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

R24-019

Status Document 2

IT21138386 – Wijeratne D.M.S.D

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

September 2024

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1. TEST RESULTS

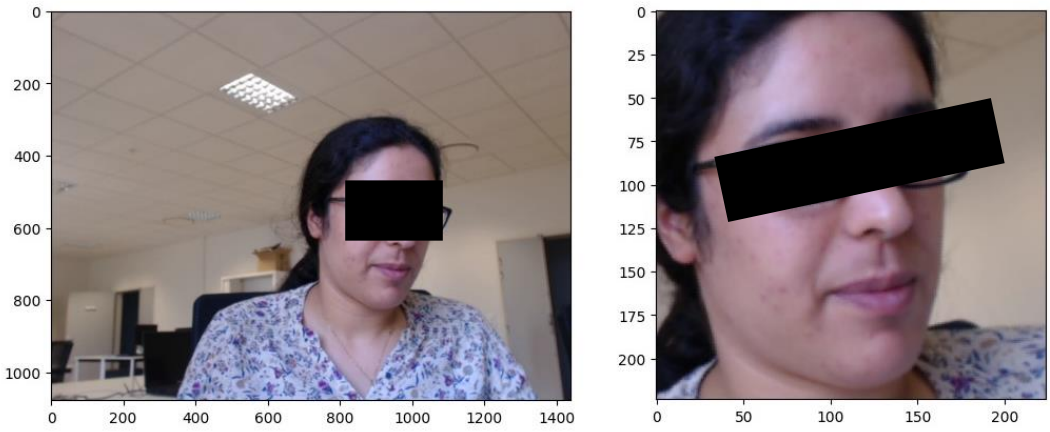


Figure 1: Applying DeepFace to detect facial region

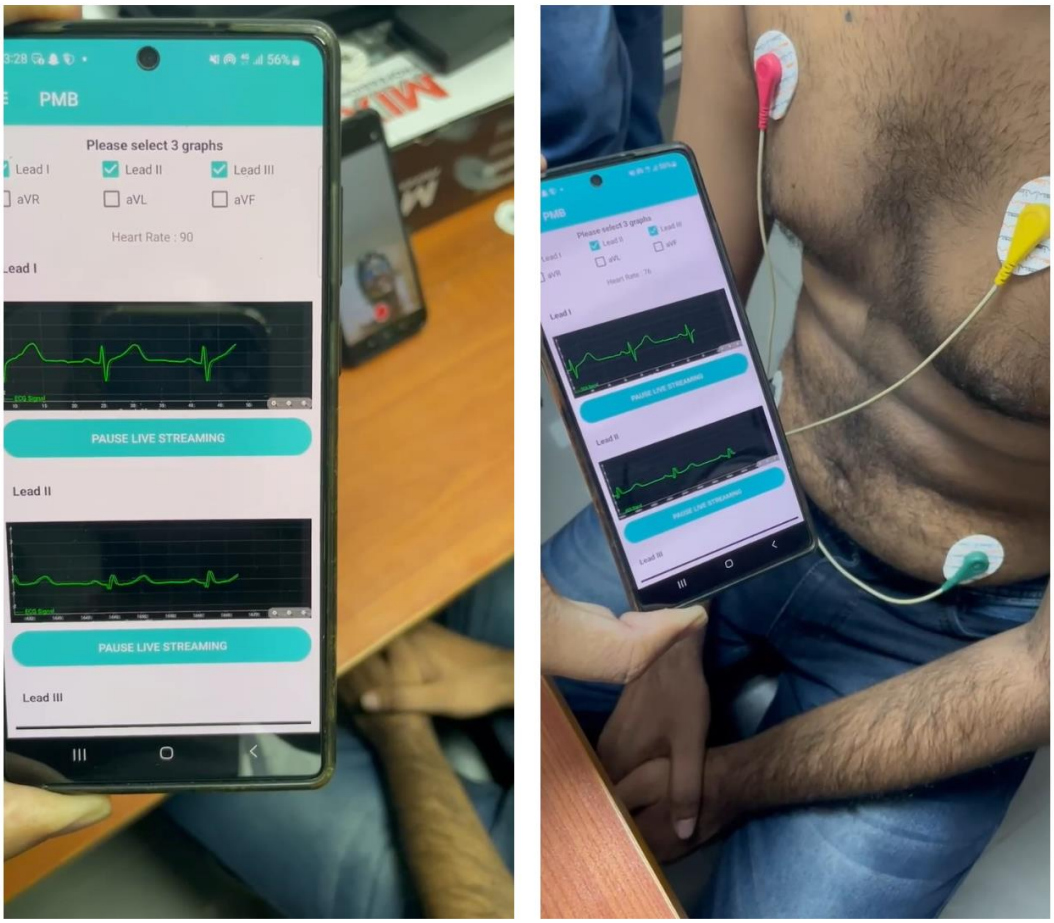


Figure 2: Creating dataset consisting of facial recording and simultaneous ECG capturing

