SUMMER INTERNSHIP PROGRAM

at

Heartnet India Private Limited

From: 19 MAY 2025 to 26 JULY 2025

A REPORT BY:

Nishant Sharma

Master of Business Administration

Healthcare Analytics

Roll no: 0019

2024-26

under the Mentorship of

Dr. Swapnil Gadhave

Assistant Professor

IIHMR UNIVERSITY

heart-net
caring for the heart

INTERNSHIP EXPERIENCE LETTER

Date: 26-07-2025

To Whomsoever It May Concern

This letter is to certify that **Mr. Nishant Sharma** (Roll No: 0019) of IIHMR University, Jaipur, has successfully completed his internship program of 10 weeks with Heartnet India Pvt Ltd as a Management Intern. His internship tenure was from 19/05/2025 (19th May 2025)to 26/07/2025 (26th July 2025). During the internship, he was actively & diligently involved in the project "Machine Learning-Based Detection of ECG Abnormalities and Data-Driven Insights Using Power BI."

During this time, Nishant demonstrated a keen willingness to learn and collaborate within a team. He approached his work with enthusiasm, hard work and a positive mindset.

We wish him the best in his future endeavours.

Arindam Sen
CEO and Director
Heartnet India Pvt. Ltd.

Heartnet India Private Limited
Bangalore

Heartnet India Private Limited
Neil Tower of Neil Rao Towers, #6CS, 6th Floor, Plot No. 117,
Road No. 3, EPIP Phase I, Whitefield, Bangalore – 560066, India. CIN:
U85100KA2017PTC101536
www.heartnetindia.com

IIHMR UNIVERSITY

IIHMR University Faculty Mentor Approval

This is to certify that **Mr. Nishant Sharma** academic year 2024-26 **School of Digital Health** has prepared a poster with respect to his summer internship held during May-July 2025.

He has carried out work as per the guidelines. His poster is approved for presentation.

Date: 28/07/2025

Dr. Swapnil Gadhave

Assistant Professor

1, Prabhu Dayal Marg, Near Sanganer Airport, Jaipur- 302029, Rajasthan, India.
Ph.: 0141-3924700, 2791431- 32, E-mail: iihmr@iihmr.edu.in, Web.: www.iihmr.edu.in

Machine learning Based Detection of ECG Abnormalities and Data Driven Insights Using Power BI

Presented By: Nishant Sharma
Roll No. : 0019
MBA (Healthcare Analytics)

Faculty Mentor- Dr, Swapnil Gadhave (Assistant Professor ,IIHMR Jaipur)

Organization Mentor- Mr. Arindam Sen (CEO & Founder, Heartnet India)

Introduction

Heartnet India is a Cardiac healthcare Company, focusing on providing specialist care to cardiac patients across India with advanced technologies.

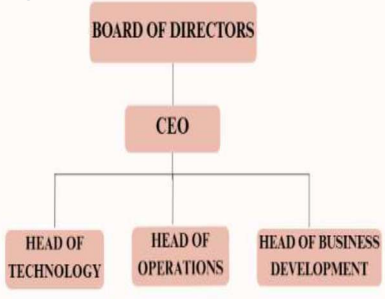
Mission

Empowering India to combat the growing burden of cardiovascular diseases by delivering comprehensive cardiac care through innovative and accessible technological solutions.

Vision

Heartnet's vision is to make cardiac care easy, affordable, and available to everyone in India. Enabling real-time cardiac monitoring, early detection, and accessible heart care across diverse regions.

Organisation Structure



Project Overview:

During my internship at Heartnet India, I built an AI-based model to classify ECG images as **Normal** or **Abnormal**. Also I made Dashboard using Power BI for data driven insights.

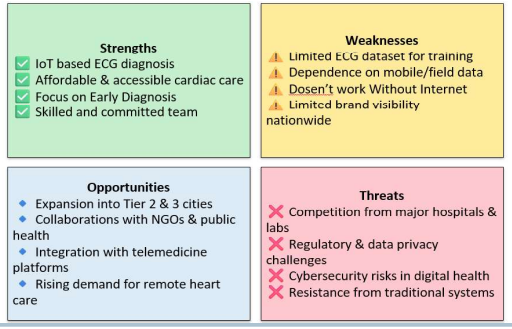
How I Prepared the model:

- Preprocessed ECG images by converting them into graycycle, resizing and flattering using OpenCV
- Labelled and combined Normal/Abnormal ECGs, then split data into training and test sets.
- Trained a Support Vector Classifier (SVC) with a linear Kernel for image classification.
- Evaluate the model using accuracy, confusion matrix, and classification report.

