AN INTERNSHIP REPORT

SUBMITTED TO THE SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE
IN THE FULFILLMENT OF THE REQUIREMENT

OF

THIRD YEAR OF INFORMATION TECHNOLOGY

SUBMITTED BY

Name of Student: Vedant Umesh Saikhede
PRN:72149185F
Mobile No:7447554482
Email ID: vedant.szpuq177@sinhgad.edu

WITH INDUSTRY

Company Name: iNeuron Intelligence Pvt Ltd
Mailing Address: contact@ineuron.ai

UNDER SUPERVISION OF

Supervisor Name: Prof. Abhilasha. S. Shinde
Mobile No: 9572223373

Start Date for Internship:**1st Feb 2023**
End Date for Internship: **5th Mar 2023**

Report Date:18th May 2023

Sinhgad Institutes

DEPARTMENT OF INFORMATION TECHNOLOGY
STES'S SMT.KASHIBAI NAVALE COLLEGE OF ENGINEERING, PUNE - 411041

2022-2023

iNeuron Intelligence Pvt Ltd

17th Floor Tower A, Brigade Signature Towers,
Sannatammanahalli, Bengaluru, Karnataka -
562129.

Internship Experience Letter

DATE: 5th March 2023

TO WHOM IT MAY CONCERN

This is to certify that Mr/Ms/Mrs Vedant Saikhede has successfully completed internship program from 1st February 2023 to 5th March 2023 in **Heart Disease Diagnostic Analysis** at INEURON INTELLIGENCE PRIVATE LIMITED. During their internship programme with us, they demonstrated exceptional skills with a self-motivated attitude to learn new things and implement them end to end with all of our mentioned industrial standards. Their performance was excellent and was able to complete the project successfully on time.

We wish them all the best for future endeavours.

Regards,
Sudhanshu Kumar
CEO & Chief AI Engineer at iNeuron.ai

ACKNOWLEDGEMENT

I would like to thank **Sudhanshu Kumar,** Supervisor of **iNeuron Intelligence Pvt Ltd** to give me the opportunity to do an internship within the organization. I also would like to thank all the people that worked along with me in the organization with their patience and openness. They created an enjoyable working environment. It is indeed with a great sense of pleasure and immense sense of gratitude that I acknowledge the help of these individuals.

I am highly indebted to Principal **Dr. A. V. Deshpande** and Vice-Principal **Dr. K. R. Borole,** for the facilities provided to accomplish this internship. I would like to thank my Head of the Department **Dr. Manoj L. Bangare** for her constructive criticism throughout my internship.

I would like to thank **Mrs. A. S. Shinde** Internship Coordinator Department of Information Technology for his support and advice to get and complete internship in above said organization.

I am extremely grateful to my department staff members and friends who helped me in the successful completion of this internship.

Name and Sign of Student: Vedant Umesh Saikhede

Place: Pune

Date:18/05/2023

COMPANY/ORGANIZATION BACKGROUND

Name of Company	iNeuron Intelligence Pvt Ltd
Company address	17th floor Tower A, Brigade Signature Towers, Sannatammanahalli, Bengaluru, Karnataka 562129.
Contact number of company	+91 7666122288
Company background	Provide self-placed internship to get hands on experience of industry standards and architecture and provide technical Courses
Name of supervisor	Sudhanshu Kumar
Contact number of supervisor	+91 7666122288
Email ID of supervisor	sudhanshu@ineuron.ai

CONTENTS

1. INTRODUCTION TO INTERNSHIP

- Machine Learning is the science of getting computers to learn without being explicitly programmed. It is closely related to computational statistics, which focuses on making predictions using computers. In its application across business problems, machine learning is also referred to as predictive analysis. Machine Learning is closely related to computational statistics. Machine Learning focuses on the development of computer programs that can access data and use it to learn themselves. The process of learning begins with observations or data, such as examples, direct experience, or instruction, in order to look for patterns in data and make better decisions in the future based on the examples that we provide. The primary aim is to allow the computers to learn automatically without human intervention or assistance and adjust actions accordingly.

- Machine learning is one of the most exciting technologies that one would have ever come across. As it is evident from the name, it gives the computer that which makes it more like humans: The ability to learn. Machine learning is actively being used today, perhaps in many more places than one would expect. We probably use a learning algorithm dozens of times without even knowing it.