Figure 3: Applying dense optical flow

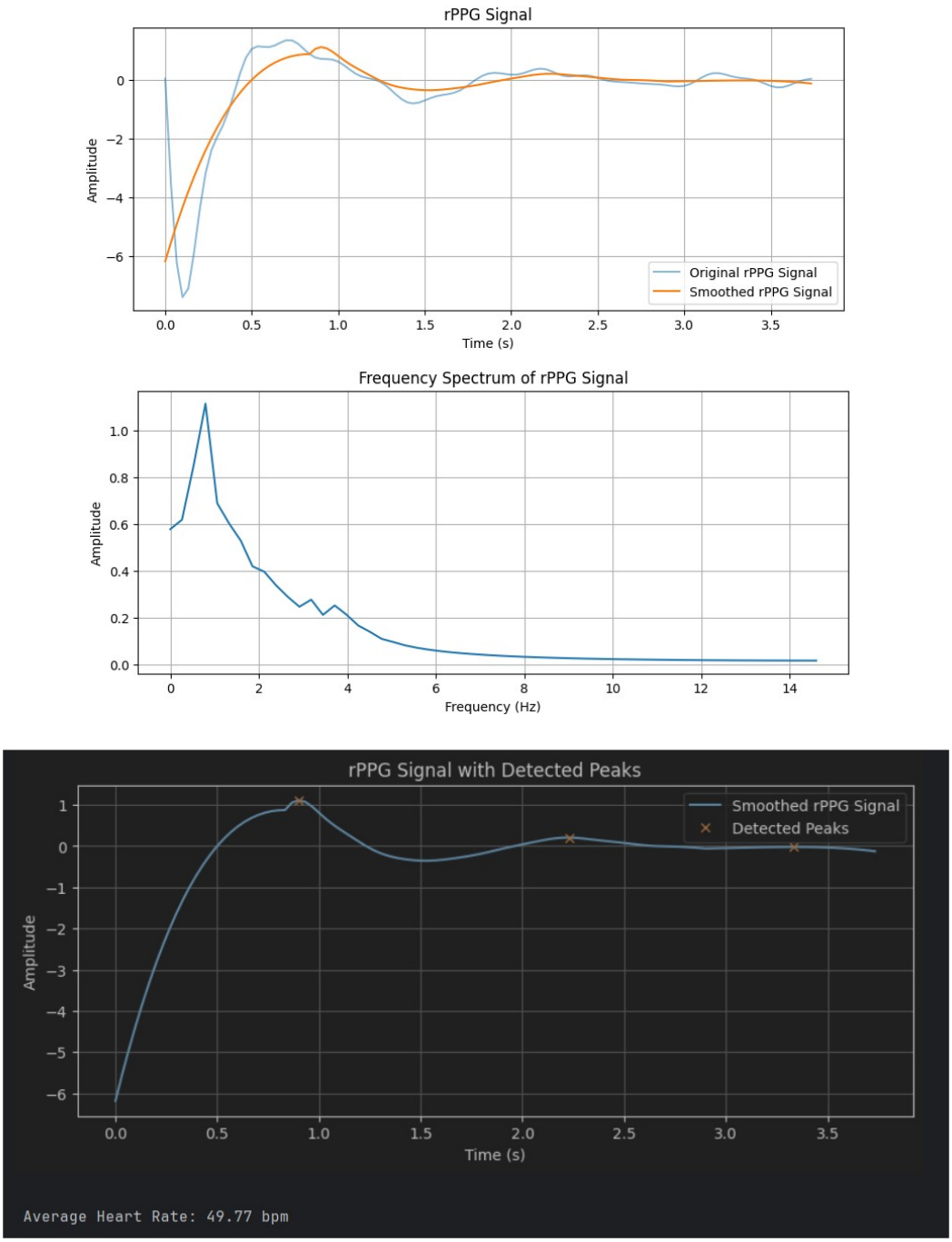


Figure 4: Obtained rPPG signal using HaarCascade and detected heart beat

Figure 5: Facial region identification using MediaPipe Facemesh

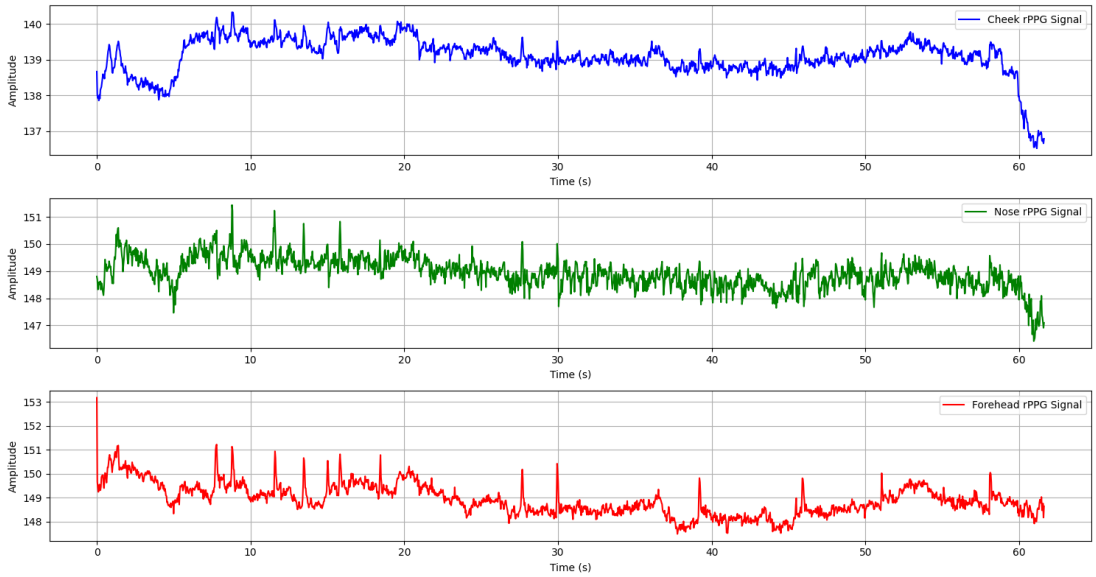


Figure 6: rPPG from multiple ROIs

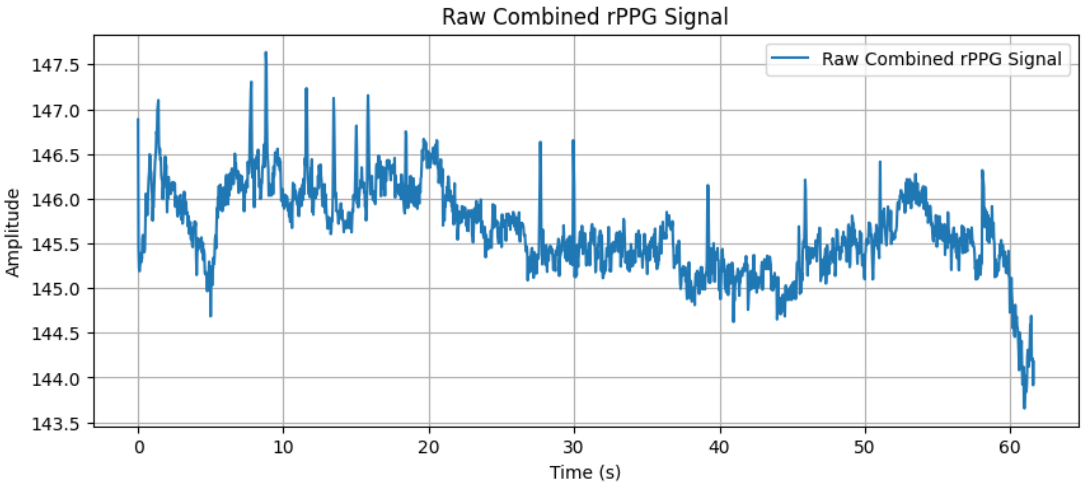


Figure 7: Combined rPPG from multiple ROIs

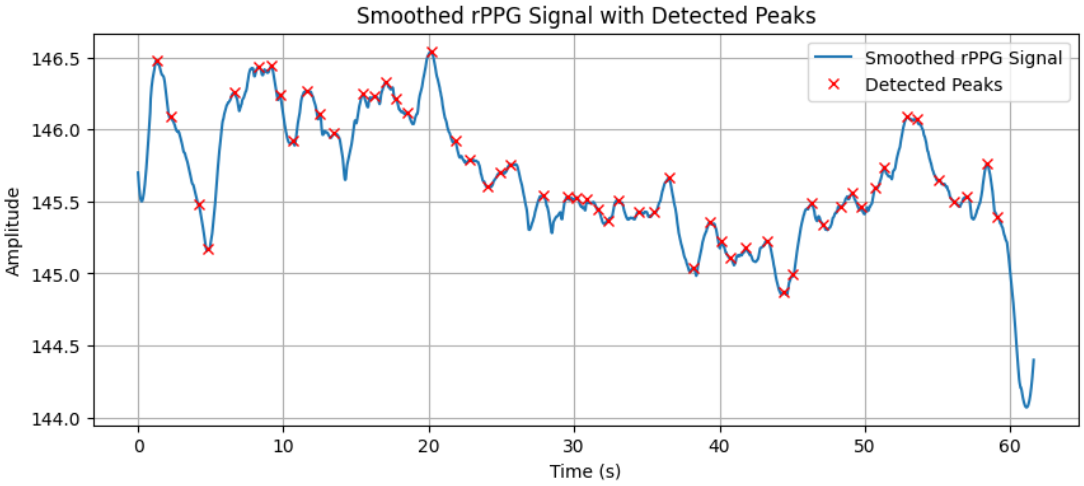


Figure 8: Peak detection for obtained rPPG signal

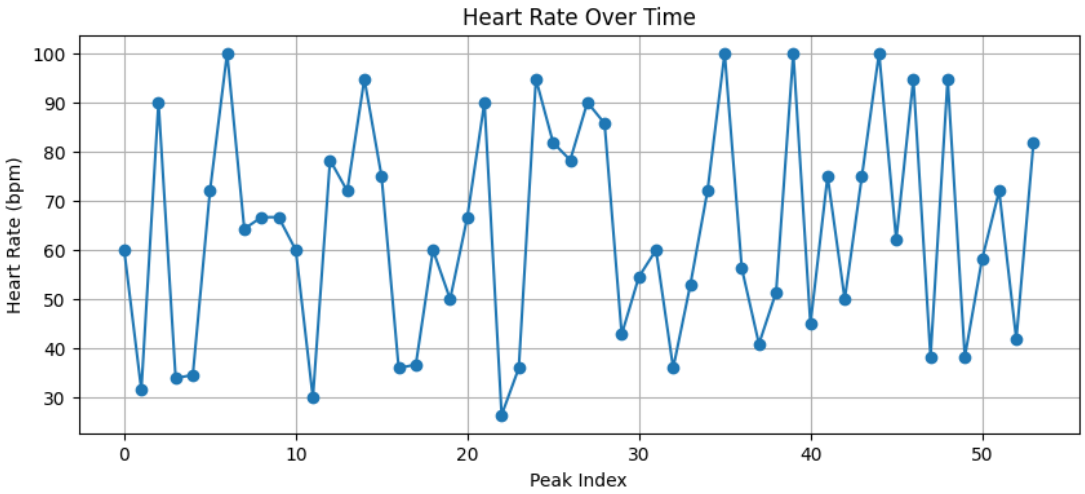


Figure 9: Heart rate over time from obtained rPPG signal