Technologies and Tools Used:

- Python(OpenCV, scikit-learn,Numpy,Matplotlib)
- SVC (Support Vector Classifier)
- Goole Colab.
- Gradio (For making Web Interface for my model)
- Power BI for Dashboard Creation

SWOT Analysis – Heartnet India



Major Learning:

- Gained hands-on experience in building an AI model using **Support Vector Classifier (SVC)** for ECG classification.
- Learned how to preprocess medical image data using **OpenCV** and handle real-world data challenges.
- Developed skills in data visualization and storytelling through **Power BI dashboards**.
- Understood end-to-end workflow of health tech operations and AI integration in diagnostics.
- Improved critical thinking, problem-solving, and collaboration in a real-time project environment.

Challenges Faced

- **Limited and imbalanced ECG dataset** affected model training and generalization
- **Variation in ECG image Datasets** due to different sources and formats.

Practical Exposure V/S Theoretical Understanding

During my internship, I gained practical exposure by working on real-time healthcare data, building an AI-based ECG classification model, and creating interactive dashboards using Power BI. This hands-on experience helped me bridge the gap between theory and application. While theoretical understanding gave me the foundation in data analytics, machine learning, and visualization, practical exposure enhanced my problem-solving skills and deepened my learning through real-world challenges.

Weekly reporting

Name of the Organisation: Heartnet India Pvt. Ltd.

Area/ Department/ Project of Summer Internship Program: Machine Learning Based Detection of ECG Abnormalities and Data Driven insights Using Power BI

Name of the Student: Nishant Sharma

Roll no: 0019 **Stream:** MBA HA

Week no: 01 **From: ……**19/05/2025**……to ……**25/05/2025**……**

Activity Done	• Start my day with Orientation Session • Gain Hands on Experience on ECG Machine. • Did Cold Calling to gynaecologist to book appointment, • Field visit for 3 consecutive days to give demonstration of ECG machine. • Shared field visit insights to the mentor.
Linking theory (Classroom learning) with practice at your organisation	• Understood how medical terminology is introduced and positioned in real world clinical settings. • Understood how IoT devices works in real time monitoring
Gaps identified on the working area.	Some doctors were not open to any demos, showing lack of interest or time constraints.
Suggestions for improvement	• Modify the subscription rate or validity as per the doctors to convert into positive sales • Highlight Unique Selling Points
Plan for the next week	• Will continue booking appointment in new target zones. • Analyse feedback from current visits and adapt demo approach accordingly. • Will also plan to work on ECG data to gather insights.

Nishant Sharma

Signature of the Student

Approved by the IIHMR University's Mentor

On the last day of every week Saturday -) report in the above format should be submitted to the faculty mentor. Submission of total 10 reports in 10 weeks is compulsory. Each report should not be more than 2 pages.

Weekly reporting

Name of the Organisation: Heartnet India Pvt. Ltd.

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Name of the Student: Nishant Sharma

Roll no: 0019 **Stream:** MBA HA

Week no: 02 **From: ……**26/05/2025**……to ……**01/06/2025**……**

Activity Done	Started my week by doing research for new Gynaecologist and started calling and booking appointment. Went on a field for 3 consecutive days Gave presentation on "Scope of mHealth Technology"
Linking theory (Classroom learning) with practice at your organisation	• Understood how medical terminology is introduced and positioned in real world clinical settings. • Gave presentation on mobile health which is covered in digital health classes.
Gaps identified on the working area.	Currently lot of ECG machines are there in market which provide ECG at much more cheaper rate than Heartnet's ECG For Ex. Tricog
Suggestions for improvement	Subscription plan should be Negotiable.
Plan for the next week	Continue booking appointment in new target zone. Will start working on my project.

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Weekly reporting

Name of the Organisation: Heartnet India Pvt. Ltd.

