



**REVOLUTIONIZING REMOTE HEALTH MONITORING:  
AUTONOMOUS DETECTION OF CARDIAC ABNORMALITIES  
WITH CUSTOMIZED DIETARY PLANNING**

R24-019

Status Document 1

IT21126888 – Senadheera P.V.P.P

Supervisor: Dr. Dilshan De Silva

BSc (Hons) in Information Technology Specializing in Software  
Engineering

Department of Software Engineering

Sri Lanka Institute of Information Technology

Sri Lanka

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# 1. SCREENSHOTS OF THE PROJECT MANAGEMENT TOOL

The screenshot shows a Kanban board interface with four columns: To do, Doing, Done, and Competition. The To do column has 4 tasks. The Doing column has 2 tasks. The Done column has 17 tasks. The Competition column has 4 tasks. Each task card includes a title, description, due date, and assignee.

Column	Task Title	Description	Due Date	Assignee
To do	Make test cases - Use Testing tools (Test Driven Development)	Use Testing tools (Test Driven Development)	Apr 27	Sa
To do	Check on the data security side of the application	Check on the data security side of the application	Jan 25	Team
To do	Check firebase database (real time or firestore and make the configurations)	Check firebase database (real time or firestore and make the configurations)	Jan 23	Team
To do	WSA Competition	WSA Competition	Team	Team
Doing	Finalize the technology requirement for 3D Visualization	Finalize the technology requirement for 3D Visualization	Jan 27	Sa
Doing	Finalize the technology requirement to make Simulation of x-ray	Finalize the technology requirement to make Simulation of x-ray	Jan 27	HQ
Done	flutter application	flutter application	Feb 11	Sa
Done	Pass the ECG pattern to web application interface	Pass the ECG pattern to web application interface	Feb 20	Sa
Done	Update about the technical Stack	Update about the technical Stack	Jan 22	Team
Done	Finalize the technology requirement of taking ECG measure from Hand and Facial recognition	Finalize the technology requirement of taking ECG measure from Hand and Facial recognition	Jan 27	Team
Competition	APICTA Competition Timeline Check	APICTA Competition Timeline Check	Jul 1	Sa
Competition	NBQSA Time Line	NBQSA Time Line	Team	Team
Competition	ESvabamani	ESvabamani	Apr 6	Team
Competition	ICT Innovative Service Awards	ICT Innovative Service Awards	Nov 1	Team

Figure 1: Asana Board - Kanban

The screenshot shows a Gantt chart interface with a timeline from April 2024 to May 2024. The chart displays tasks in the To do and Doing columns. Each task is represented by a horizontal bar indicating its start date, end date, and duration.

Task Name	Date Range	Duration
Make test cases - Use Testing t	Apr 27	1 day
Check on the data security side	Jan 17 – 25	7 days
Check firebase database (real t	Jan 21 – 23	2 days
WSA Competition	Team	Team
Update about the technical Sta	Jan 15 – 22	6 days
Finalize the technology require	Jan 20 – 27	5 days
Finalize the technology require	Jan 27	1 day
Finalize the technology require	Jan 20 – 27	5 days

Figure 2: Asana Board - Gantt Chart

## 2. SCREENSHOTS OF GOOGLE DRIVE FOLDERS

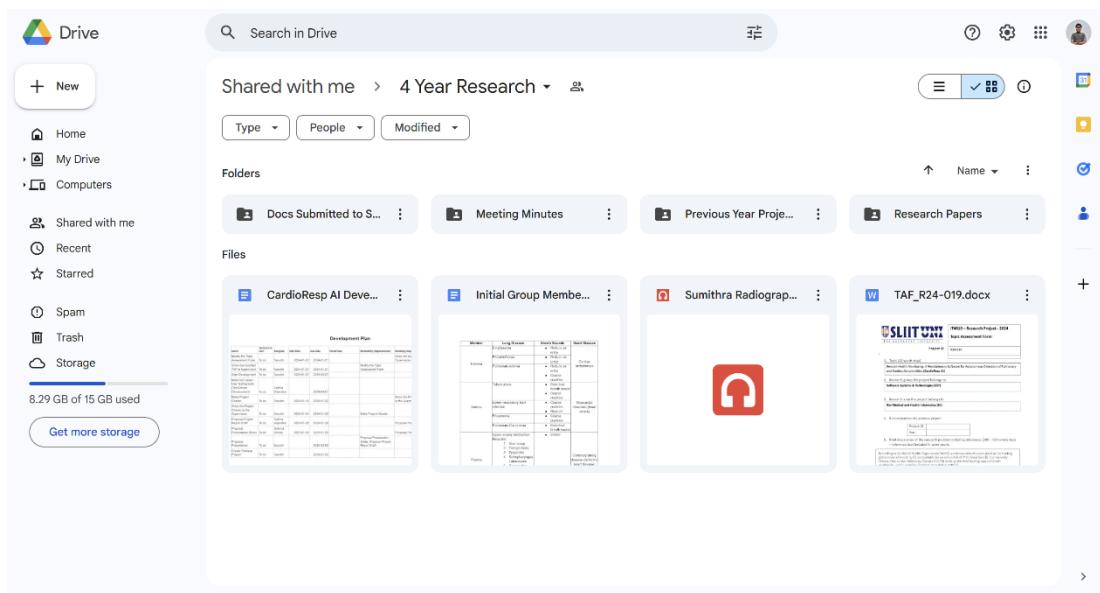


Figure 3: Google Drive shared folder

### 3. SCREENSHOTS OF THE MEETING MINUTES

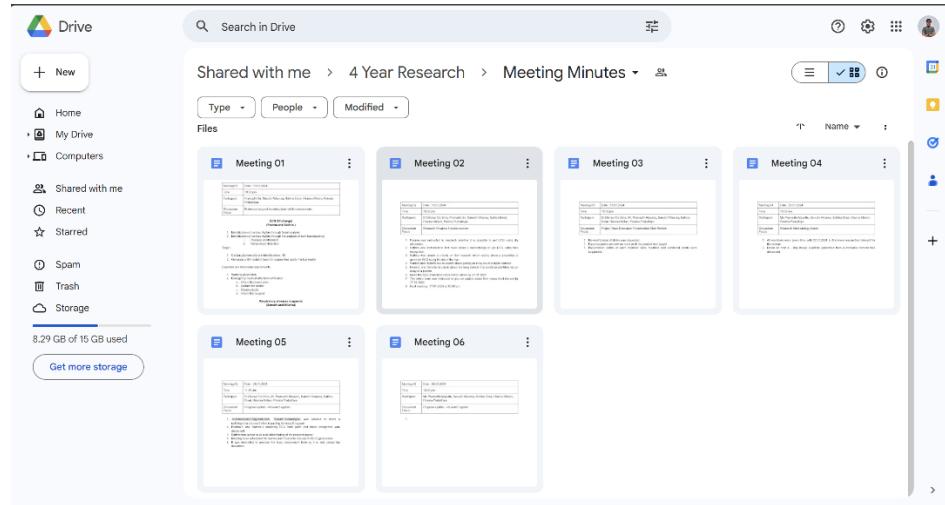


Figure 4: Meeting minutes shared folder

Meeting 01	Date : 10.01.2024
Time	10.00 pm
Participant	Pramadhi Sir, Sanuthi Vihansa, Sathira Dinal, Hilarina Melani, Poorna Prabathiya
Discussion Focus	Brainstorming and breaking down of the components.

#### ECG (Challenge) (Poorna and Sathira )

1. Identification of cardiac rhythm through facial analysis
2. Identification of cardiac rhythm through the analysis of both hands(palms)
  - i. Pressure identification
  - ii. Temperature detection

Target

1. Cardiac Abnormality pre identifications- 10
2. Generate a 3D model of heart for augmented reality / virtual reality

Expected non functional requirements

1. Warning generation
2. Emergency medical attention notification
  - a. Inform the loved ones
  - b. Update the doctor
  - c. Paramedics
  - d. Inform the hospital

#### Respiratory diseases diagnosis (Sanuthi and Hilarina)

1. Scan body from a camera and generate an x ray feed of the lungs
2. Perform imagine processing to identify lung abnormalities
3. Generate an 3D model of the lungs using 2D images
4. Generate a 3D model based on the real time video feed

Target

1. Lung abnormality pre identification - 10

Assigned Tasks

1. Fill the topic assessment form
2. Come up with the technology stack

Figure 5: Meeting minutes 1

Meeting 02	Date : 15.01.2024
Time	10.30 pm
Participant	Dr.Dilshan De Silva, Pramadhi Sir, Sanuthi Vihansa, Sathira Dinal, Hilarina Melani, Poorna Prabathiya
Discussion Focus	Research Progress Update session

1. Poorna was instructed to research whether it is possible to get ECG using dry electrodes.
2. Sathira was instructed to find more about a methodology to get ECG using face recognition.
3. Sathira was asked to check on the research which states about a possibility to generate ECG using the iris of the eye.
4. Sanuthi and Hilarina has to search about getting an x ray out of a digital camera
5. Hilarina and Sanuthi to check about the lung defects that could be identified via an x-ray of a patient.
6. Make the topic evaluation presentation slides by 17.01.2024
7. The entire team was instructed to give an update about their researched domain by 17.01.2024
8. Next meeting - 17.01.2024 at 10.00 pm

Figure 6: Meeting minutes 2

Meeting 03	Date : 18.01.2024
Time	10.30 pm
Participant	Dr.Dilshan De Silva, Mr. Pramadhi Atapattu, Sanuthi Vihansa, Sathira Dinal, Hilarina Melani, Poorna Prabathiya
Discussion Focus	Project Topic Evaluation Presentation Slide Review

1. Re-modification of slides was requested.
2. Essential points on how we need pitch the product was taught
3. Presentation points of each member were modified and additional points were suggested.

Figure 7: Meeting minutes 3

Meeting 04	Date : 20.01.2024
Time	10.30 am
Participant	Mr. Pramadhi Atapattu, Sanuthi Vihansa, Sathira Dinal, Hilarina Melani, Poorna Prabathiya
Discussion Focus	Research Methodology Doubt

1. All members were given time until 27.01.2024 to find more researched relevant for the domain
2. Doubt on how X - Ray image could be generated from a consumer camera was discussed.

Figure 8: Meeting minutes 4

Meeting 05	Date : 28.01.2024
Time	11.30 am
Participant	Dr.Dilshan De Silva, Mr. Pramadhi Atapattu, Sanuthi Vihansa, Sathira Dinal, Hilarina Melani, Poorna Prabathiya
Discussion Focus	Progress update - Research update

1. hilarinamelani21@gmail.com Sanuthi Subasingha was advised to meet a radiologist to discuss further regarding the lung X ray part
2. Poorna's and Sathira's obtaining ECG from palm and facial recognition was discussed.
3. Sathira was asked to do a detailed finding of the research paper.
4. Meeting to be scheduled for Sathira and Poorna to discuss the ECG generation.
5. It was instructed to process the topic assessment form as it is and upload the document.

Figure 9: Meeting minutes 5

Meeting 06	Date : 06.02.2024
Time	10.00 pm
Participant	Mr. Pramadhi Atapattu, Sanuthi Vihansa, Sathira Dinal, Hilarina Melani, Poorna Prabathiya
Discussion Focus	Progress update - Research update

1.