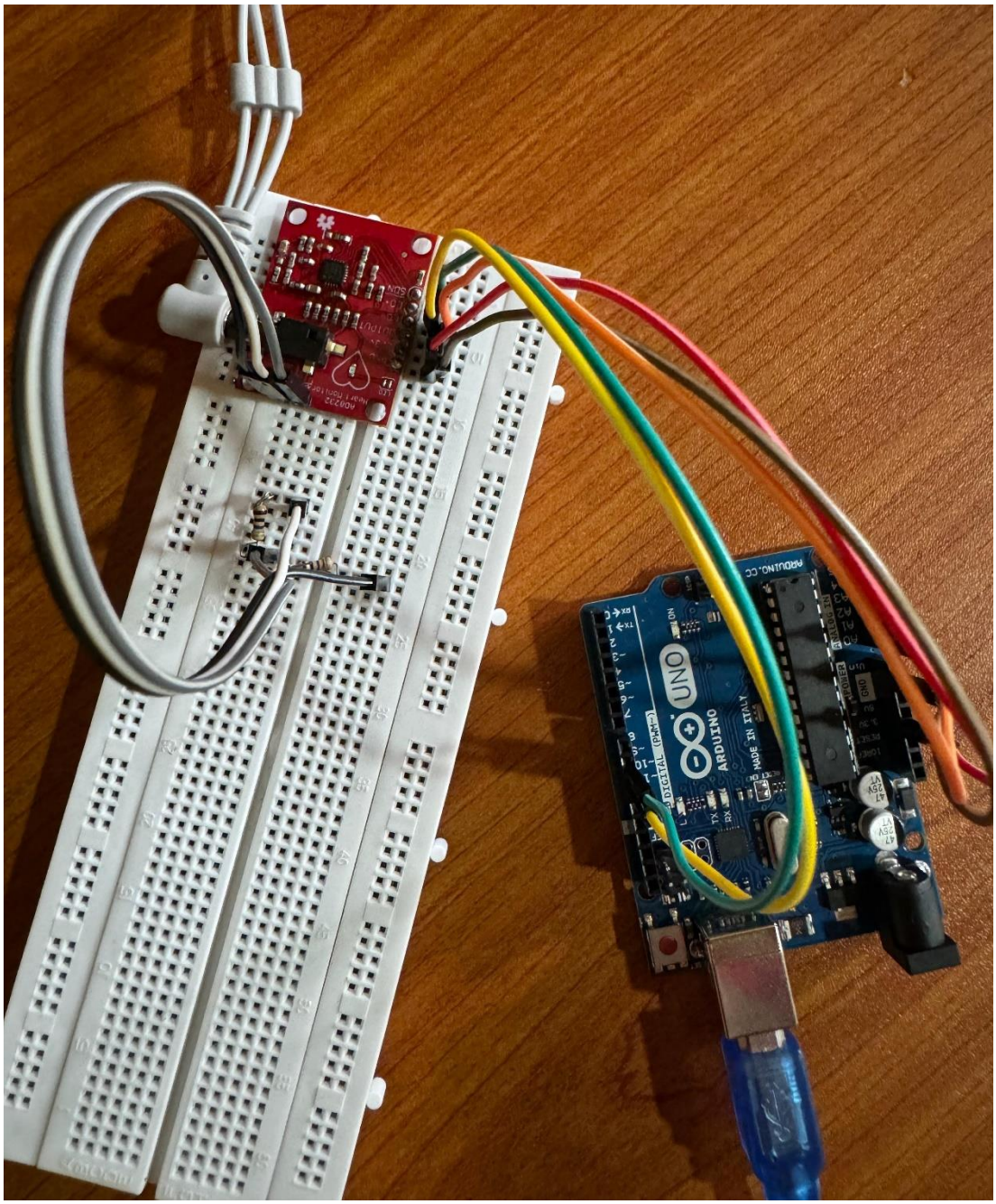


Figure 10: Palm based ECG acquisition device

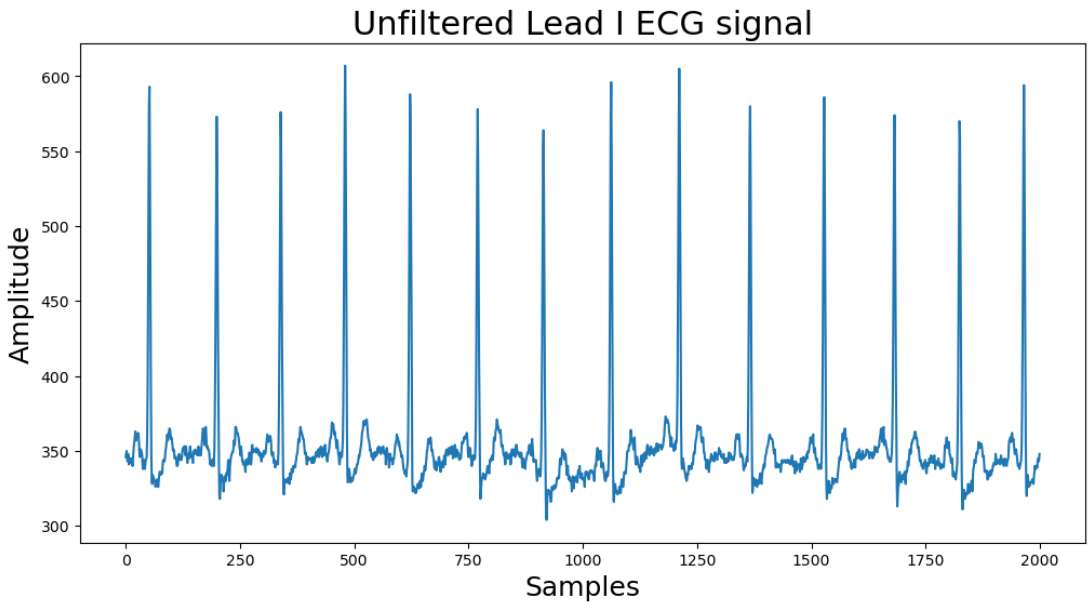


Figure 11: Unfiltered Lead I ECG signal obtained from palms

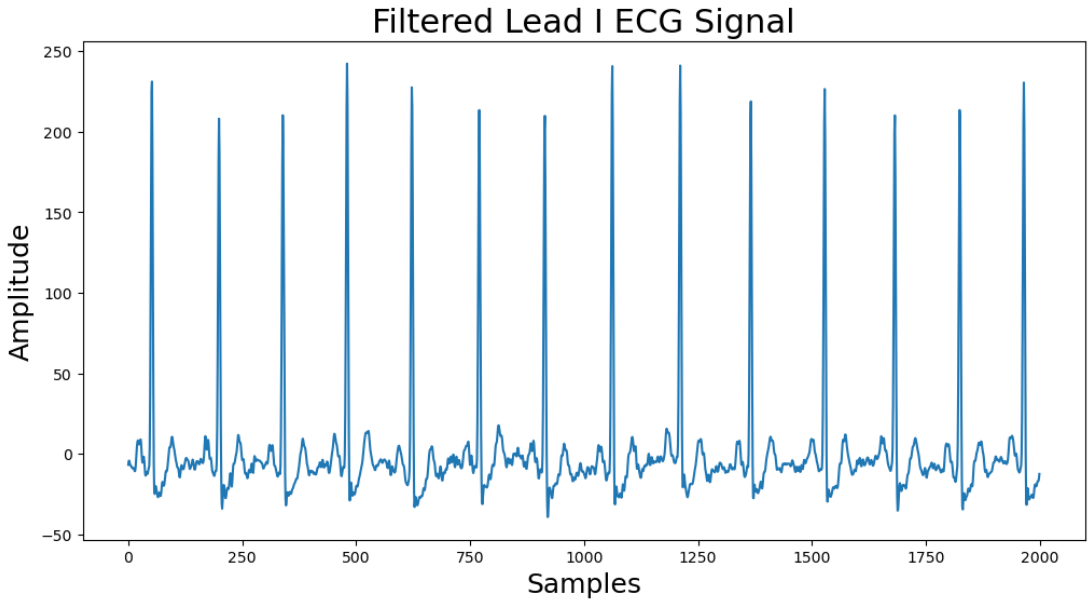


Figure 12: Filtered Lead I ECG signal obtained from palms

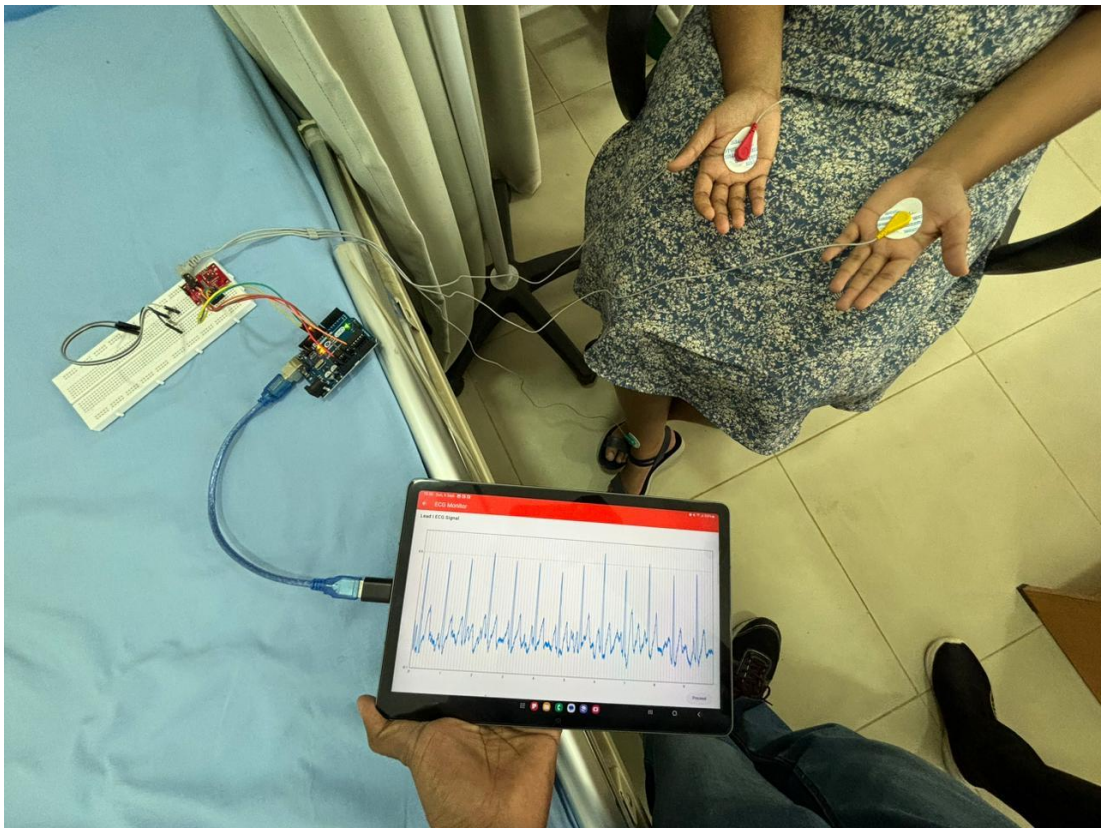


Figure 13: Obtaining ECG from proposed device

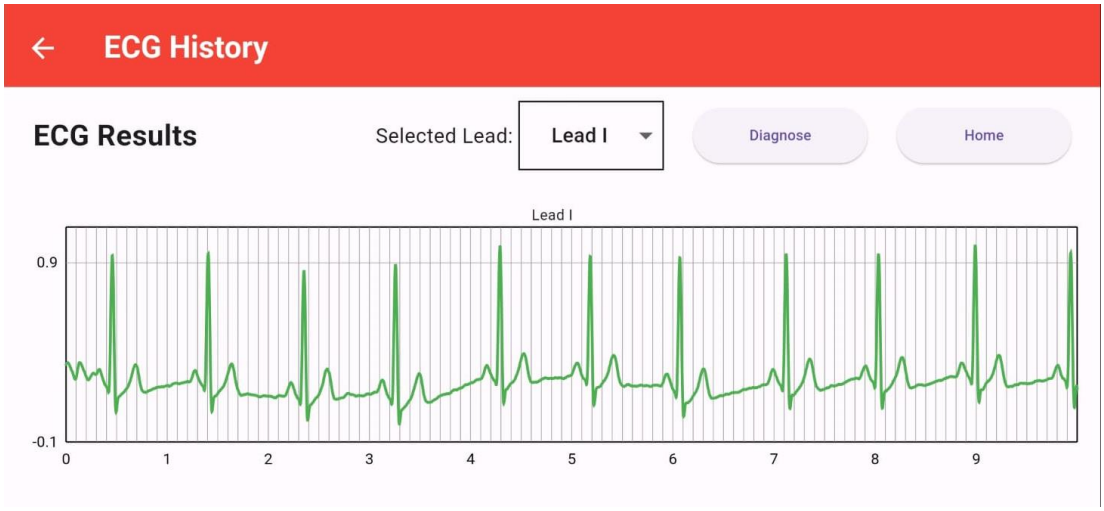


Figure 14: Visualization of ECG on mobile app

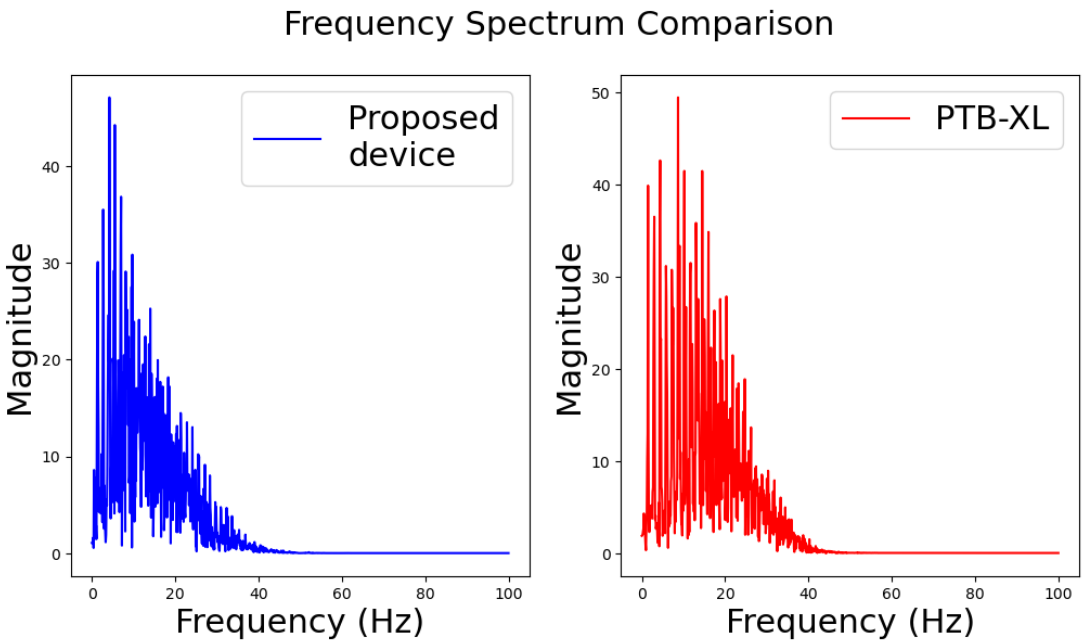


Figure 15: Frequency spectrum comparison between Lead I ECG from proposed device and PTB-XL dataset