- To get started with machine learning using Python, you will need to have a basic understanding of Python programming and some knowledge of mathematical concepts such as probability, statistics, and linear algebra.

- scikit-learn: This library provides a wide range of machine learning algorithms, including supervised and unsupervised learning, and it is built on top of other libraries such as NumPy and SciPy.

- TensorFlow: This library is an open-source machine learning framework developed by Google

2. MODE OF INTERNSHIP

Mode of Internship: Online (Remote)

3. DOMAIN OF INTERNSHIP

Machine Learning (Project: Heart Disease Diagnostic Analysis)

4. OBJECTIVES OF INTERNSHIP

- How to determine and measure program complexity.
- Python Programming.
- ML Library Scikit, NumPy, Matplotlib, Pandas , Theano , TensorFlow.
- Statistical Math for the Algorithms.
- ML Algorithms.
- Classification and Regression
- Learning to solve statistics and mathematical concepts.

5. MOTIVATION/SCOPE OF INTERNSHI

Motivation: My motivation to pursue a machine learning internship stem from my deep passion for the field and my desire to contribute to the advancement of AI technologies. The motivation for pursuing an internship as a Machine Learning intern can be driven by several factors, to gain practical experience in the field, to learn new programming languages and technologies, to apply classroom knowledge to real-world projects, and to build a professional network.

Scope: A machine learning internship offers an exciting opportunity to apply theoretical knowledge to real-world scenarios, working on projects that have a tangible impact. During the internship.

- Enhance my understanding of machine learning algorithms, frameworks, and tools: By collaborating with experienced professionals, I aim to deepen my knowledge of various ML techniques and gain exposure to state-of-the-art tools and frameworks.

- Contribute to real-world projects: I hope to be involved in projects that address complex challenges and have a meaningful impact. Whether it's developing a recommendation system, improving fraud detection algorithms, or enhancing natural language processing models, I am eager to contribute my skills and creativity to make a difference.

6. METHODOLOGIES LEARNT IN INTERNSHIP

During a machine learning internship, I have learned lots of different concepts and methodologies some of them are,

1. Data Extraction:
   The dataset used for analysis is the heart disease dataset provided by the UCI Repository. It contains 76 attributes out of which only 14 are used. We will be using the Cleveland dataset.

2. Data Preprocessing:
   After Exploratory Data Analysis carried out on the dataset, we have certain observations with the dataset. Here are a few columns which contain categorical values but have been incorrectly labeled as numeric. As a part of data preprocessing, we will convert them to categorical values.

3. Data Exporting:
   Once the data has been cleaned in the data preprocessing stage, we will export the cleaned dataset into a new file with .csv format.

4. Dataset Loading and Modification:
   The exported .csv dataset file – 'preprocessed_heart_disease_dataset.csv' will be. imported into Tableau Public Desktop. Since this a .csv file, we will choose the 'Microsoft Excel' file option when prompted to import dataset into Tableau.

5. Data Analysis:
   Once the data has been loaded into the Tableau Desktop software, we perform the analysis for the various medical parameters provided in the dataset and study the relationship between them. Based on these patterns, we try to draw approximate inferences about the data provided based on visualizations created.

Software requirements:

1) Anaconda Navigator (anaconda3)