Figure 10: Meeting minutes 6

## 4. SCREENSHOTS OF THE TEAMS MEETING HISTORY

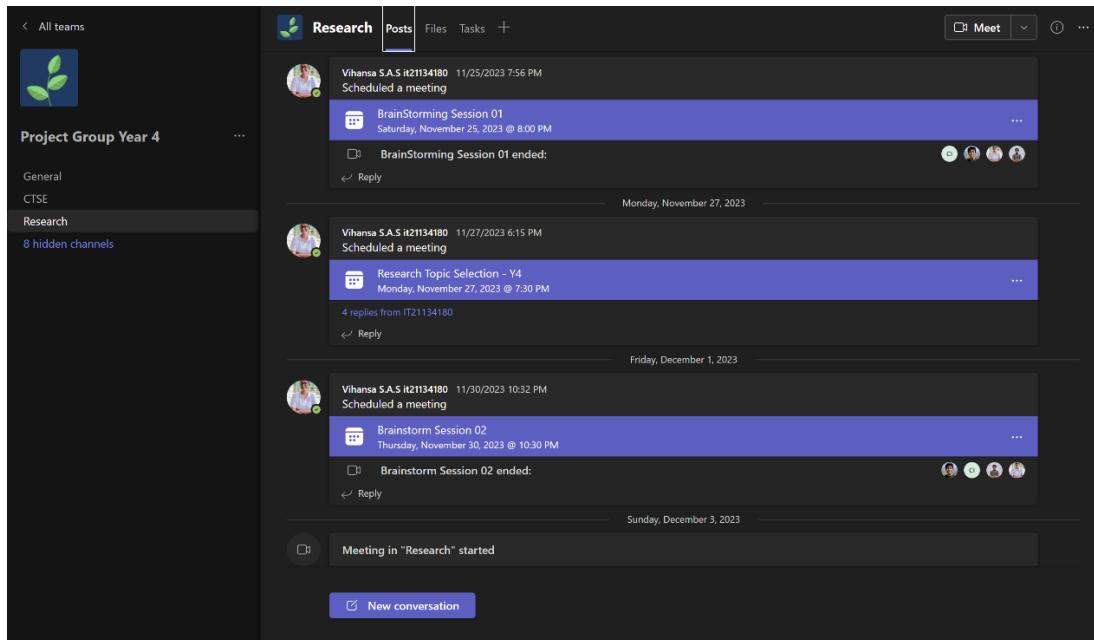


Figure 11: MS Teams meeting history 1

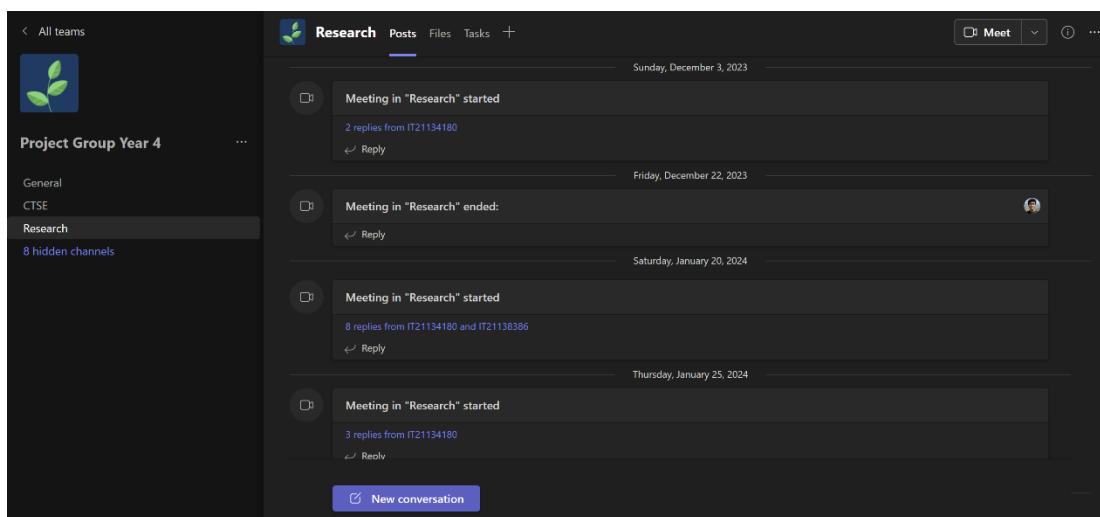


Figure 12: MS Teams meeting history 2

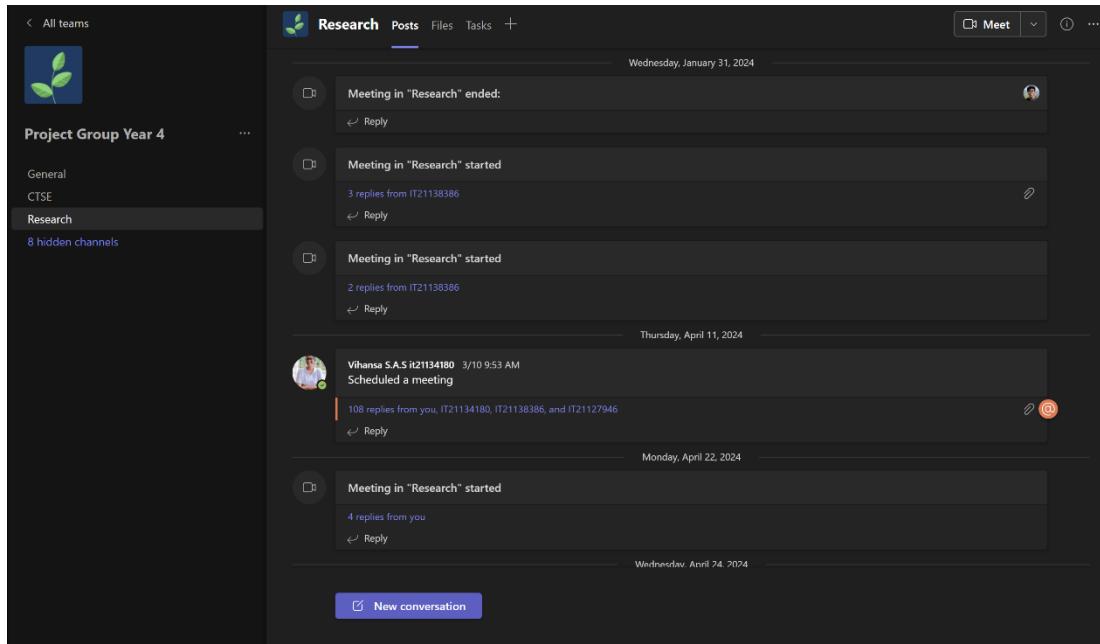


Figure 13: MS Teams meeting history 3

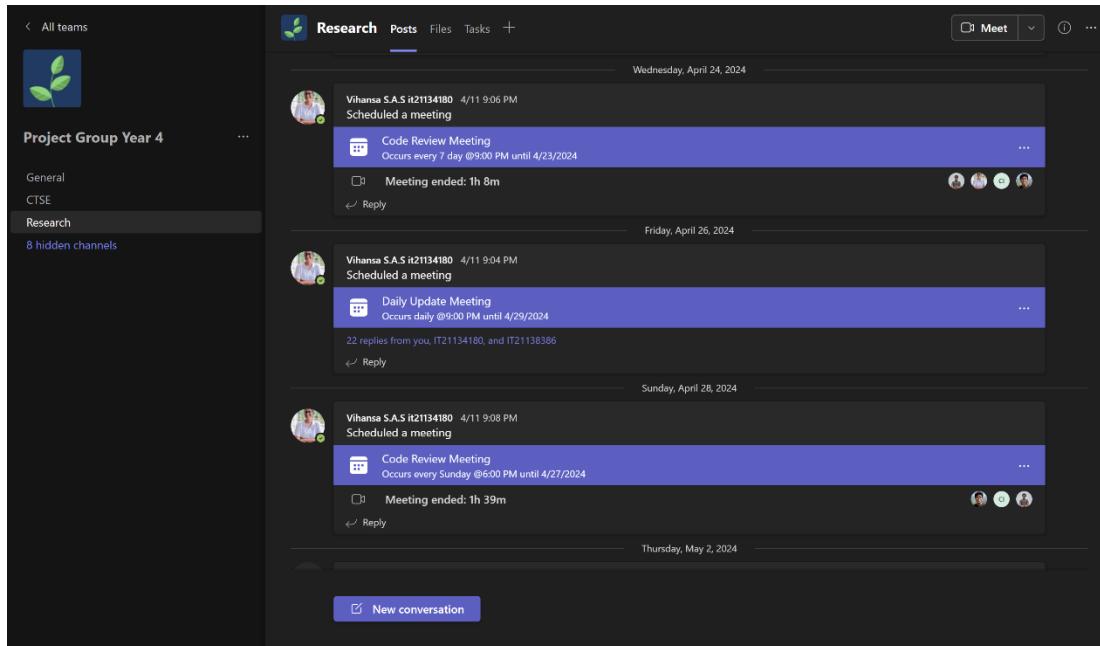


Figure 14: MS Teams meeting history 4

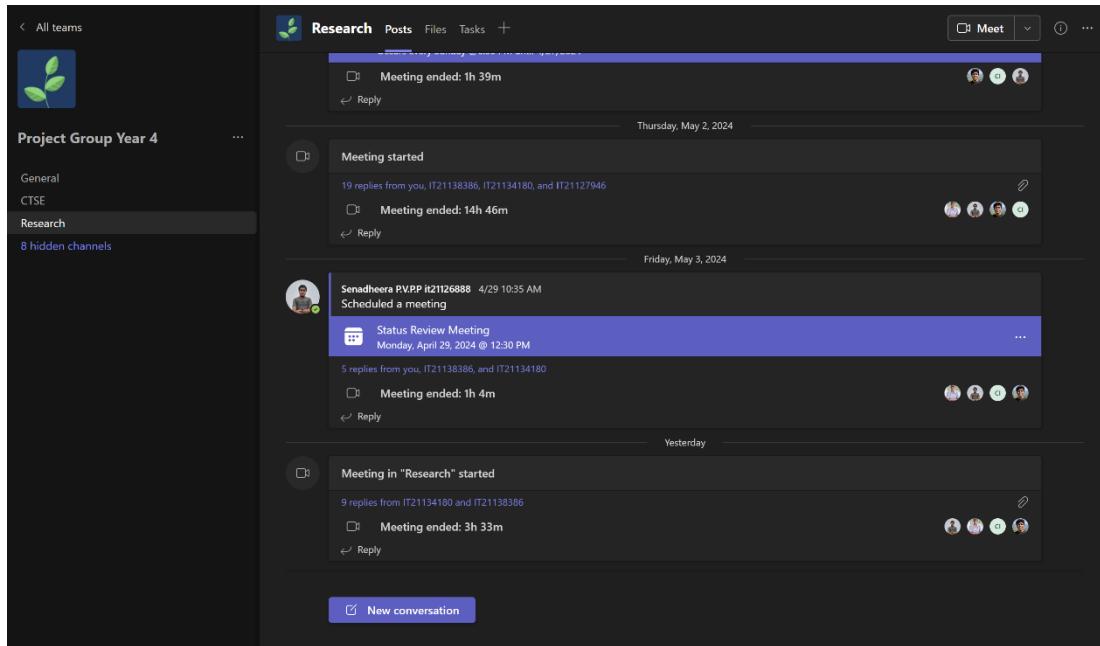


Figure 15: MS Teams meeting history 5

## 5. SCREENSHOTS OF THE WHATSAPP GROUP

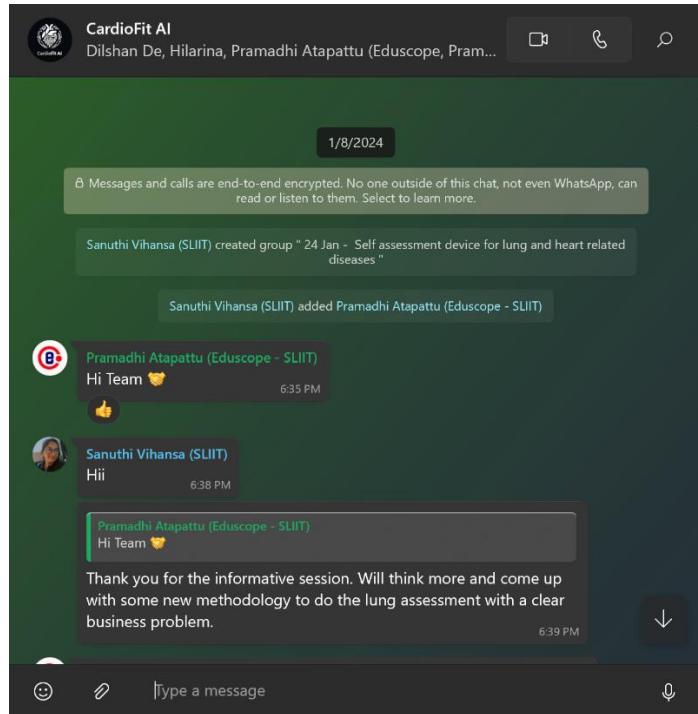