2. SCREENSHOTS OF THE TEAMS MEETING HISTORY

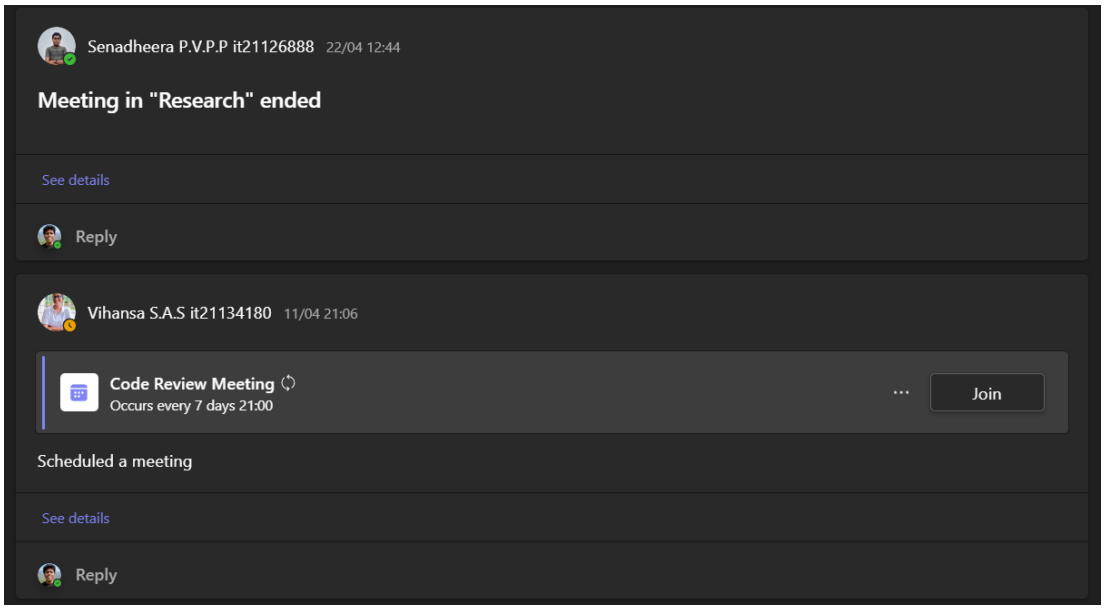


Figure 16: Teams meeting history

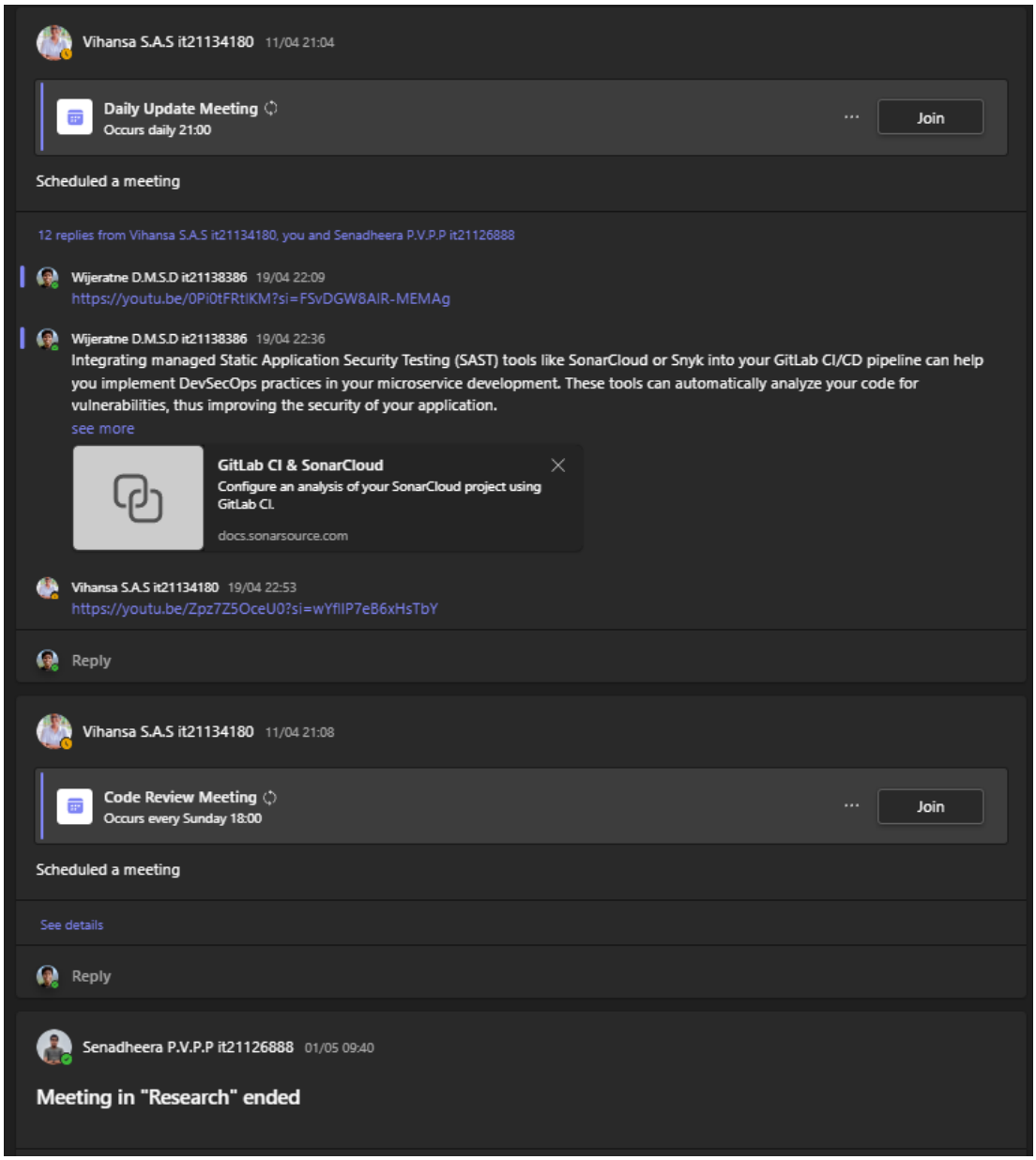


Figure 17: Teams meeting history

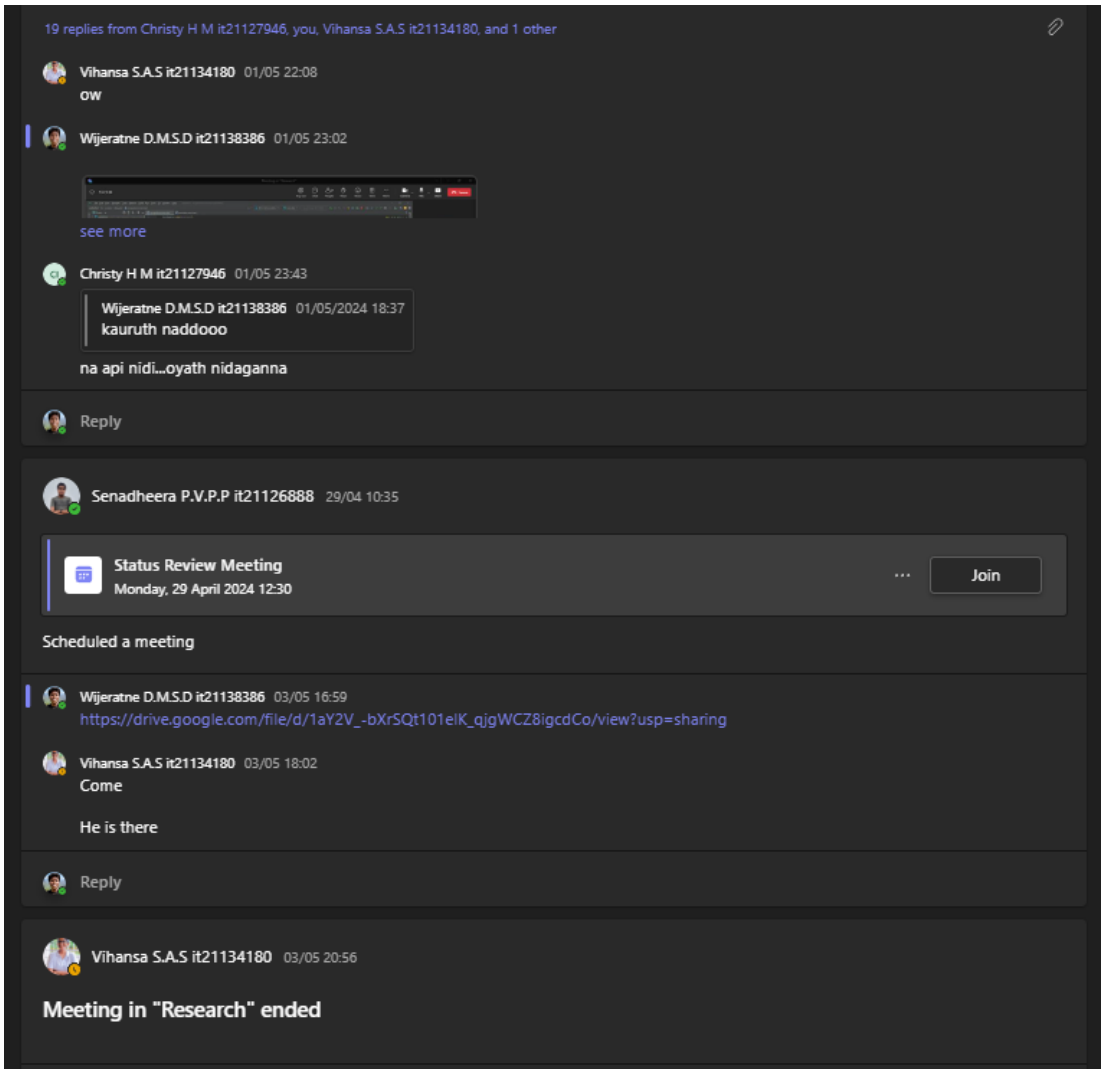