2) Python

3) Jupyter Notebook

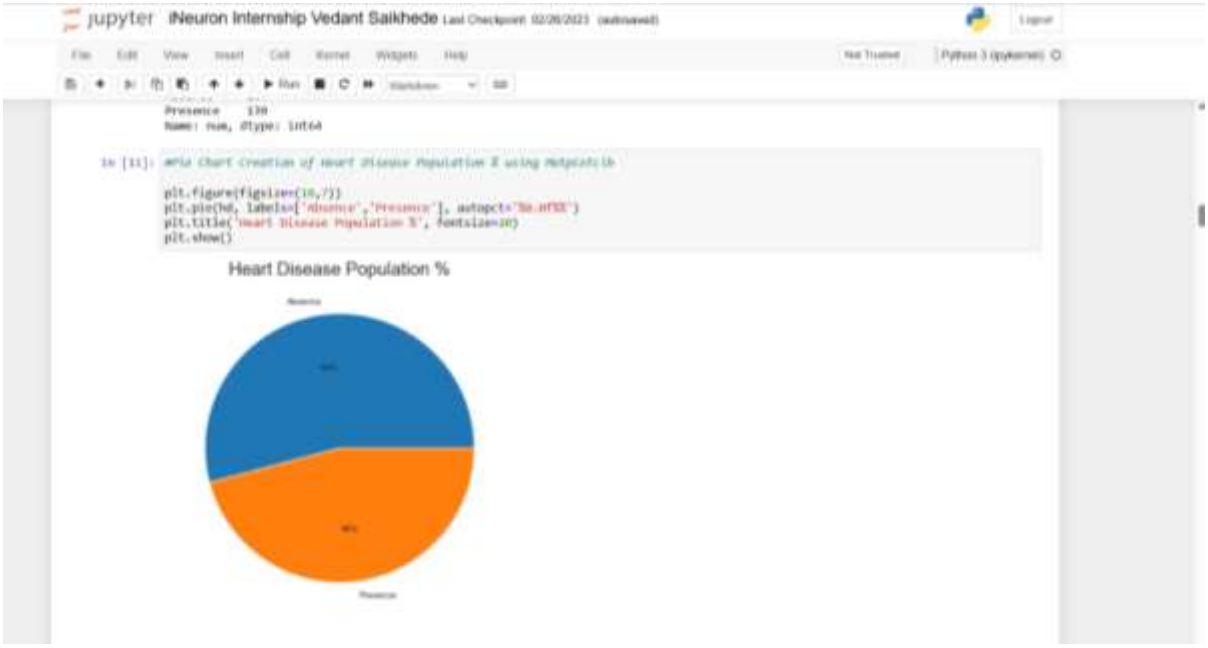
4) pip

5) Python libraries

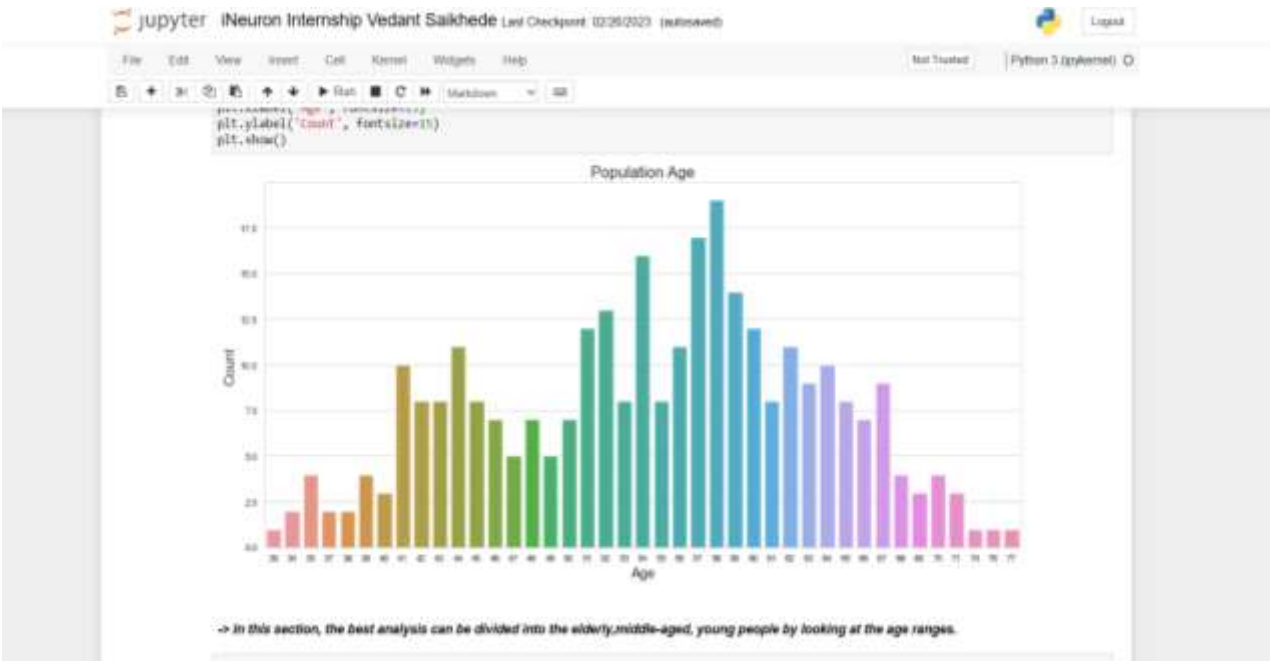
Hardware requirements:

1) Computer or Laptop

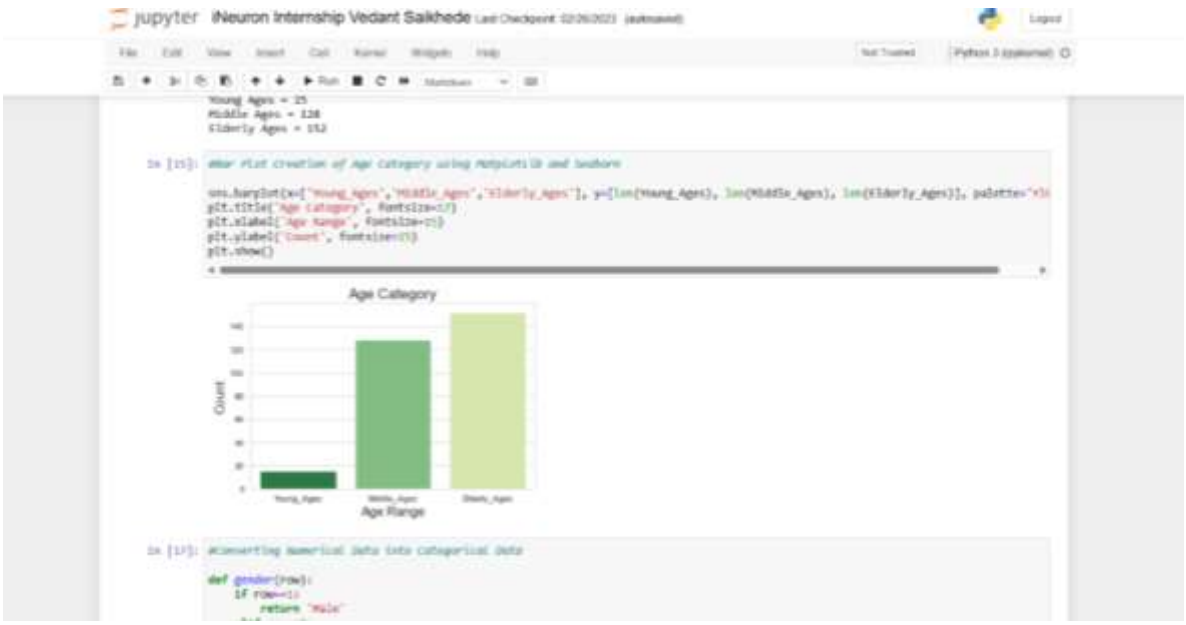
7. OUTCOME/RESULTS OF INTERNSHIP

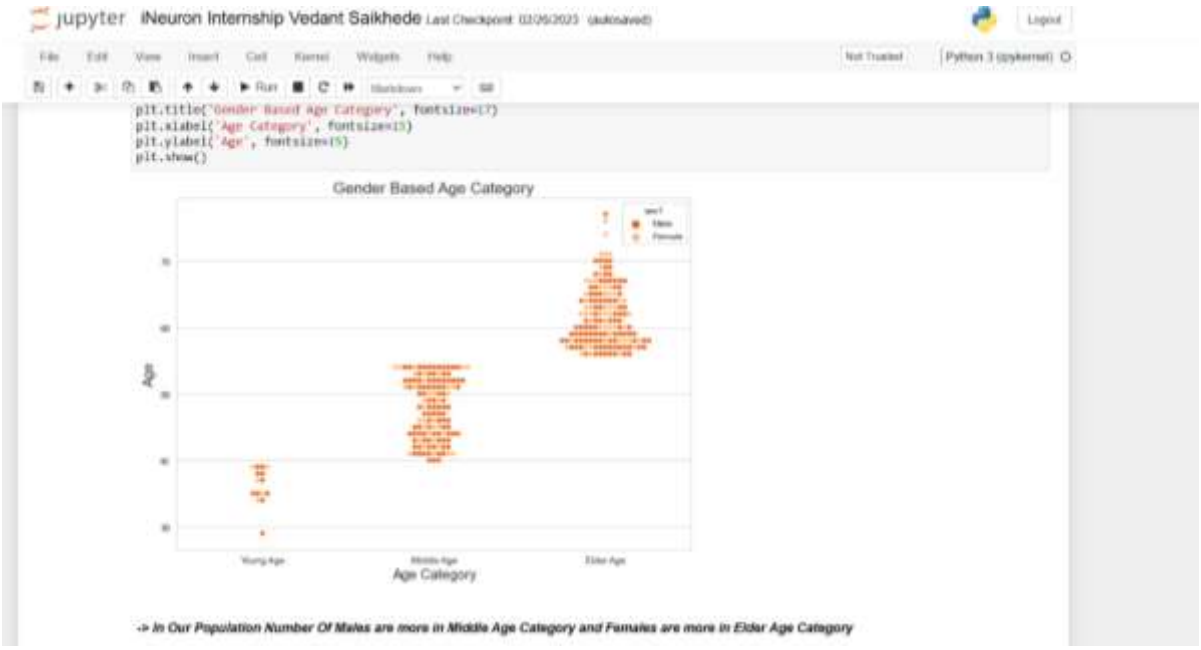


- **Heart Disease Population %**

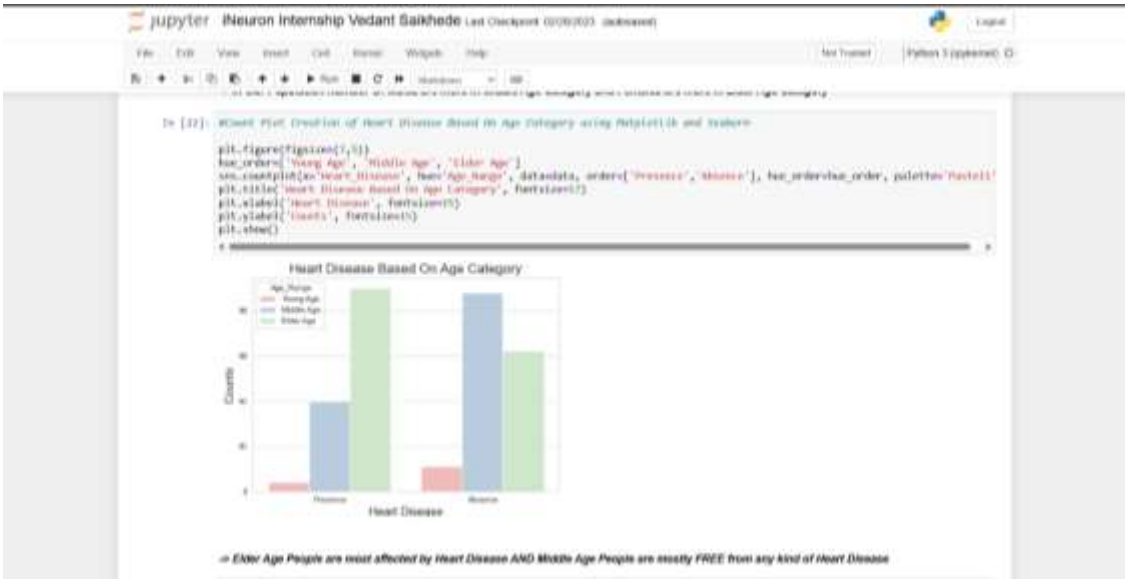


- **Population Age**

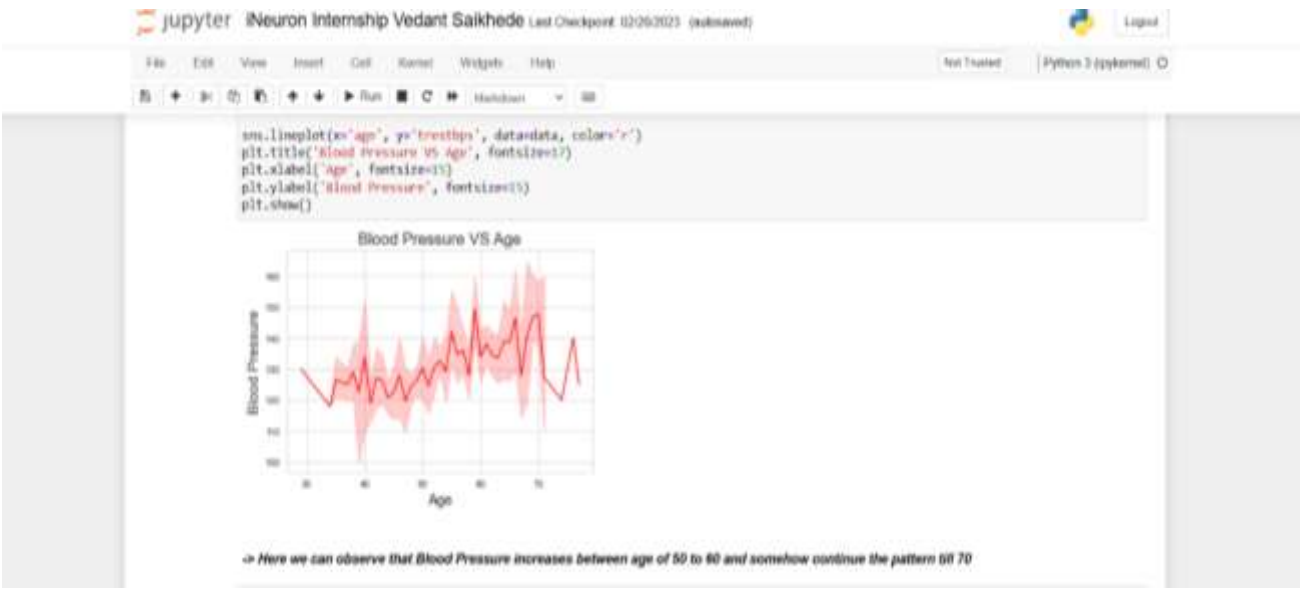




- **Gender Based Age Category**



- **Heart Disease Based on Age**



- **Blood Pressure VS Age Graph**

- **Final Output**

8. SUGGESTIONS FOR IMPROVEMENT BY INDUSTRY

1. Schedule regular check-in:
   Give interns a regular opportunity to ask questions, talk about their performance, understand how they can improve, and offer feedback. While a one-on-one with their manager is a good place to start, schedule periodic human resources check-ins as well. These meetings are a chance for interns to further develop their career, provide insight on how your internship program can improve, and ensure they're getting the work experience they need.

2. Time Management:
   While you were able to complete your assigned tasks within the given deadlines, there were instances where you could have managed your time more efficiently. I suggest that you prioritize your tasks and create a schedule that allows you to complete your work on time and without compromising quality.

3. Soft Skills Development: In addition to technical skills, emphasize the development of soft skills that are crucial in the industry, such as effective communication, teamwork, and project management. Providing opportunities for interns to work in teams, present their work, and engage in cross-functional collaborations can help them develop these skills.

9. CONCLUSION

We have successfully developed Machine Learning Model for Heart Disease Diagnostic Analysis. From this model we can conclude that Males are more prone to heart disease. And People having asymptomatic chest pain have a higher chance of heart disease. 45.87% of People suffer from heart disease.

Additionally, the internship experience should not only focus on technical skills but also emphasize the development of soft skills such as communication, teamwork, and project management. This holistic approach prepares interns to excel not only in technical aspects but also in collaborative and leadership roles within the industry.

Overall, I am grateful for the opportunity to have participated in this internship.

REFERENCES

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- GitHub - a web-based platform for version control and collaborative software development. It is commonly used by Java developers to store and share their code with others.

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- NumPy Tutorial: http://wiki.scipy.org/Tentative_NumPy_Tutorial