Figure 16: WhatsApp group screenshot 1

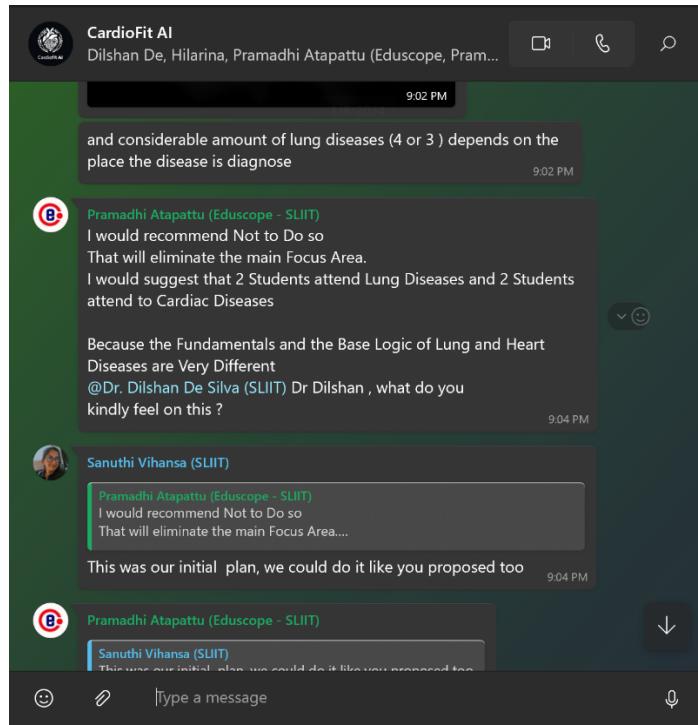


Figure 17: WhatsApp group screenshot 2

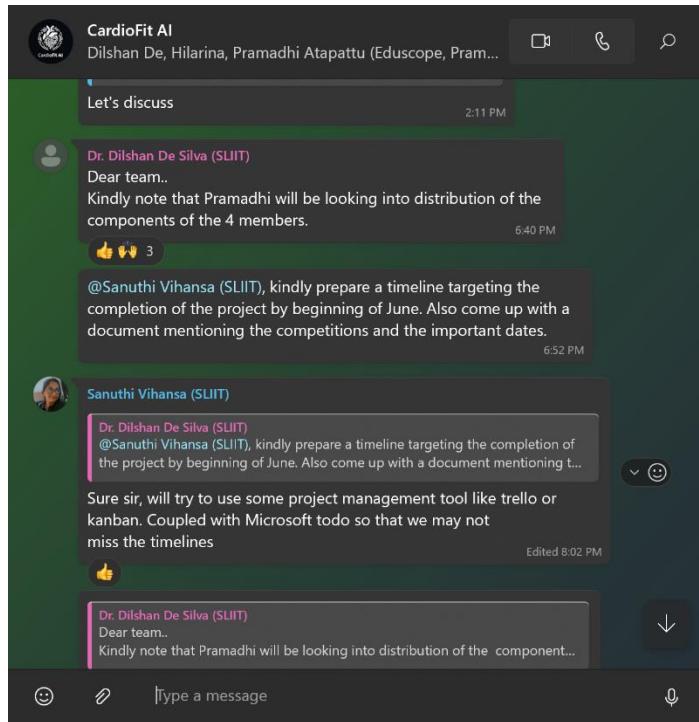


Figure 18: WhatsApp group screenshot 3

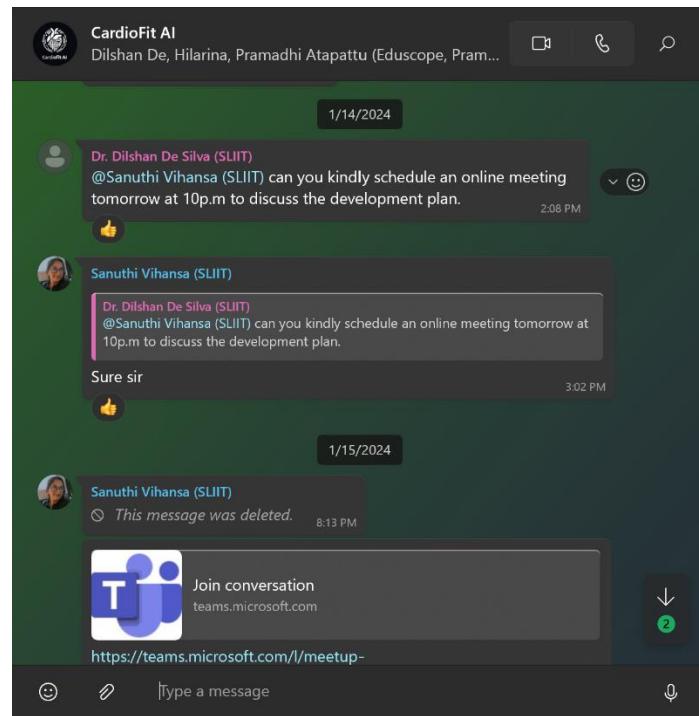


Figure 19: WhatsApp group screenshot 4

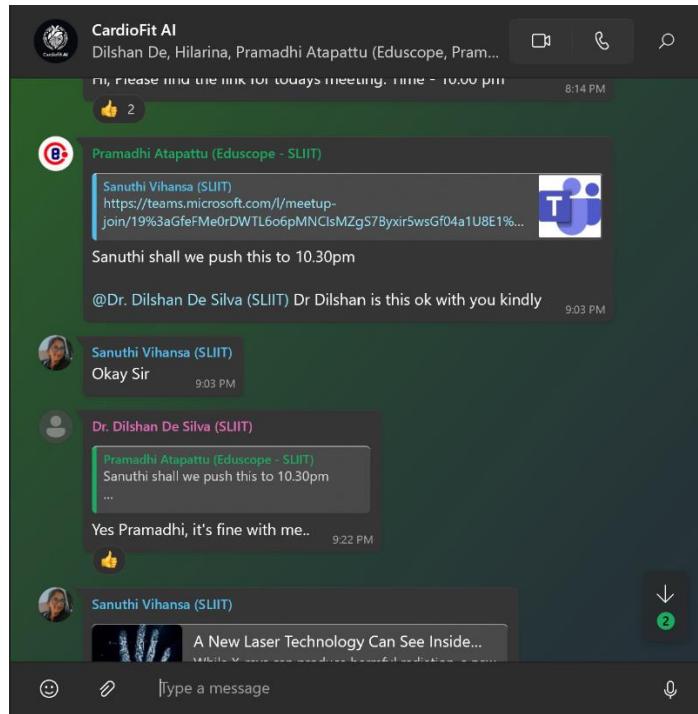


Figure 20: WhatsApp group screenshot 5

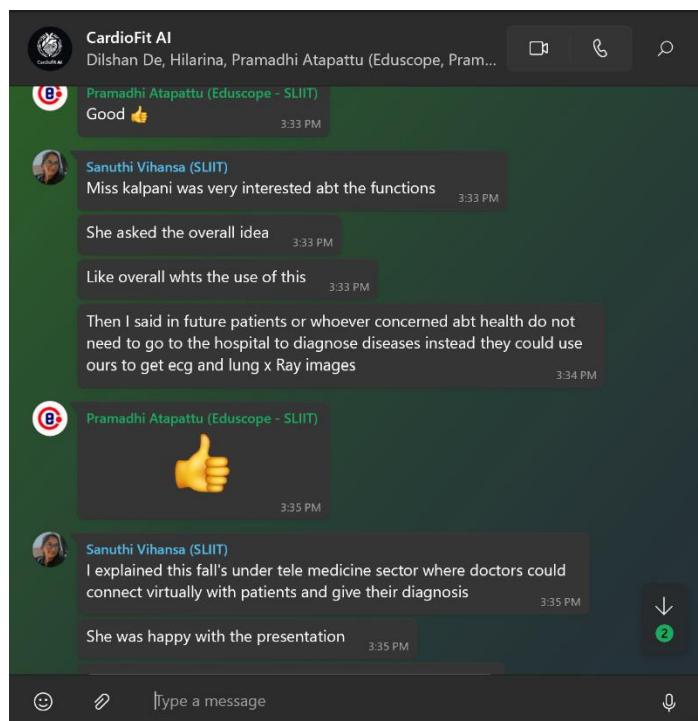


Figure 21: WhatsApp group screenshot 6

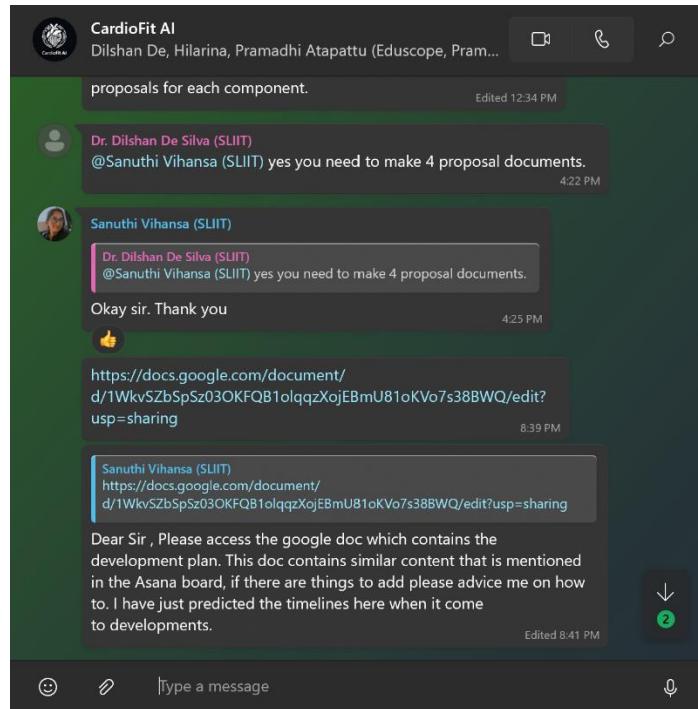


