  Slopes indicates that the walking style is  perfect or not. Accelerometer and gyroscope sensor values are being uploaded to Google  Sheets through the Google cloud. Collect accelerometer gyroscope values and map ,get now  the values to patient movement based on angle plus acceleration of place patient and upload    them using WiFi module inside the ESP 30 through. Values can be monitored anywhere and  anytime with precision cloud storage for years, this monitoring of patient. Vital parameters  thereby with 20 4 by 7 diagnosis helps in speedy recovery and avoids human dependence and  much more life saving |

**CHAPTER 5: OUTCOMES DESCRIPTION**

**Describe the real time technical skills you have acquired (in terms of the job-related skills and hands on experience)**

As part in this internship, I acquire the real time skills like PCB design using EAGLE software. I have acquired a good knowledge on PCB designing and 3D-printing .

The main skills I acquire this is to design a PCB with EAGLE. I involved in the live project and get what the requirements needed to design a smart shoe. I have knowledge to build the proper calibrations required to design 3D printing designs. The various calibrations are length, breadth and depth and power.

We observe the good mechanism of the PCB in the stipulated time and maintain the proper form and various design in the EAGLE software.

I have gained knowledge on the FUSION 360 software and able to design the various 3D models of the smart shoe. These parts can be manufacture by the carbon fiber materials, then only it flies without any vibrations. By using the parts placed on the frame to connect the parts on the frame and design a smart shoe. I really enjoyed while learning the knowledge on the PCB design.

**Describe the real time technical skills you have acquired (*in terms of the job-related skills and hands on experience)***

Describe the managerial skills you have acquired (in terms of planning, leadership, team work, behaviour, workmanship, productive use of time, weekly improvement in competencies, goal setting, decision making, performance analysis, etc.

Management Skills are important to lead a team and drive the organization in the right direction.

And to be a good manager it is important to have skills like Planning and creating an effective strategy, good communication skills, decision making, leadership skills, problem-solving skills, time management, conceptual-skills, controlling, motivating, and leading the team, etc. A Manager with good managerial skills is one of the pillars of the organization.

I have a proper planning to gain the knowledge on the technology like what is this technolog And how does it works. And how it will helpful to the society. I have utilized the time for designing of the PCB and maintain the proper forming of the PCB using EAGLE software.

In our internship, we have designed a Smart shoe for the elder people. Actually this is useful to paralysis patient by calculating the various parameters like tilt angle of the foot.

**Describe the managerial skills you have acquired** (*in terms of planning, leadership, team work, behaviour, workmanship, productive use of time, weekly improvement in competencies, goal setting, decision making, performance analysis, etc.*

*Describe how you could improve your communication skills (in terms of improvement in oral communication, written communication, conversational abilities, confidence levels while communicating, anxiety management, understanding others, getting understood by others, extempore speech, ability to articulate the key points, closing the conversation, maintaining niceties and protocols, greeting, thanking and appreciating others, etc.,)*

*I have improved my oral communication by speaking english with the faculty and gave various seminars or reviews on the technology. I have clarified my doubts with the faculty on the english language only. I have given number of reviews for getter confidence on my knowledge and proper communication. Now I am able deliver my content without any stage fear and make it understandable to the viewers.*

*I have worked on my written communication and conversational abilities and maintain good confidence while communicating the project. While delivering the review, I should maintain a good eye contact with the viewers. And myself controlling my anger during the presentations on the stage. I have gained a good knowledge on the proper interactions with the students like how to deliver and make it understandable. This will help me to improve my confidential and oral communication during different presentations.*

**Describe how you could improve your communication skills** (*in terms of improvement in oral communication, written communication, conversational abilities, confidence levels while communicating, anxiety management, understanding others, getting understood by others, extempore speech, ability to articulate the key points, closing theconversation, maintaining niceties and protocols, greeting, thanking and appreciating others, etc.,)*

Describe how could you could enhance your abilities in group discussions, participation in teams, contribution as a team member, leading a team/activity

To function successfully in a small group discussions, students need to be able to communicate clearly on intellectual and emotional levels. A good communicator should possess various qualities like implementing the ideas in smart way.

I, myself consider as a team lead, because I can manage my skills and ideas to design different parameters. This will help me to improve my skills and active participation in the group discussion. This effective way of participating in a group discussion on project leads to successful completion of the project.

I can manage my team members and have good healthy during the internship programme. This internship programme has given a lot of interest to learn a lot of unknown and advanced skills. I acted as a team lead for getting the proper work and maintain good time management for getting the output of the result.

**Describe how could you could enhance your abilities in group discussions, participationin teams, contribution as a team member, leading a team/activity.**

Describe the technological developments you have observed and relevant to the subject area of training (focus on digital technologies relevant to your job role)

I have developed and observed the relevant technologies like 3D printing,PCB design and laser cutting. The smart shoe involves the major role in the society in the upcoming days. This will help the society to enhance the working of the projects.

This will lead to easier life and maintain the good communication technology between the customers. The technology involve various trending technologies like cloud computing and Internet of Things.

These advancement of the technologies leads to the proper planning and enhancing of the ideas in a different way. This smart shoe can be developed by using the various components like ESP2-C3,FSR sensors and gyroscope accelerometer sensors.

I have observed the various connections while developing a design of the project. By connecting the various ways, we can conclude that the development of the design in various technologies is quite difficult.

I have observed various conditions of the smart shoe in advancement of technology and have learned the controlling of smart shoe .

**Describe the technological developments you have observed and relevant to thesubject area of training** *(focus on digital technologies relevant to your job role)*

In recent years, there have been significant technological developments relevant to the subject area of training at Idea Lab, including advancements in digital technologies that have greatly impacted the fields of 3D printing, PCB design, and laser cutting and engraving.

One of the most notable advancements in 3D printing technology has been the development of multi-material 3D printing, which allows for the creation of complex objects with multiple components or materials. This technology has greatly expanded the possibilities for product design and development, enabling designers to create more intricate and sophisticated products.

In the area of PCB design, the development of computer-aided design (CAD) software has greatly streamlined the design process, allowing designers to create complex circuit boards more efficiently and accurately. Additionally, advancements in automation and machine learning have enabled the use of artificial intelligence (AI) algorithms to optimize circuit board design for maximum performance and efficiency.

Finally, advancements in laser cutting and engraving technology have greatly expanded the range of materials that can be cut or engraved, including metals, plastics, and even wood. Additionally, the development of computer-controlled laser systems has greatly increased precision and accuracy in laser cutting and engraving, allowing for the creation of highly intricate designs and patterns.

Overall, these technological developments have greatly impacted the fields of 3D printing, PCB design, and laser cutting and engraving, and have greatly expanded the possibilities for product design and development. As an intern at Idea Lab, you will have the opportunity to work with these cutting-edge technologies and contribute to the development of innovative products that leverage these advancements.

**INTERNSHIP COMPLETION CERTIFICATE, PHOTOS & VIDEO LINKS**