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Roll no: 0019 **Stream:** MBA HA

Week no: 03 **From: ……**02/06/2025**……to ……**08/06/2025**……**

Activity Done	• This week we went to diagnostic centres for Machine Installation. • Conducted ECG on live patient. • Visited Gynaecologist for ECG Demonstration.
Linking theory (Classroom learning) with practice at your organisation	• Understood how medical terminology is introduced and positioned in real world clinical settings and got to see how it works on live patients.
Gaps identified on the working area.	Some Doctors were not open to any demos, showing lack of interest or time constraints
Suggestions for improvement	• For converting the lead, we will target to diagnostics labs and other segments also. • Subscription plan should be negotiable
Plan for the next week	• Continue booking appointment in new target zone. • Will start working on SIP. • Will start learning regression and try to understand how to implement on real world datasets.

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Weekly reporting

Name of the Organisation: Heartnet India Pvt. Ltd.

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Name of the Student: Nishant Sharma

Roll no: 0019 **Stream:** MBA HA

Week no: 04 **From: ……**09/06/2025**……to ……**15/06/2025**……**

Activity Done	• Collected data from Heartnet Server for preparing the AI model. • Visited diagnostic centres for ECG Demo and got some lead as well
Linking theory (Classroom learning) with practice at your organisation	• Download data from Heartnet Server • Started preprocessing the data.
Gaps identified on the working area.	• All the data with doctors impression does not stored on a single server. • Downloaded the data from different - different portal.
Suggestions for improvement	All the data with doctors impression must be stored on a single server so that it can be accessible for anyone and easy to use.
Plan for the next week	• Will start working on my project • Will have to take followup from the leads we have. • Will target more diagnostic centres

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Weekly reporting

Name of the Organisation: Heartnet India Pvt. Ltd.

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Name of the Student: Nishant Sharma

Roll no: 0019 **Stream:** MBA HA

Week no: 05 **From: ……**16/06/2025**……to ……**22/06/2025**……**

Activity Done	• Worked on ECG data by using Python, trying to make a predictive model. • Went on field. Met with operations head of PlusOne Diagnostic, offered the plan as well
Linking theory (Classroom learning) with practice at your organisation	Gain hands on practice on Python Using ML and Data analysis technique.
Gaps identified on the working area.	Data that I am using for development of a predictive model is very less.
Suggestions for improvement	No. of data should be more Data should be stored in proper format.
Plan for the next week	• Will continue to work on my project • Will plan to generate more leads • Will get proper follow up from the leads that we have generated

Nishant Sharma

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Weekly reporting

Name of the Organisation: Heartnet India Pvt. Ltd.

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Name of the Student: Nishant Sharma

Roll no: 0019 **Stream:** MBA HA

Week no: 06 **From: ……**23/06/2025**……to ……**29/06/2025**……**

Activity Done	• Prepared ML based predictive model on the data which I have downloaded from Kaggle just for practice. • Also visited diagnostic centres for machine demonstrations. Generated lead. • Did TAT monitoring to ensure reports generated timely.
Linking theory (Classroom learning) with practice at your organisation	Learned ML, regression, AI, and python in classroom this learning help me a lot to make this predictive model.
Gaps identified on the working area.	Datasets are very less in numbers, so it will be tough to train the model within this datasets.
Suggestions for improvement	If the datasets are more in no. then the accuracy score will be more.
Plan for the next week	Will apply this code on a real world datasets to develop the predictive model. Also planning to make a dashboard on this datasets to gather or draw some insights from our data.

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Weekly reporting

Name of the Organisation: Heartnet India Pvt. Ltd.

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Name of the Student: Nishant Sharma

Roll no: 0019 **Stream:** MBA HA

Week no: 07 **From: ……**30/06/2025**……to ……**06/07/2025**……**

Activity Done	• Prepared ML based predictive model on our data for detecting ECG. • Visited diagnostic centres. • Did TAT monitoring to ensure report generated timely
Linking theory (Classroom learning) with practice at your organisation	• Learned ML, Regression, Python in classroom. • By the use of SVC I made this predictive model.
Gaps identified on the working area.	Datasets are very less in numbers, so it will be tough to train the model within this datasets.
Suggestions for improvement	More no. of datasets helps to make model with good accuracy score.
Plan for the next week	Will work on the dashboard.

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Weekly reporting

Name of the Organisation: Heartnet India Pvt. Ltd.

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Name of the Student: Nishant Sharma

Roll no: 0019 **Stream:** MBA HA

Week no: 08 **From: ……**07/07/2025**……to ……**13/07/2025**……**

Activity Done	• Made AI model for detecting ECG images using SVM. • Prepared visuals for my dashboard from power BI • Did TAT monitoring
Linking theory (Classroom learning) with practice at your organisation	I am using Power BI which I have learned in my classroom
Gaps identified on the working area.	Datasets are very less in numbers, so it will be tough to train the model within this datasets.
Suggestions for improvement	Once the datasets will be more they can use the model, Everything is ready code is ready.
Plan for the next week	Will compile all the visuals in a dashboard.