Figure 22: WhatsApp group screenshot 7

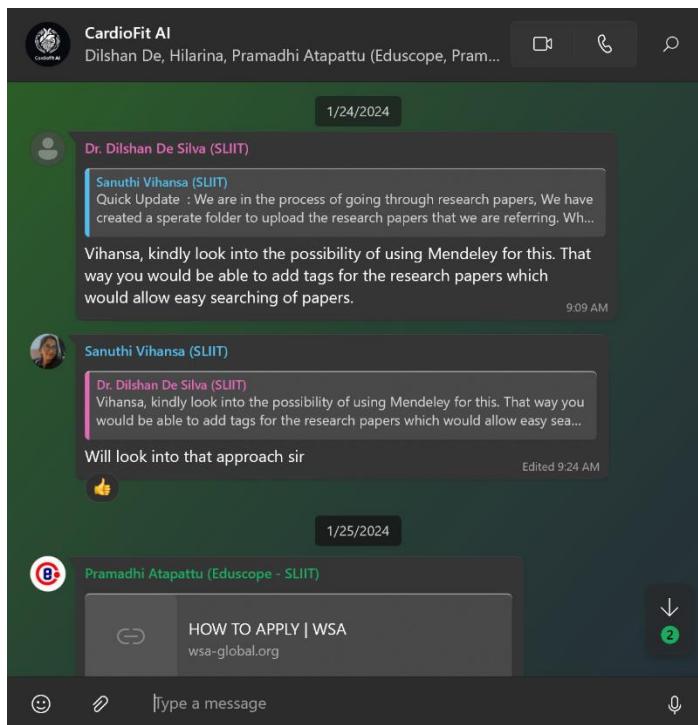


Figure 23: WhatsApp group screenshot 8

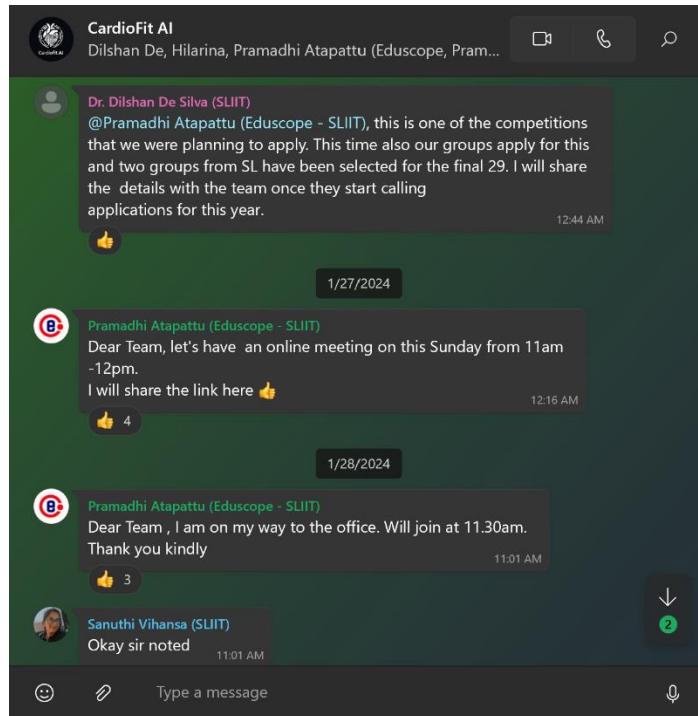


Figure 24: WhatsApp group screenshot 9

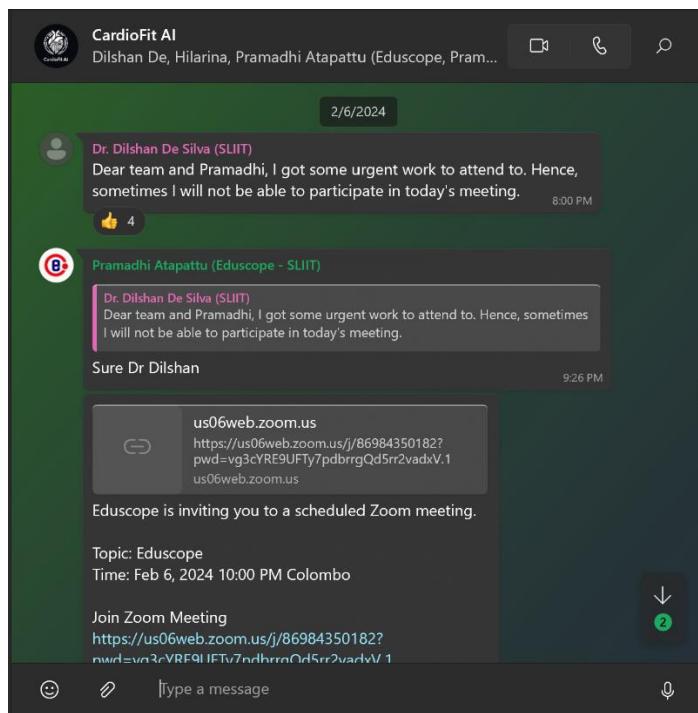


Figure 25: WhatsApp group screenshot 10

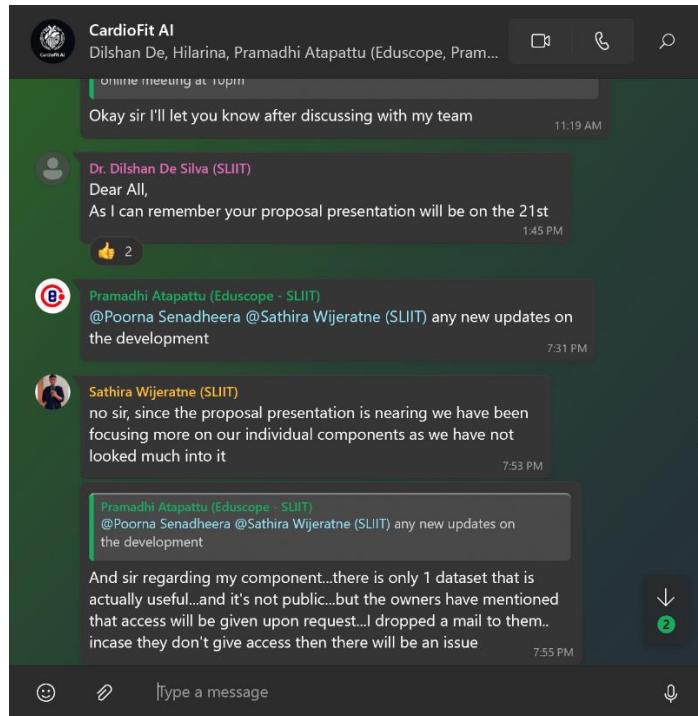


Figure 26: WhatsApp group screenshot 11

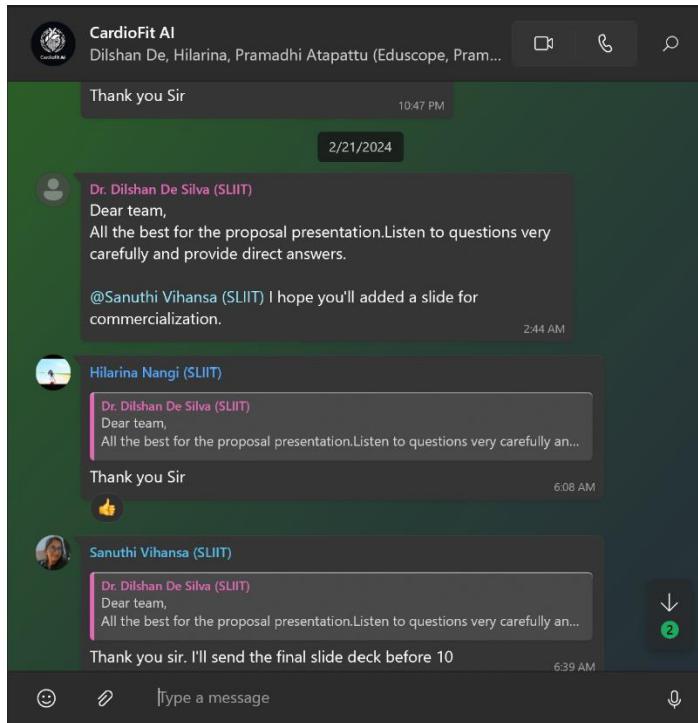


Figure 27: WhatsApp group screenshot 12

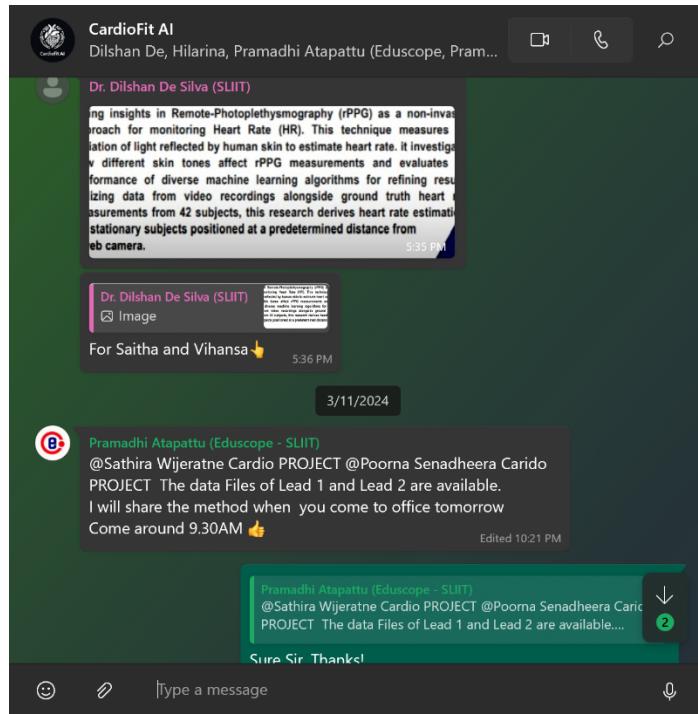


Figure 28: WhatsApp group screenshot 13