Figure 18: Teams meeting history

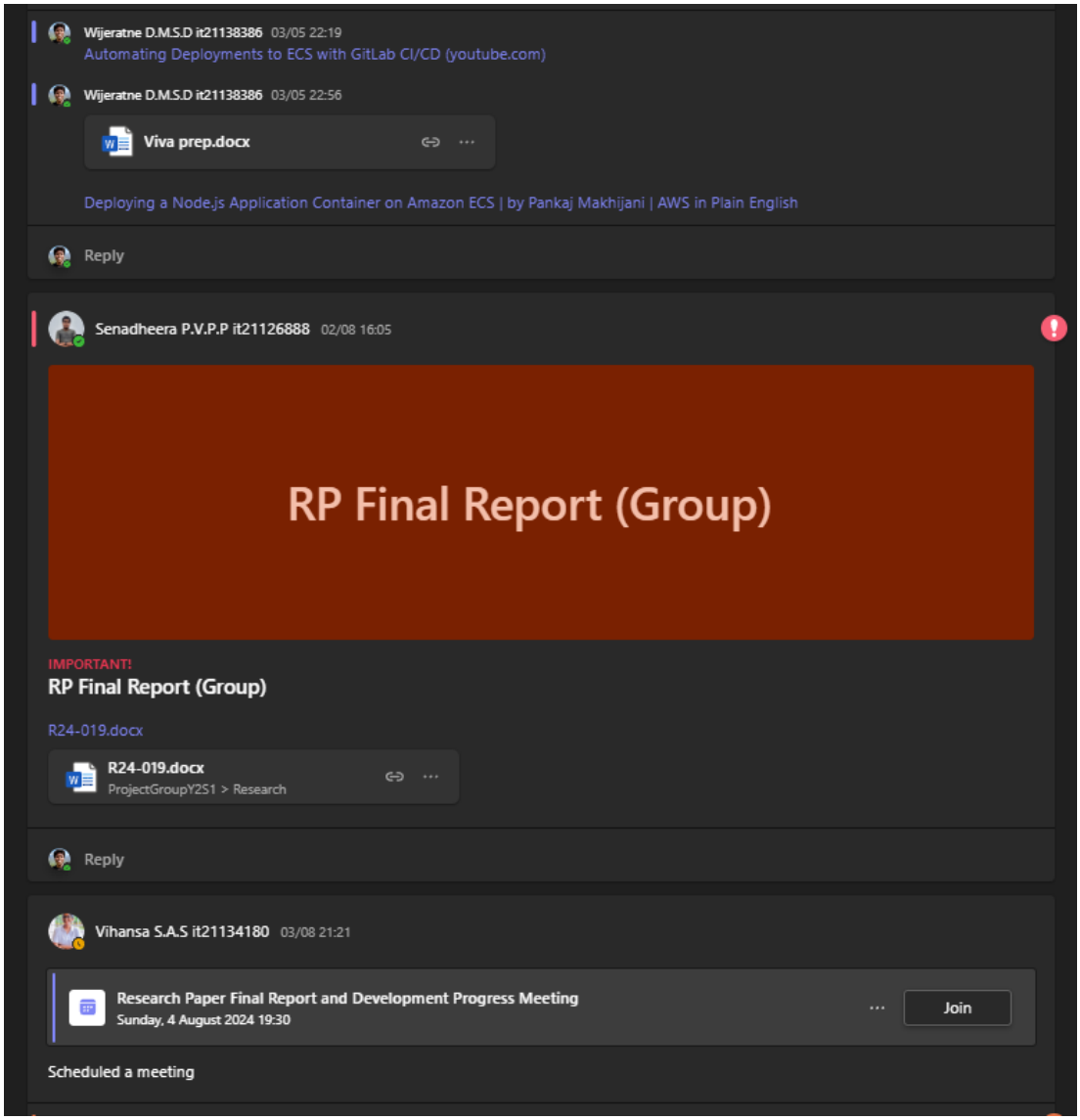


Figure 19: Teams meeting history

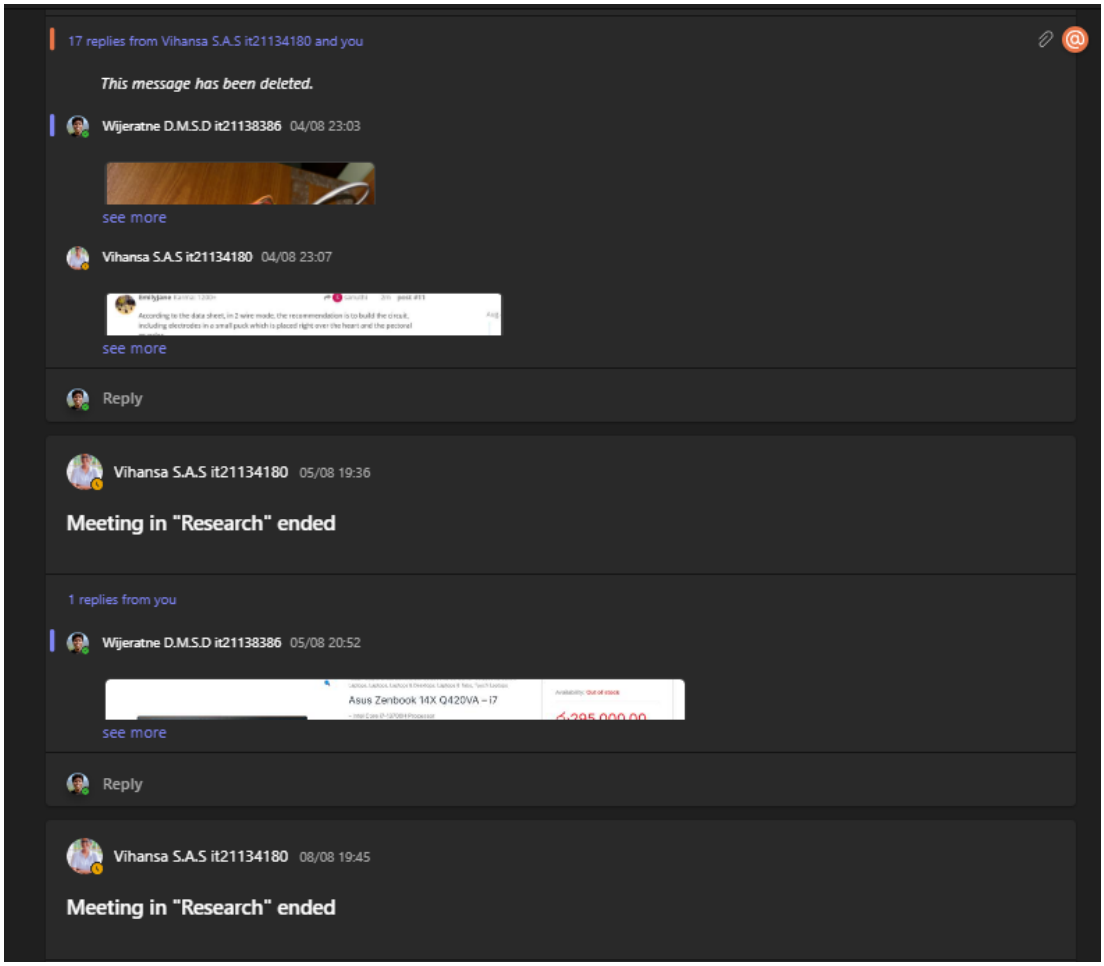


Figure 20: Teams meeting history

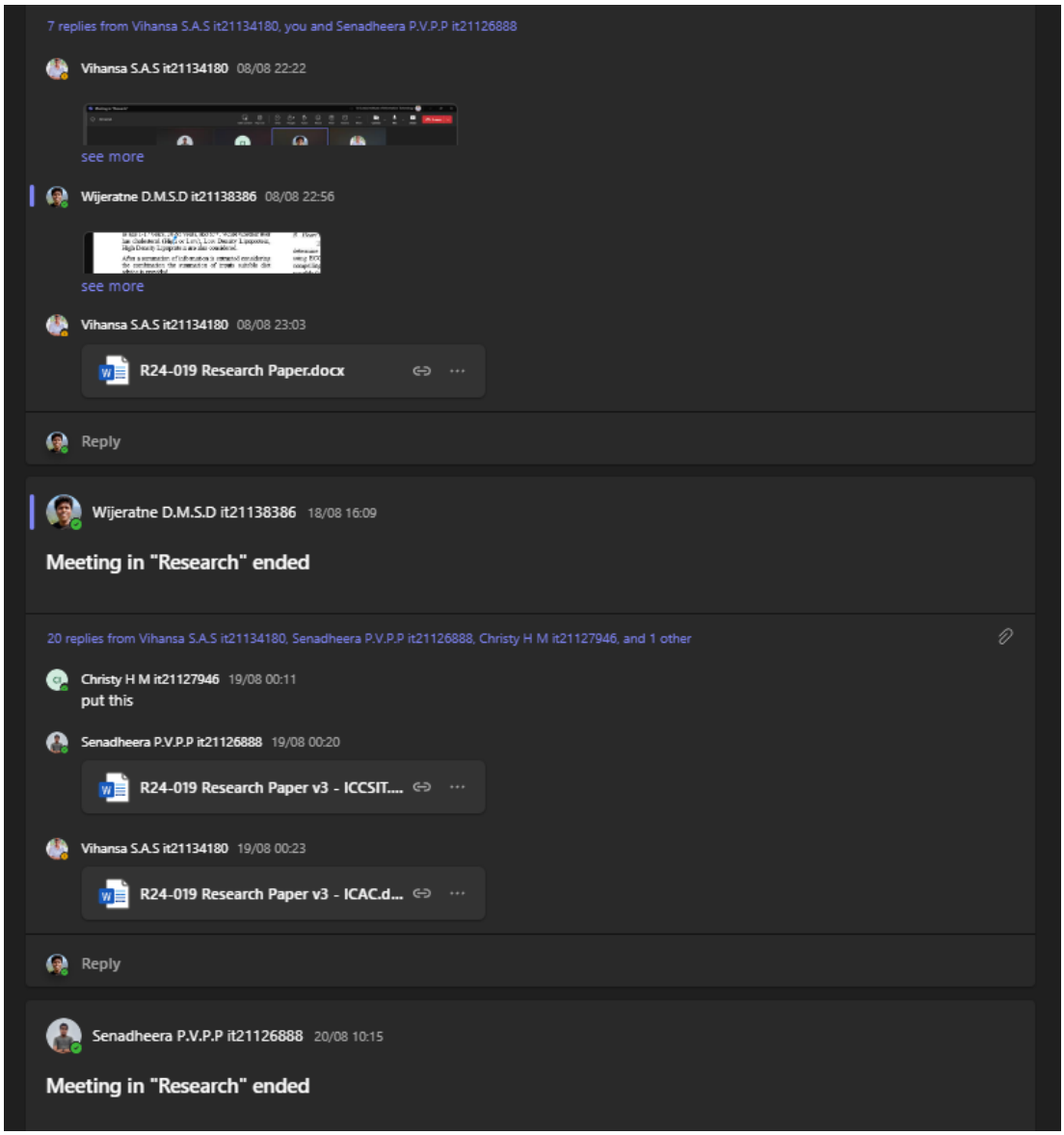


Figure 21: Teams meeting history