- Pandas Tutorial: http://pandas.pydata.org/pandas-docs/stable/tutorials.html

- Matplotlib Tutorial: http://matplotlib.org/users/beginner.html

- IPython Notebook: https://ipython.org/ipython-doc/3/notebook/index.html

ANNEXURE I

INTERNSHIP DIARY

Name of Student: Vedant Umesh Saikhede

Mode of Internship: Online

Name of Supervisor: Sudhanshu Kumar

Name of Organization**:** iNeuron Intelligence Pvt Ltd

Sr. No.	Date	Description of Activities done during the day, Knowledge acquired, Practical Skills obtained and plan for next day	Signature of Supervisor	Signature of Faculty Coordinator
1		Onboarding	 Regards, Sudhanshu Kumar CEO & Chief AI Engineer at iNeuron.ai	
2		Introduction		
3		Core concepts of Machine Learning		
4		Machine Learning Process		
5		Project: Titanic Dataset		
6		How Machine Learning Models work		
7		Basic Data Exploration		
8		Working with Cleaning Data		
9		Model Validation		
10		Classification Algorithms		
11		Regression Algorithms		
12		Implementing Pipeline		
13		Artificial neural networks (ANN)		
14		Deep Learning Basics		
15		Machine Learning best practices		
16		Project: Allocation		
17		Project: Explanation		
18		Project Work		
19		Project Work		
20		Project Work		
21		Project Work		

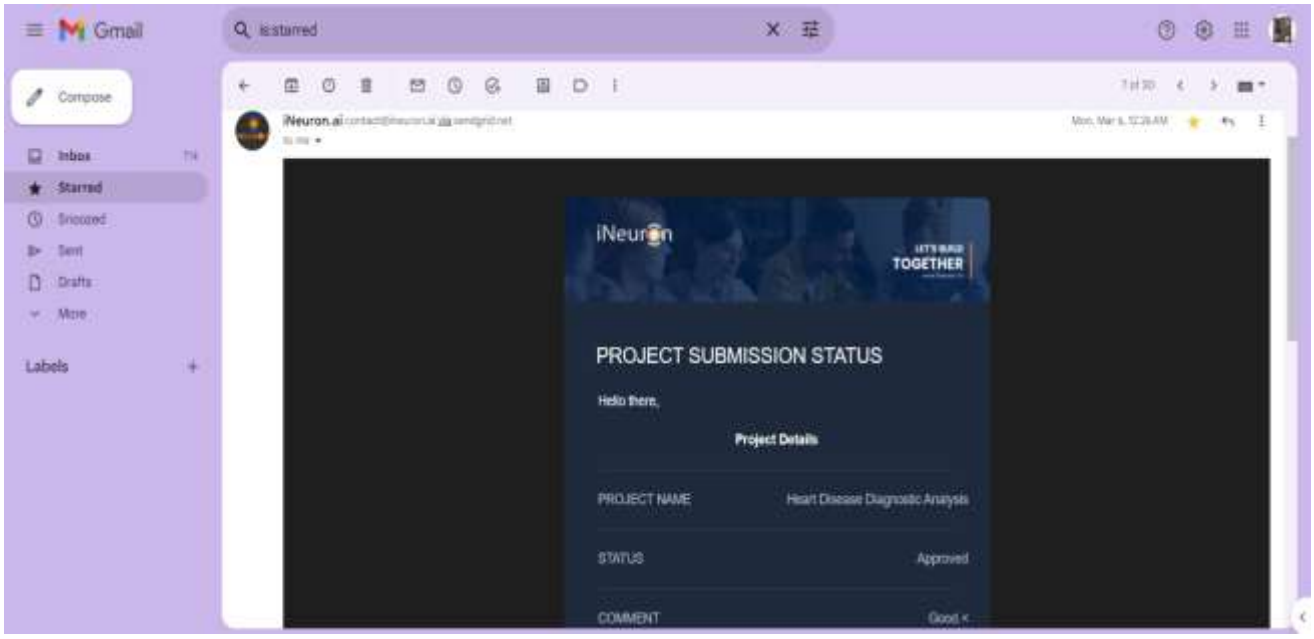
22		Project Work		
23		Project Work		
24		Low Level Design		
25		High Level Design		
26		Architecture Design		
27		Wireframe Document		
28		Project Report and Submission		

ANNEXURE II

ATTENDANCE RECORD

Week 1	**P**	**P**	**P**	**A**	**P**	**P**
Week 2	**P**	**P**	**P**	**P**	**P**	**P**
Week 3	**P**	**A**	**P**	**P**	**P**	**P**
Week 4	**P**	**P**	**P**	**P**	**A**	**P**
Week 5	**P**	**P**	**P**	**P**		

ANNEXURE III
EVALUATION SHEET



Regards,
Sudhanshu Kumar
CEO & Chief AI Engineer at iNeuron.ai