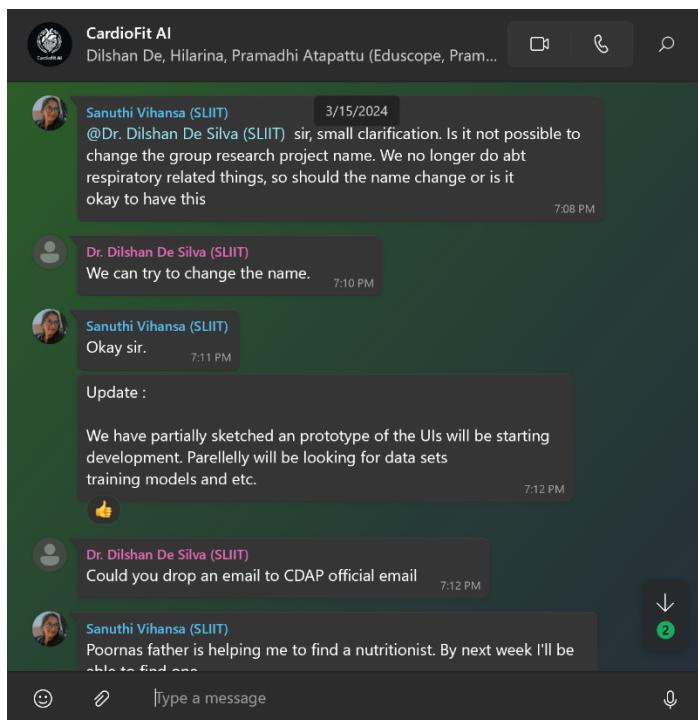


Figure 29: WhatsApp group screenshot 14

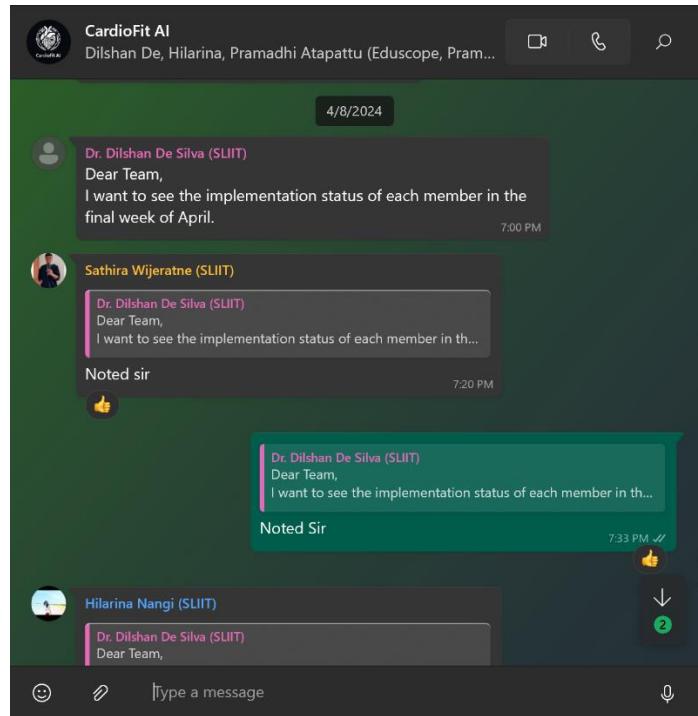


Figure 30: WhatsApp group screenshot 15

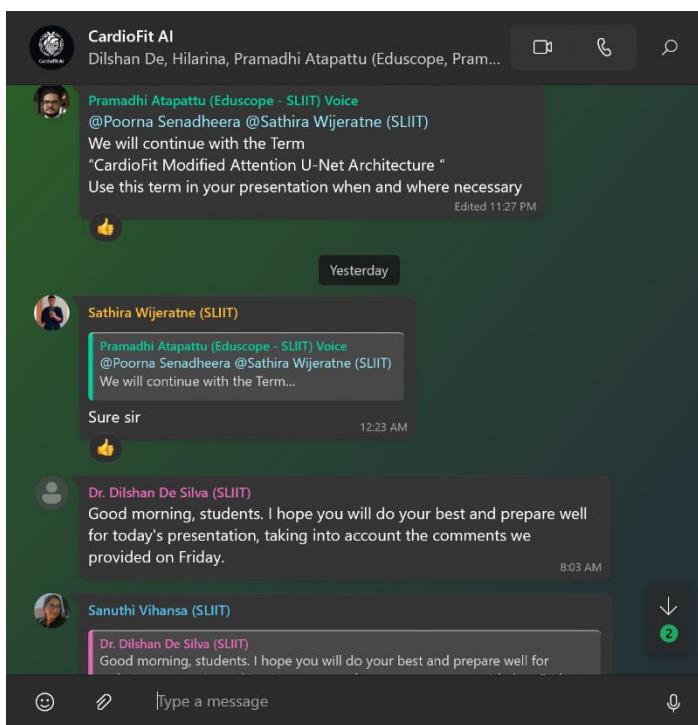


Figure 31: WhatsApp group screenshot 16

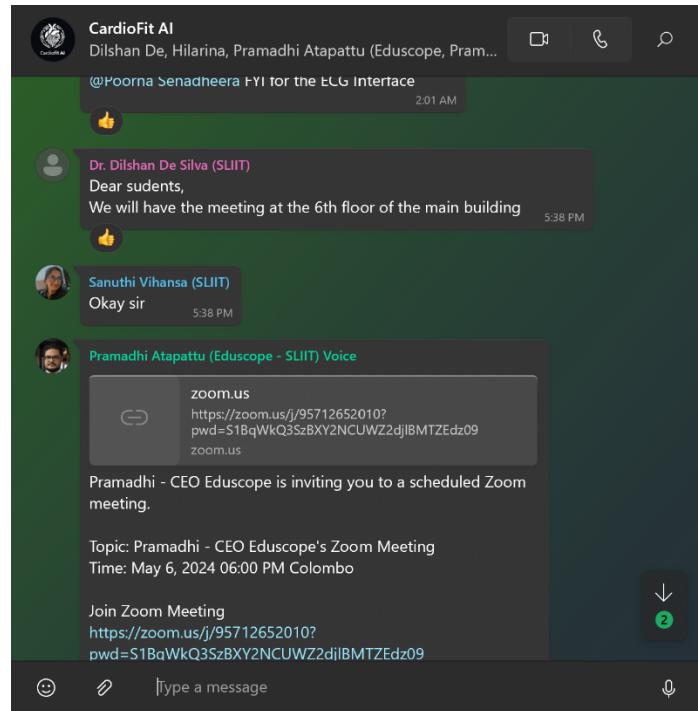


Figure 32: WhatsApp group screenshot 17

## 6. FIGMA PROTOTYPE DESIGNING

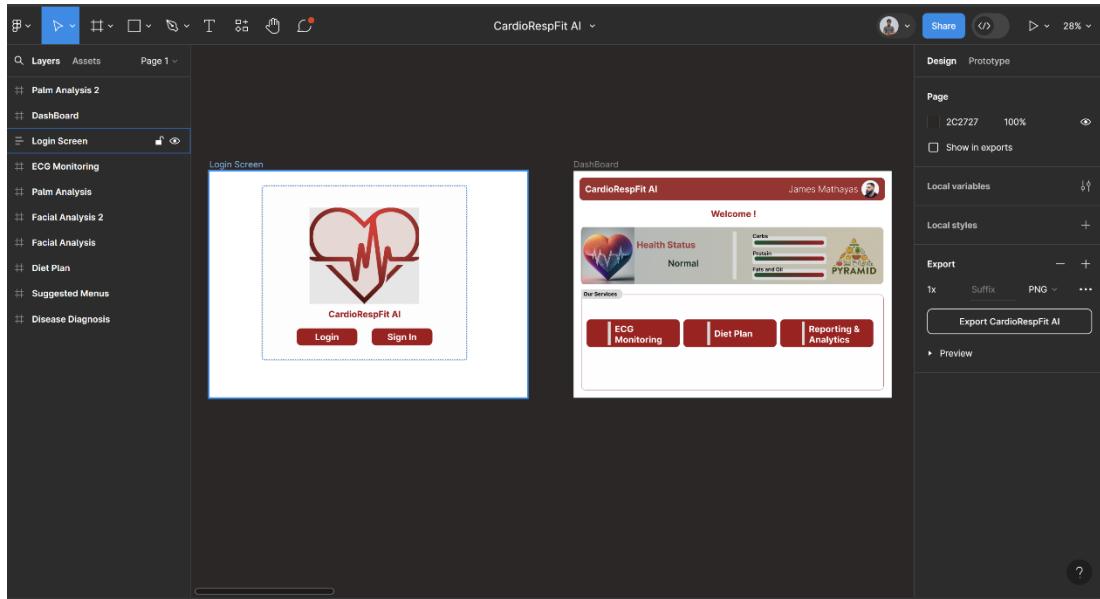


Figure 33: Figma Prototype 1

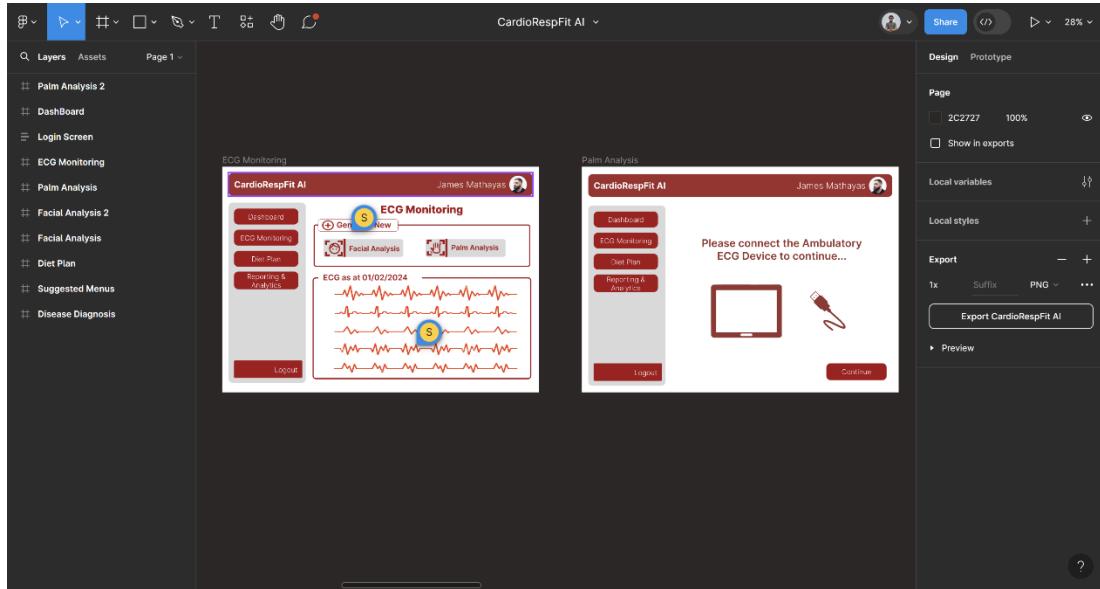


Figure 34: Figma Prototype 2