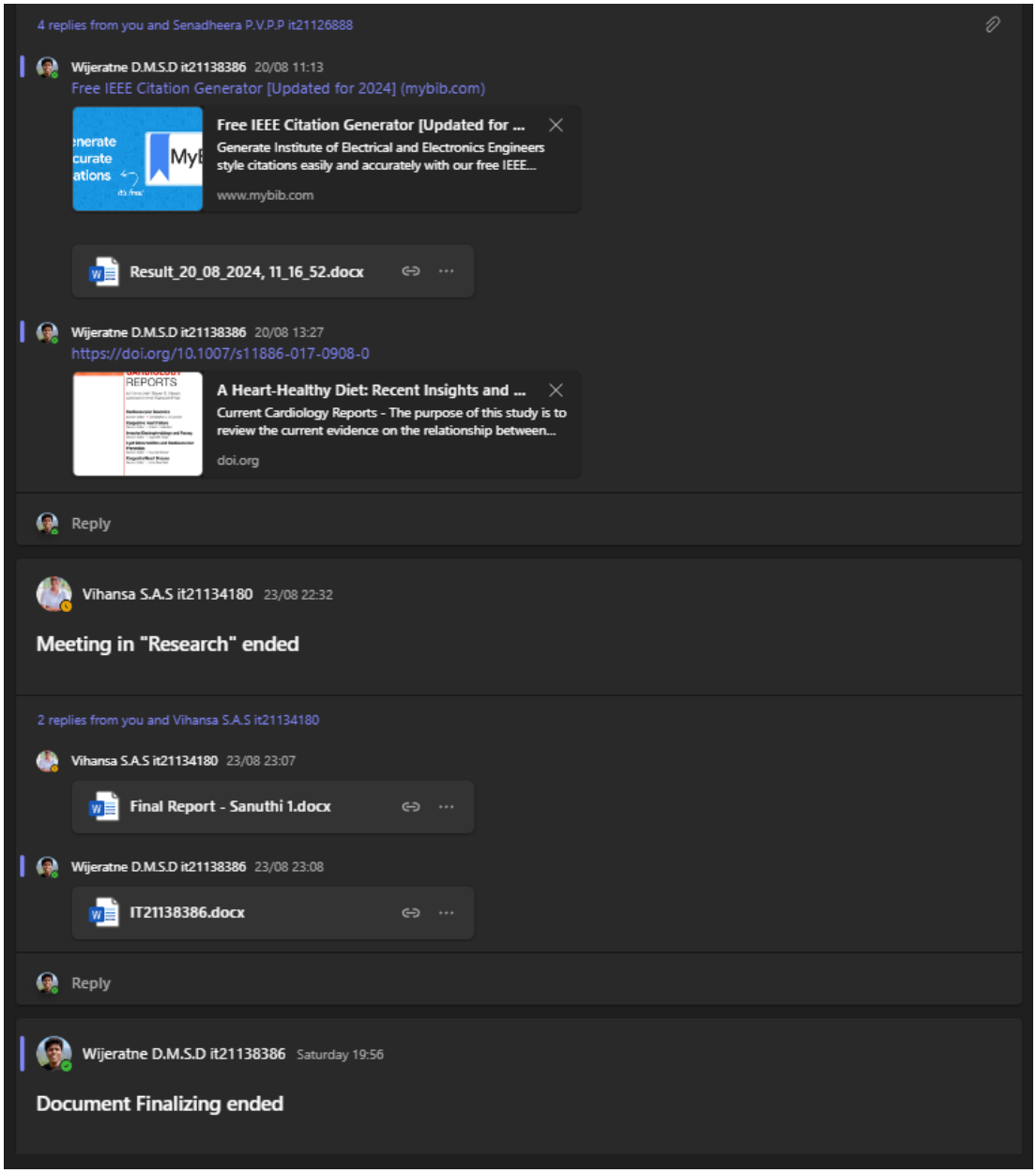


Figure 22: Teams meeting history

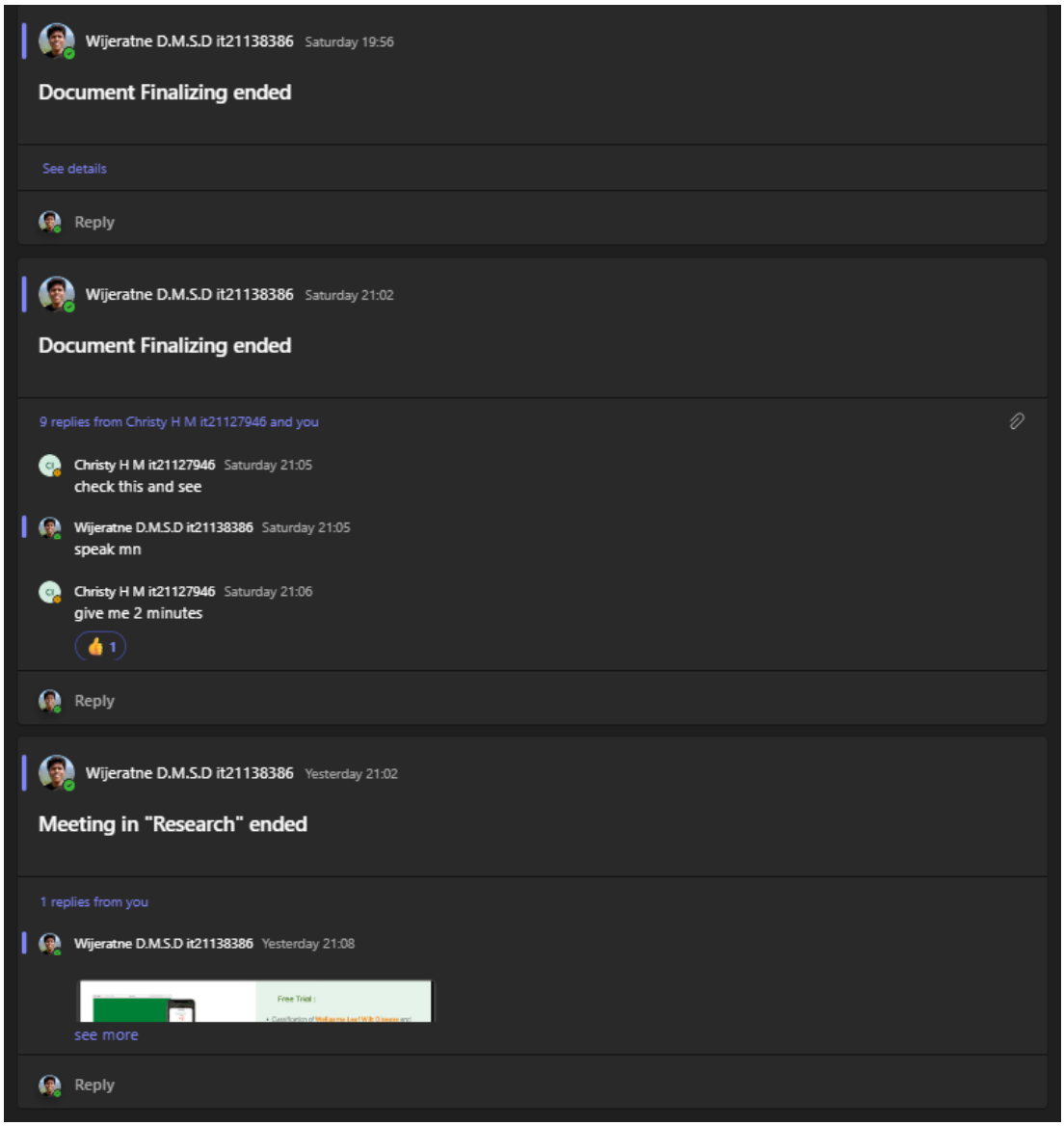
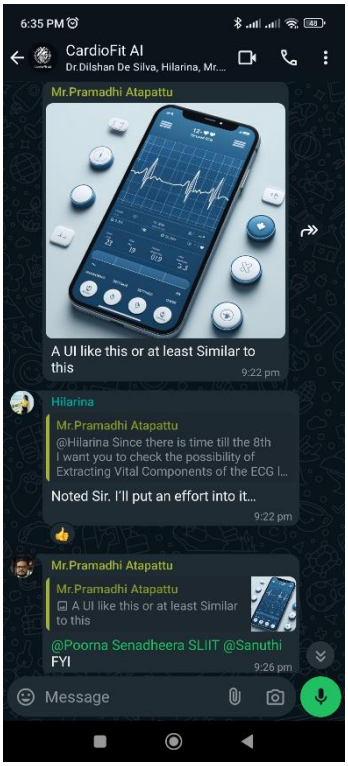
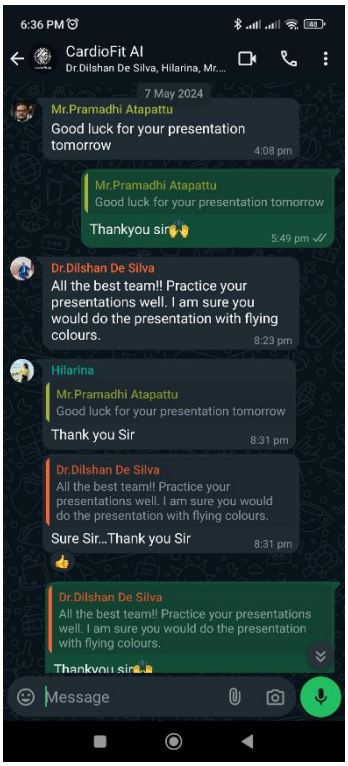
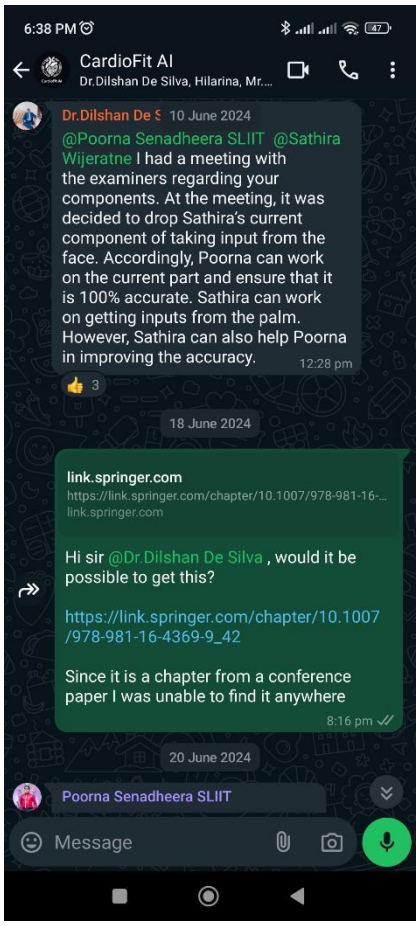