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Weekly reporting

Name of the Organisation: Heartnet India Pvt. Ltd.

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Name of the Student: Nishant Sharma

Roll no: 0019 **Stream:** MBA HA

Week no: 09 **From: ……**14/07/2025**……to ……**20/07/2025**……**

Activity Done	• Prepared a dashboard using the data I got. And draw some meaningful insights.
Linking theory (Classroom learning) with practice at your organisation	Used Power BI which I have learned from classroom
Gaps identified on the working area.	Datasets I got for making dashboard is from last one year only.
Suggestions for improvement	More no of data will draw some meaningful insights for the business.
Plan for the next week	• Will prepare for my final internship presentation. • Will handover all the work that I have done during this internship period.

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Weekly reporting

Name of the Organisation: Heartnet India Pvt. Ltd.

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Name of the Student: Nishant Sharma

Roll no: 0019 **Stream:** MBA HA

Week no: 10 **From: ……**21/07/2025**……to ……**26/07/2025**……**

Activity Done	Prepared my final internship presentation like key takeaways, challenges, what I have learned and about my project
Linking theory (Classroom learning) with practice at your organisation	What I did during my internship period is already better explained in classroom. I got practical experience what I have learned so far.
Gaps identified on the working area.	Less no. clients we have due to the competition in the market. Also need to hire sales team to boost the company in the market.
Suggestions for improvement	Need to explore their business in other states also like Rajasthan and other tier 2 cities. Chances are higher as compare to other tier 3 cities.

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Compiled Report

Name of the Organisation: Heartnet India Pvt. Ltd.

Area/ Department/ Project of Summer Internship Program: Machine Learning Based Detection of ECG Abnormalities and Data Driven insights Using Power BI

Name of the Student: Nishant Sharma

Roll no: 0019 **Stream:** MBA HA

Activity Done	• Attended orientation and gained hands-on exposure to ECG machines. • Conducted field visits for ECG demonstrations to gynaecologists and diagnostic centres. • Performed lead generation and follow-up across different target zones. • Collected ECG data from Heartnet's server and pre-processed it using Python. • Built an AI-based model using **Support Vector Classifier (SVC)** to classify ECGs. • Created dashboards in **Power BI** to derive operational and clinical insights. • Monitored report TAT (Turnaround Time) and tracked field activities. • Delivered presentations on mHealth and collaborated with the team for marketing. • Compiled final reports, dashboards, and models for submission.
Linking theory (Classroom learning) with practice at your organisation	• Applied classroom knowledge of **Machine Learning** by building an ECG classification model using **Support Vector Classifier (SVC)** in Python. • Used **Power BI** skills gained in class to create dashboards that visualize ECG trends and business insights. • Leveraged concepts from **Digital Health** to present the scope of mHealth technology. • Utilized **data preprocessing techniques** (learned in analytics classes) to clean and prepare real ECG image. • Connected classroom case studies on **healthcare systems and sales strategy** with real-life challenges faced during field visits and client demos.

Gaps identified on the working area.	• ECG datasets available for model training were **limited and imbalanced**, reducing model performance. • **Doctor impressions and report data** were not stored in a centralized server, making access and analysis difficult. • Faced **resistance from doctors** during field demos due to lack of time or interest. • **Subscription plans lacked flexibility**, limiting conversion during sales pitches. • Strong **market competition** from players offering cheaper ECG services (e.g., Tricog). • **No dedicated sales team**, affecting business outreach and client acquisition.
Suggestions for improvement	• Centralize ECG data and doctor impressions on a single, accessible server • Make subscription plans more flexible and customizable for different client types • Focus sales efforts on Tier 2 cities where competition is relatively lower • Hire dedicated sales and marketing team to expand reach and visibility • Increase data collection volume to improve model training and insights
Key Learnings	• Applied ML techniques like **SVC** for medical image classification • Understood the practical integration of AI in healthcare diagnostics • Improved skills in data preprocessing, visualization, and BI reporting • Gained real-world exposure to challenges in field sales and lead conversion • Developed time management, communication, and collaboration skills.

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