## 7. EVIDENCE FOR DEVELOPMENT

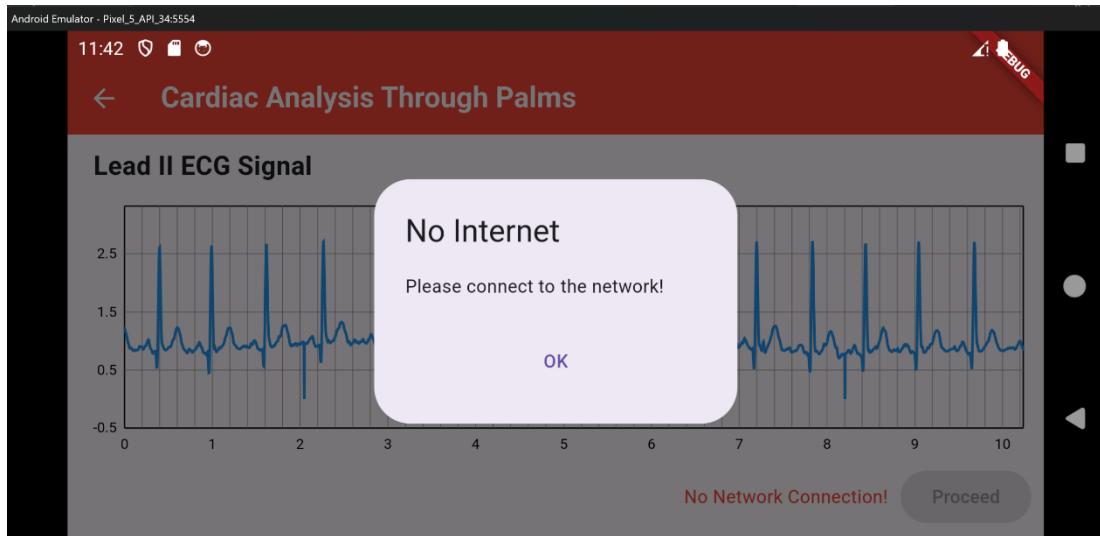


Figure 35: Implementation of the error and warning messages

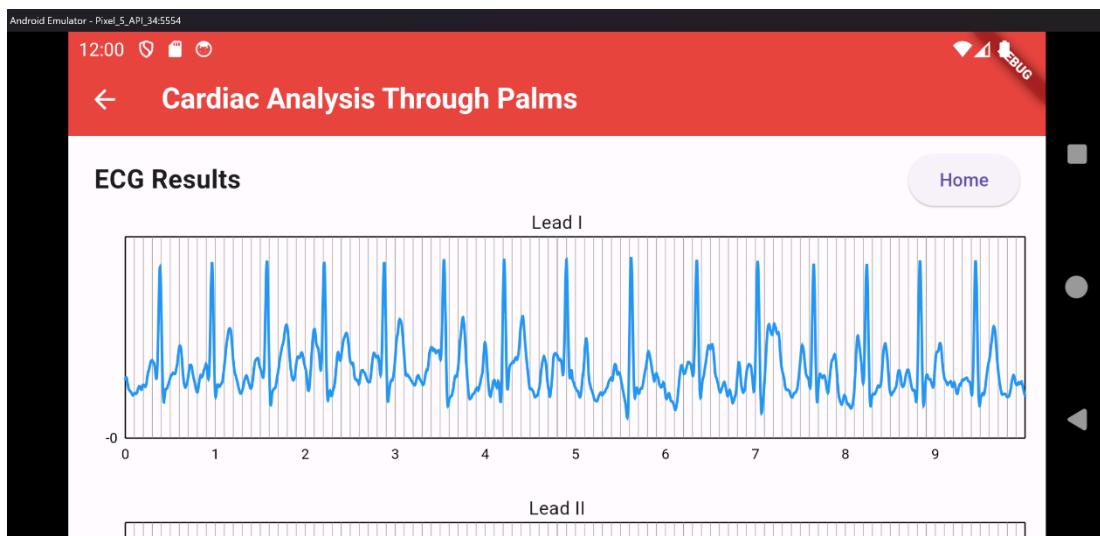


Figure 36: Visualizing the ECG in mobile app

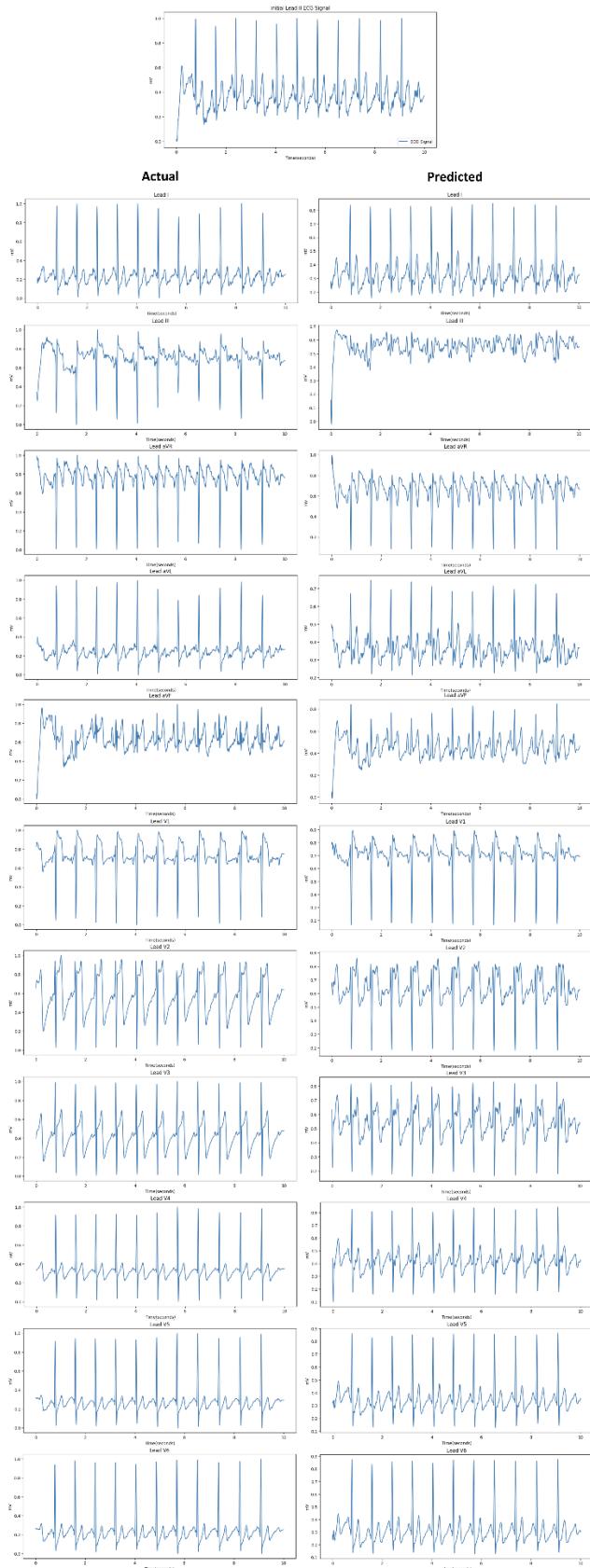


Figure 37: Results of the deep learning model 1

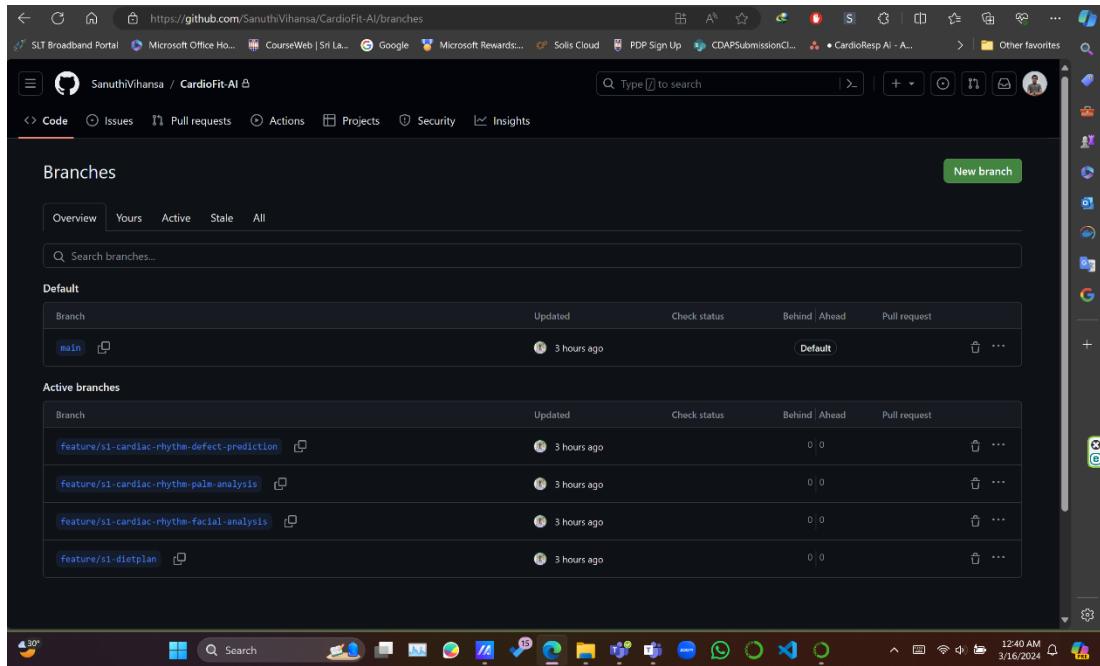


Figure 38: GitHub repository branch creation

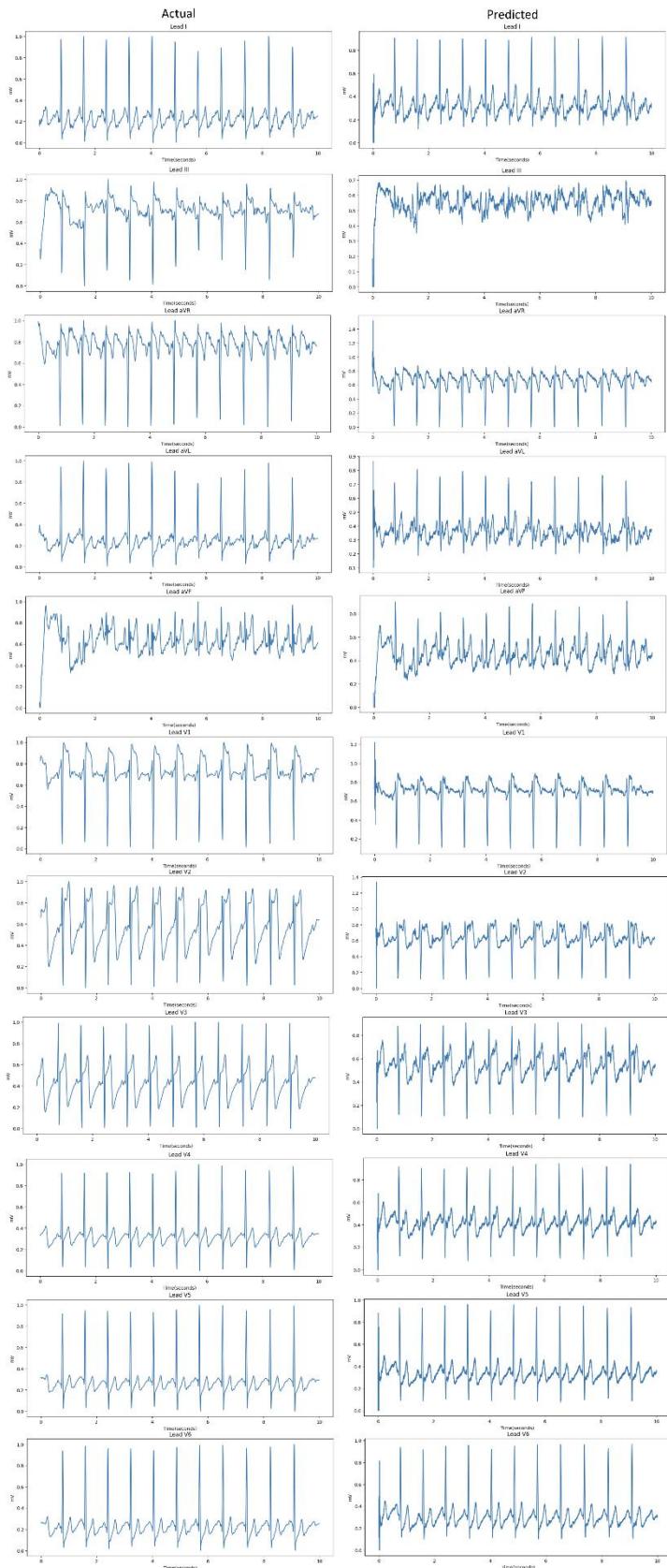


Figure 39: Results of the deep learning model 2



Figure 40: Working with Panacea's Medi Belt at PulzSolution (Pvt) Ltd.