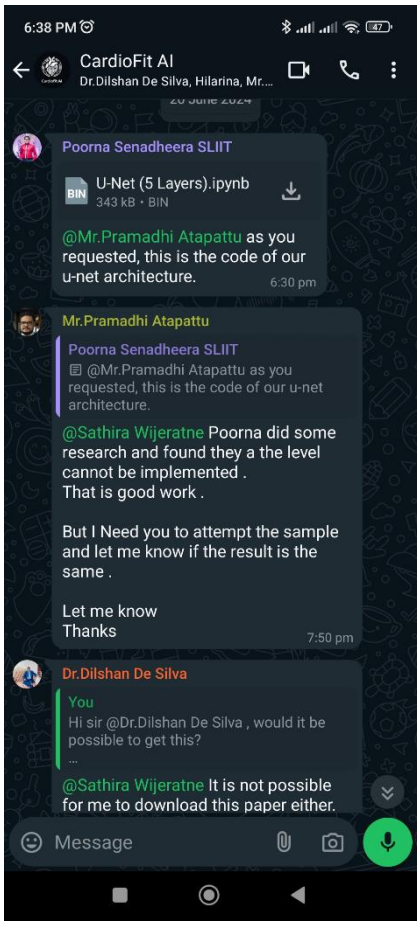
Figure 23: Teams meeting history

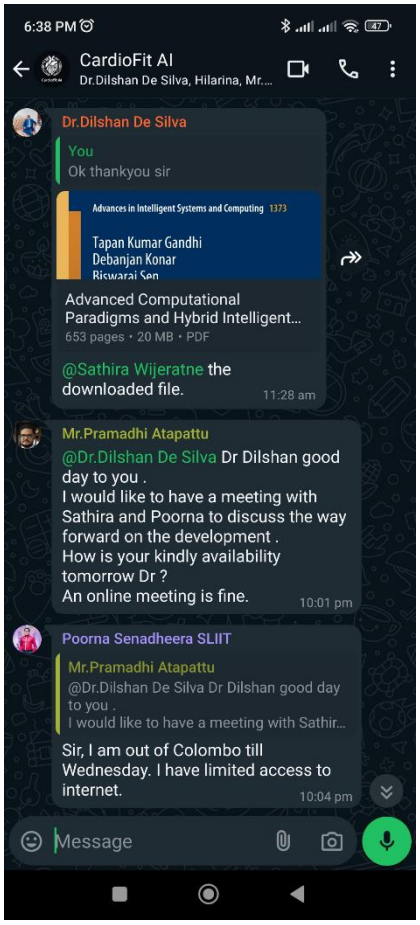
3. SCREENSHOTS OF THE WHATSAPP GROUP

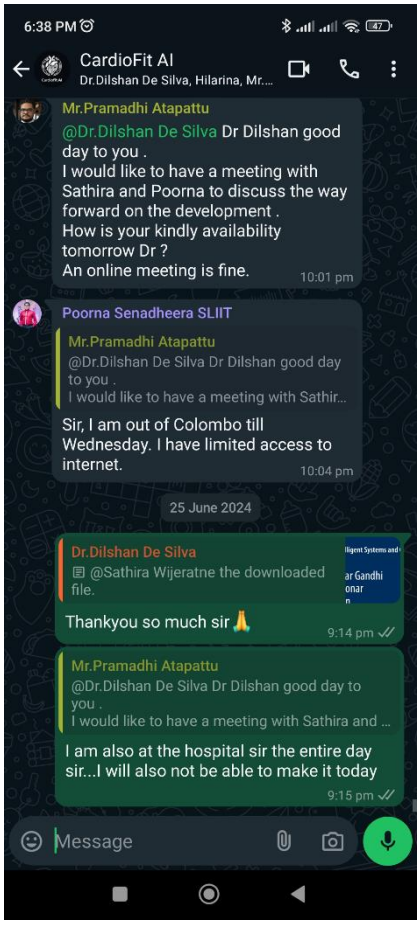





6:38 PM
CardioFit AI
Dr.Dilshan De Silva, Hilarina, Mr....
Dr.Dilshan De S 10 June 2024
@Poorna Senadheera SLIIT @Sathira Wijeratne I had a meeting with the examiners regarding your components. At the meeting, it was decided to drop Sathira's current component of taking input from the face. Accordingly, Poorna can work on the current part and ensure that it is 100% accurate. Sathira can work on getting inputs from the palm. However, Sathira can also help Poorna in improving the accuracy. 12:28 pm
3
18 June 2024
link.springer.com
https://link.springer.com/chapter/10.1007/978-981-16-...
link.springer.com
Hi sir @Dr.Dilshan De Silva , would it be possible to get this?
https://link.springer.com/chapter/10.1007/978-981-16-4369-9_42
Since it is a chapter from a conference paper I was unable to find it anywhere 8:16 pm
20 June 2024
Poorna Senadheera SLIIT
Message


6:38 PM
CardioFit AI
Dr.Dilshan De Silva, Hilarina, Mr....
Poorna Senadheera SLIIT
U-Net (5 Layers).ipynb
343 kB • BIN
@Mr.Pramadhi Atapattu as you requested, this is the code of our u-net architecture. 6:30 pm
Mr.Pramadhi Atapattu
Poorna Senadheera SLIIT
@Mr.Pramadhi Atapattu as you requested, this is the code of our u-net architecture.
@Sathira Wijeratne Poorna did some research and found they a the level cannot be implemented .
That is good work .
But I Need you to attempt the sample and let me know if the result is the same .
Let me know
Thanks 7:50 pm
Dr.Dilshan De Silva
You
Hi sir @Dr.Dilshan De Silva , would it be possible to get this?
@Sathira Wijeratne It is not possible for me to download this paper either.
Message


6:38 PM
CardioFit AI
Dr.Dilshan De Silva, Hilarina, Mr....
Dr.Dilshan De Silva
You
Ok thankyou sir
Advances in Intelligent Systems and Computing 1373
Tapan Kumar Gandhi
Debanjan Konar
Biswarai Sen
Advanced Computational Paradigms and Hybrid Intelligent...
653 pages • 20 MB • PDF
@Sathira Wijeratne the downloaded file. 11:28 am
Mr.Pramadhi Atapattu
@Dr.Dilshan De Silva Dr Dilshan good day to you .
I would like to have a meeting with Sathira and Poorna to discuss the way forward on the development .
How is your kindly availability tomorrow Dr ?
An online meeting is fine. 10:01 pm
Poorna Senadheera SLIIT
Mr.Pramadhi Atapattu
@Dr.Dilshan De Silva Dr Dilshan good day to you .
I would like to have a meeting with Sathir...
Sir, I am out of Colombo till Wednesday. I have limited access to internet. 10:04 pm
Message