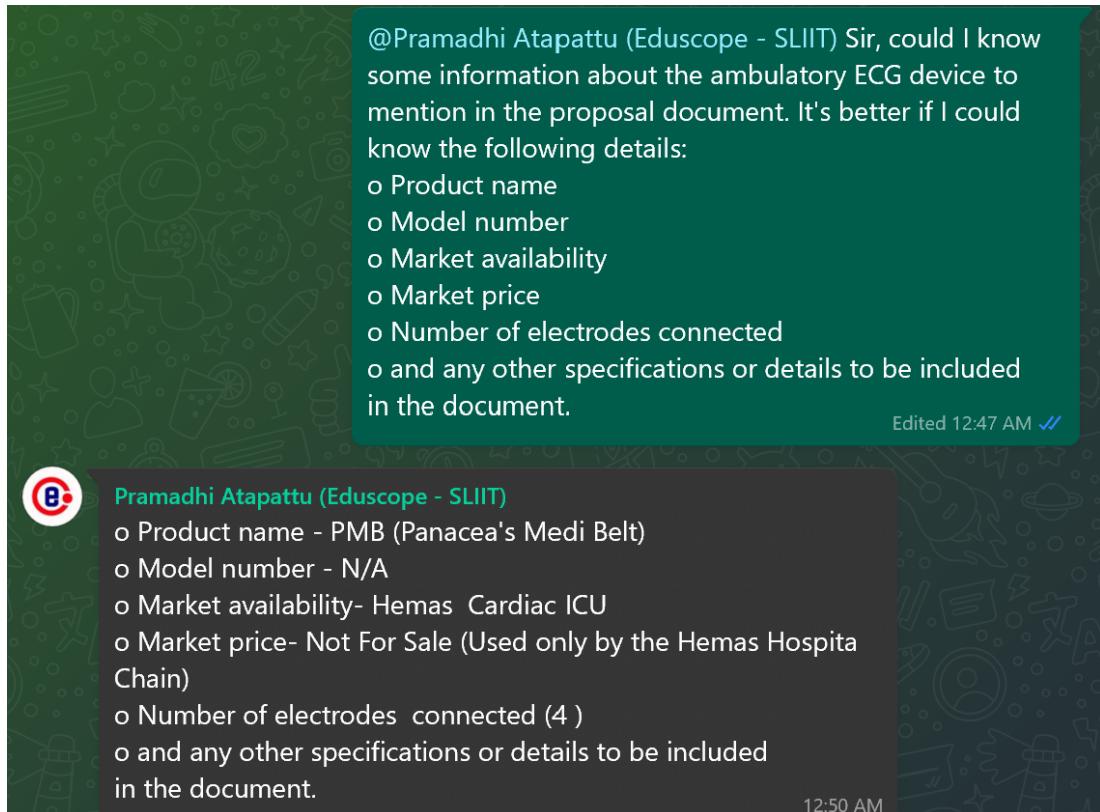


Figure 41: Ambulatory ECG device specifications

```
[13]: corr = stat.pearsonr(y_test_reshaped, pred_reshaped)
corr
```

```
[13]: PearsonRResult(statistic=0.5367207995230621, pvalue=0.0)
```

```
[14]: mse = sm.mean_squared_error(y_test_reshaped, pred_reshaped)
mse
```

```
[14]: 0.030068060464096574
```

```
► r2 = sm.r2_score(y_test_reshaped, pred_reshaped)
r2
```

```
[15]: 0.25069238965273066
```

[+ Code](#) [+ Markdown](#)

Figure 42: Metric evaluation of the deep learning model

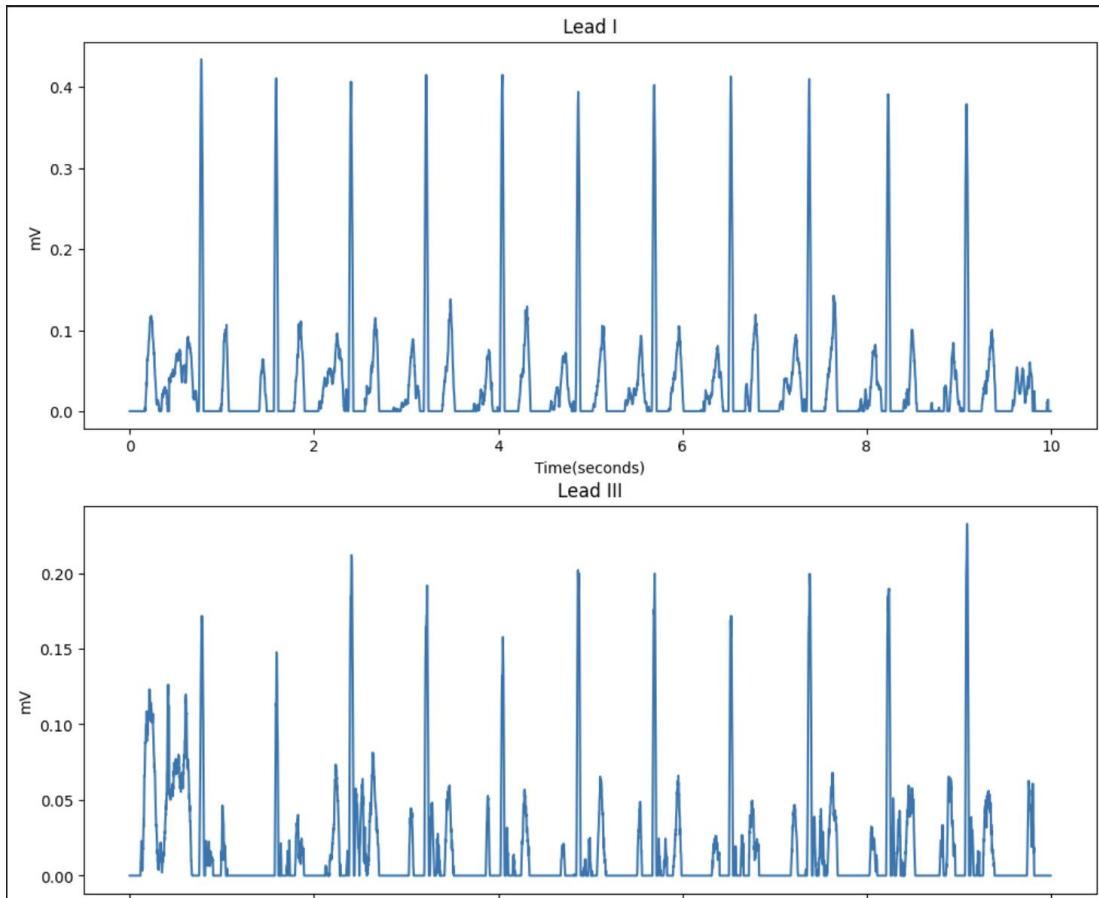


Figure 43: Results before the normalization

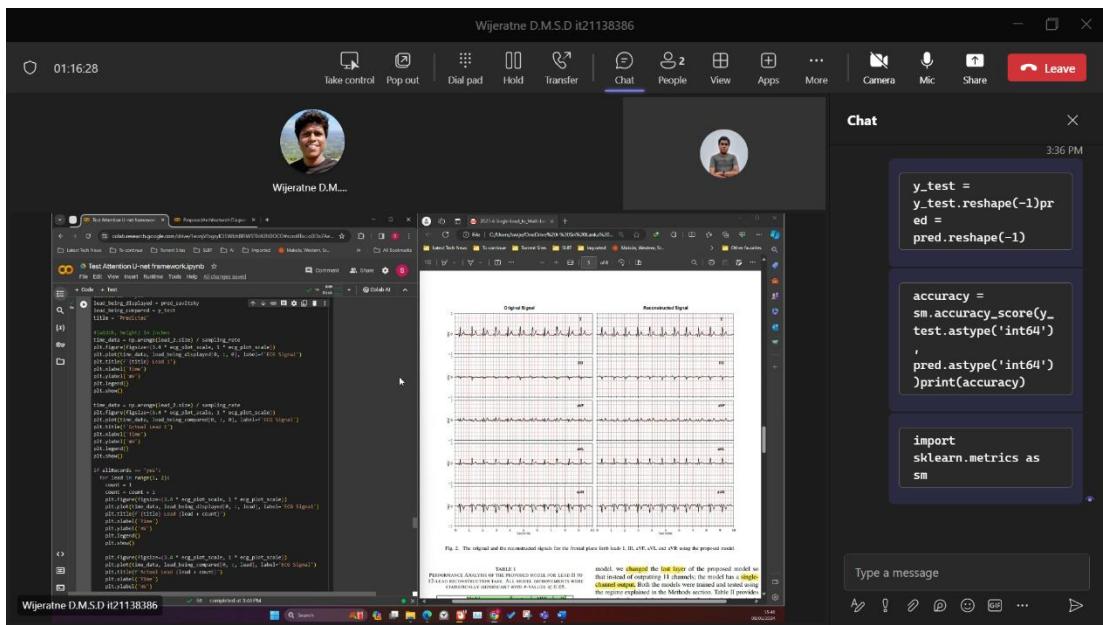


Figure 44: Prediction comparison with past research

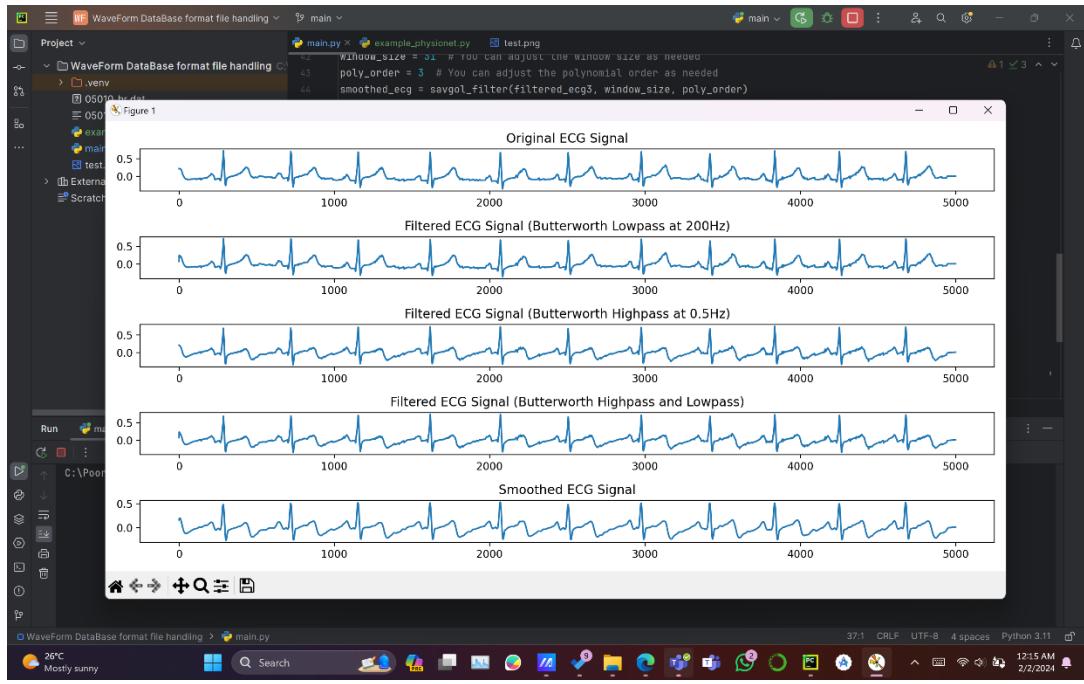


Figure 45: Filter testing

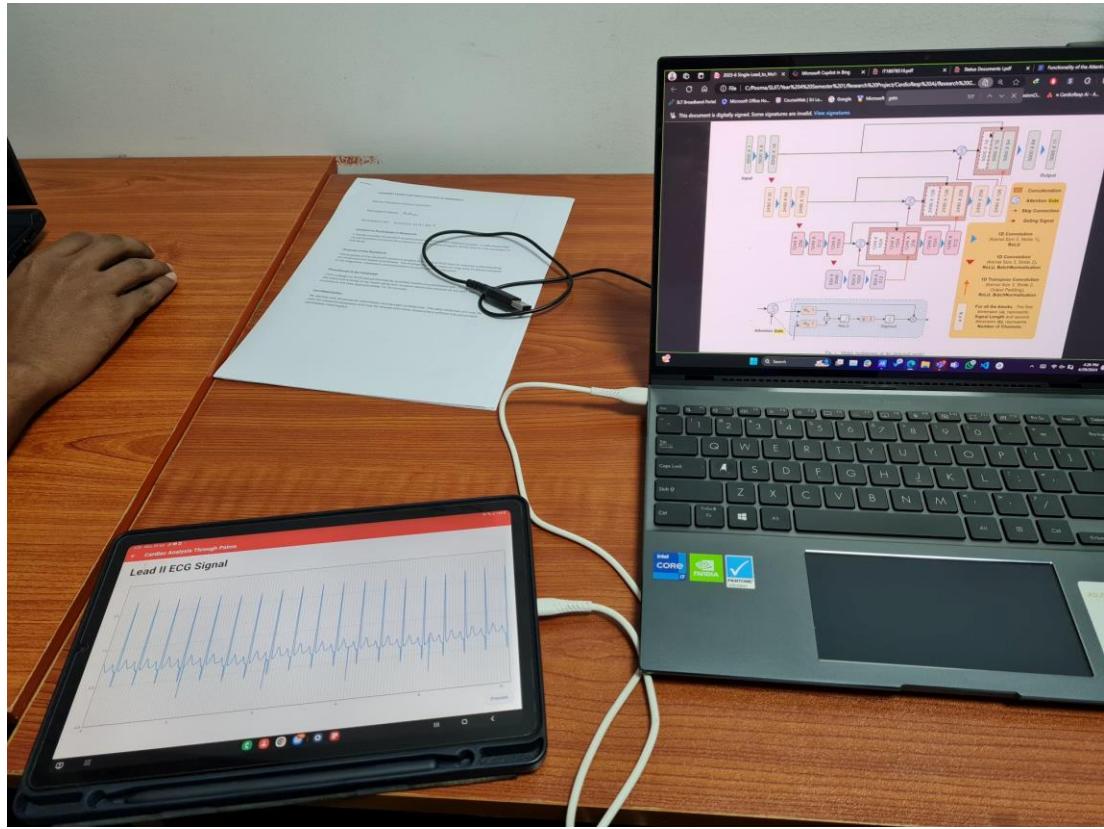


Figure 46: Application testing on tablet device

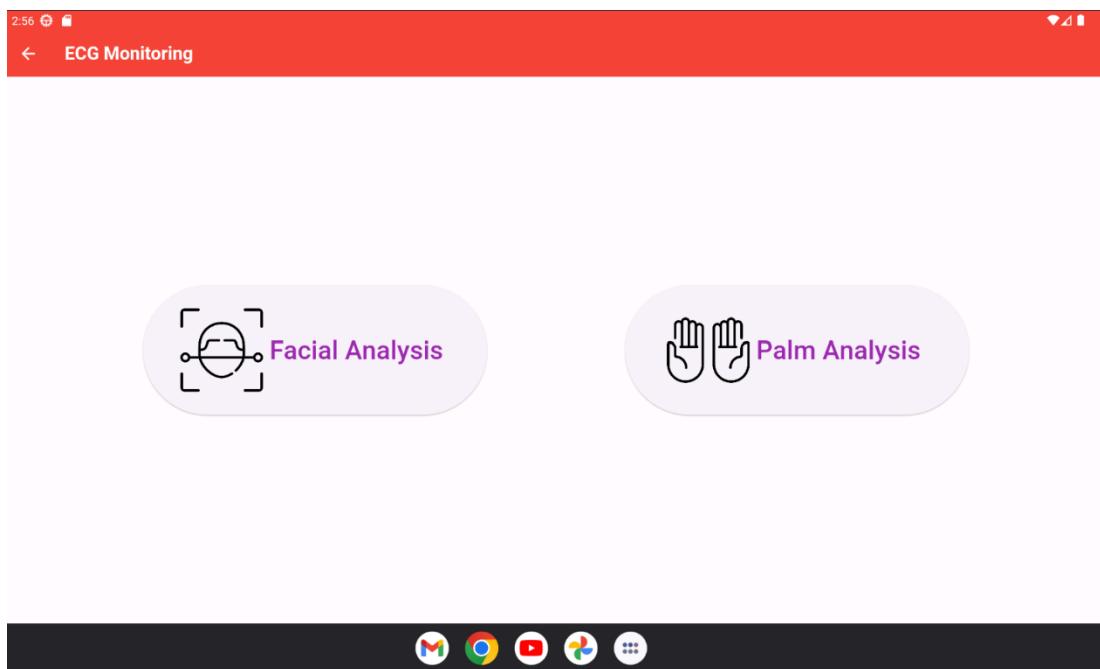


Figure 47: User interface 1

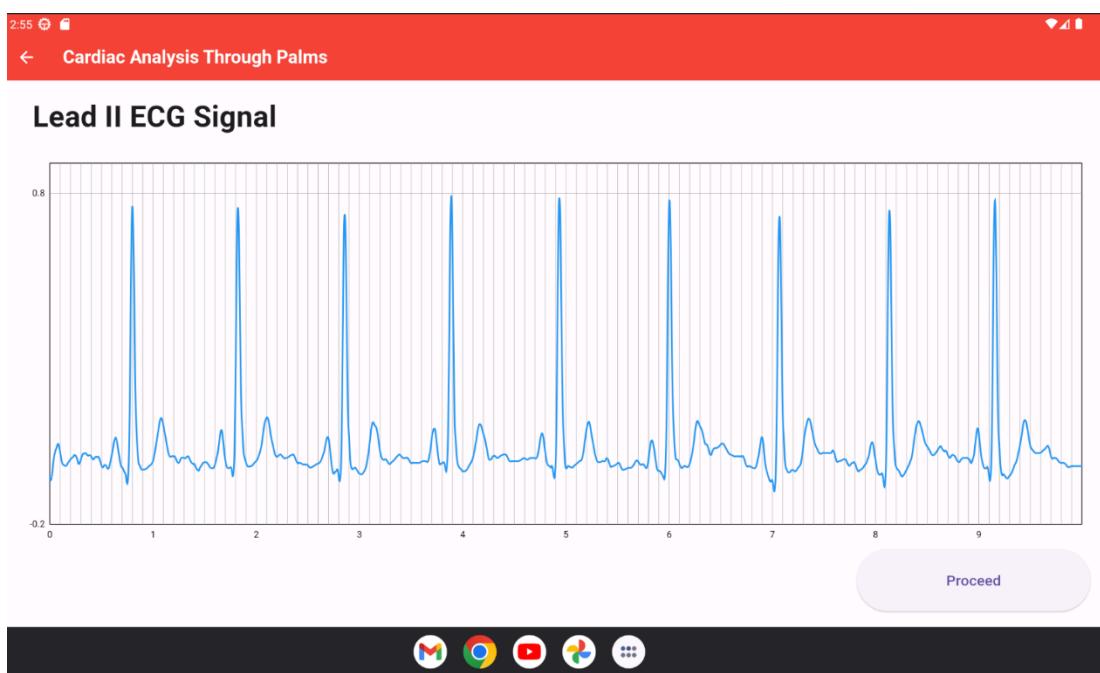


Figure 48: User interface 2

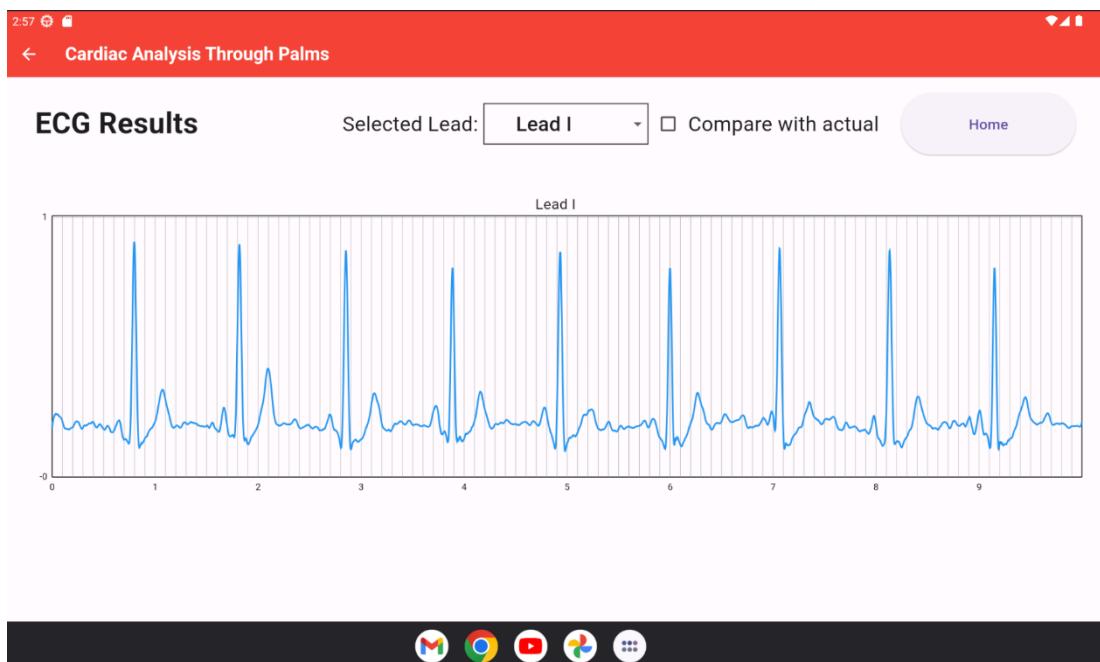


Figure 49: User interface 3

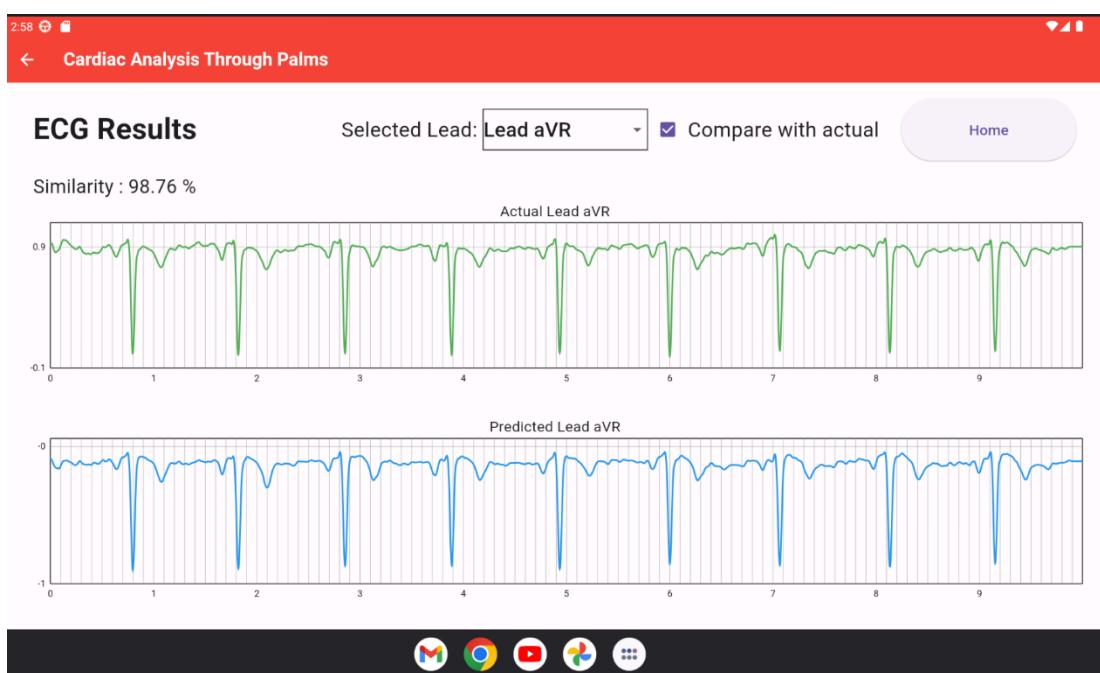


Figure 50: User interface 4