6:38 PM
CardioFit AI
Dr.Dilshan De Silva, Hilarina, Mr....
Mr.Pramadhi Atapattu
@Dr.Dilshan De Silva Dr Dilshan good day to you .
I would like to have a meeting with Sathira and Poorna to discuss the way forward on the development .
How is your kindly availability tomorrow Dr ?
An online meeting is fine. 10:01 pm
Poorna Senadheera SLIIT
Mr.Pramadhi Atapattu
@Dr.Dilshan De Silva Dr Dilshan good day to you .
I would like to have a meeting with Sathir...
Sir, I am out of Colombo till Wednesday. I have limited access to internet. 10:04 pm
25 June 2024
Dr.Dilshan De Silva
@Sathira Wijeratne the downloaded file.
Thankyou so much sir 🙏 9:14 pm
Mr.Pramadhi Atapattu
@Dr.Dilshan De Silva Dr Dilshan good day to you .
I would like to have a meeting with Sathira and ...
I am also at the hospital sir the entire day sir...I will also not be able to make it today 9:15 pm
Message

4. EVIDENCE FOR DEVELOPMENT

```
# Plot the ECG values
plt.figure(figsize=(12, 6))
plt.plot(time_axis, ecg_values, label='ECG Signal')
plt.xlabel('Time (s)')
plt.ylabel('Amplitude')
plt.title('1 minutes ECG Signal Visualization')
plt.legend()
plt.grid(True)
plt.show()
```

Executed at 2024.07.13 19:19:10 in 260ms

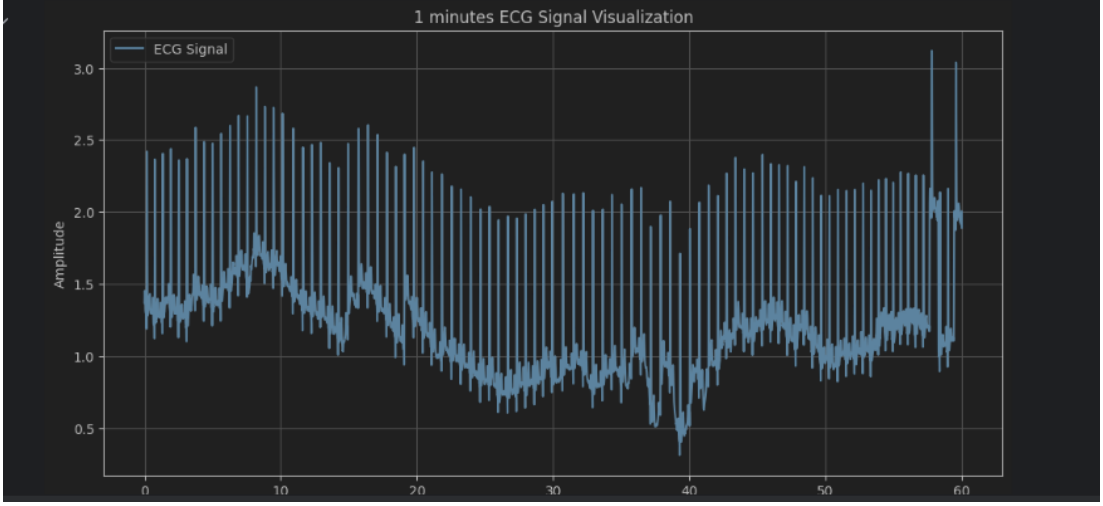


Figure 24: CardioFit Dataset ECG visualization

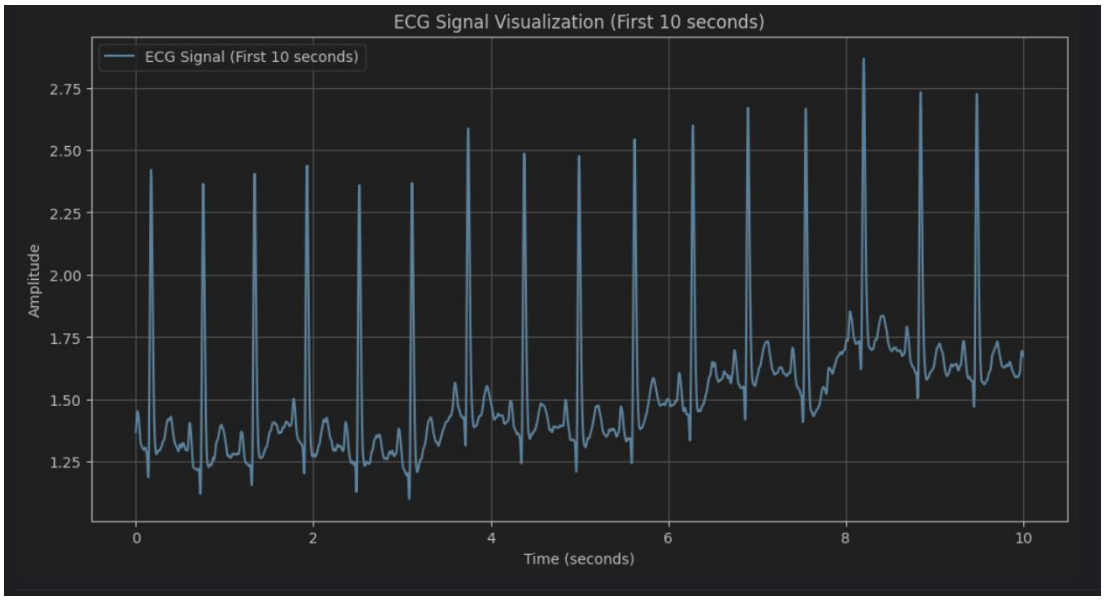


Figure 25: CardioFit Dataset ECG visualization

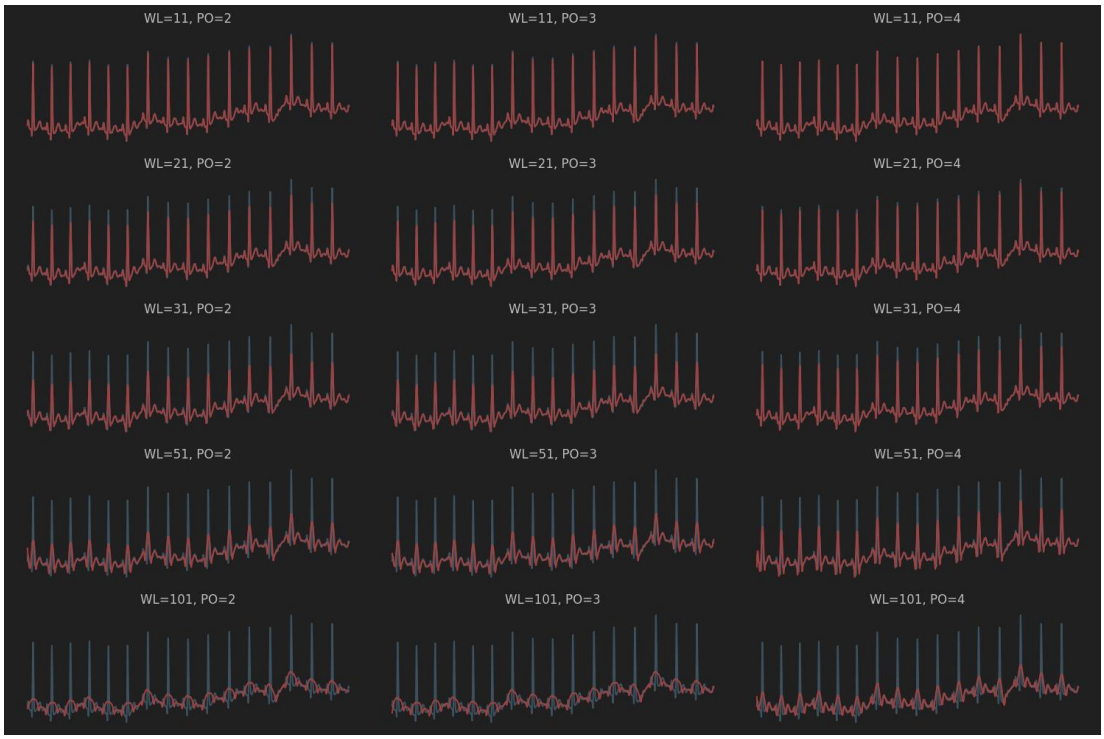


Figure 26: Determining suitable filters

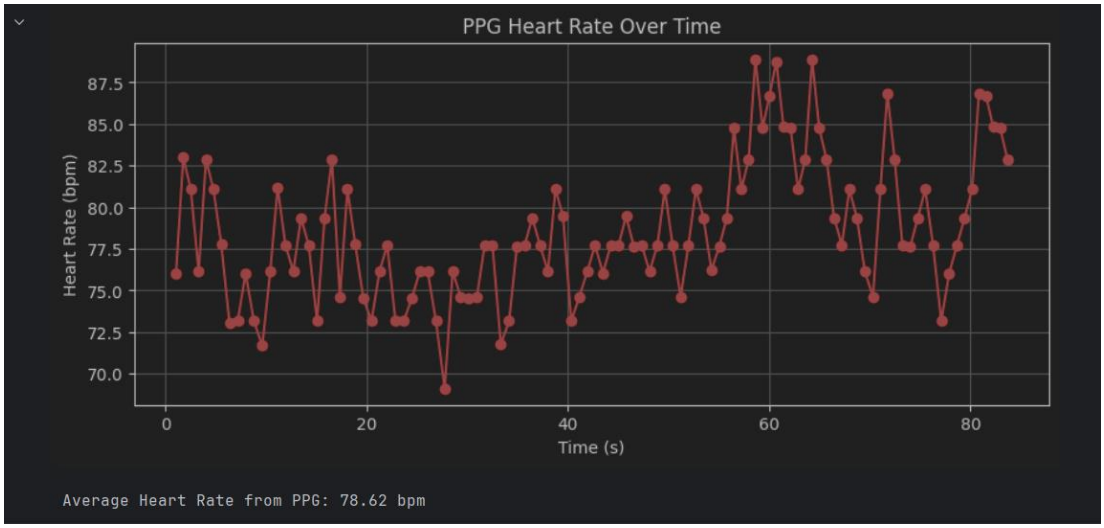


Figure 27:Heart rate calculated from PPG Signal

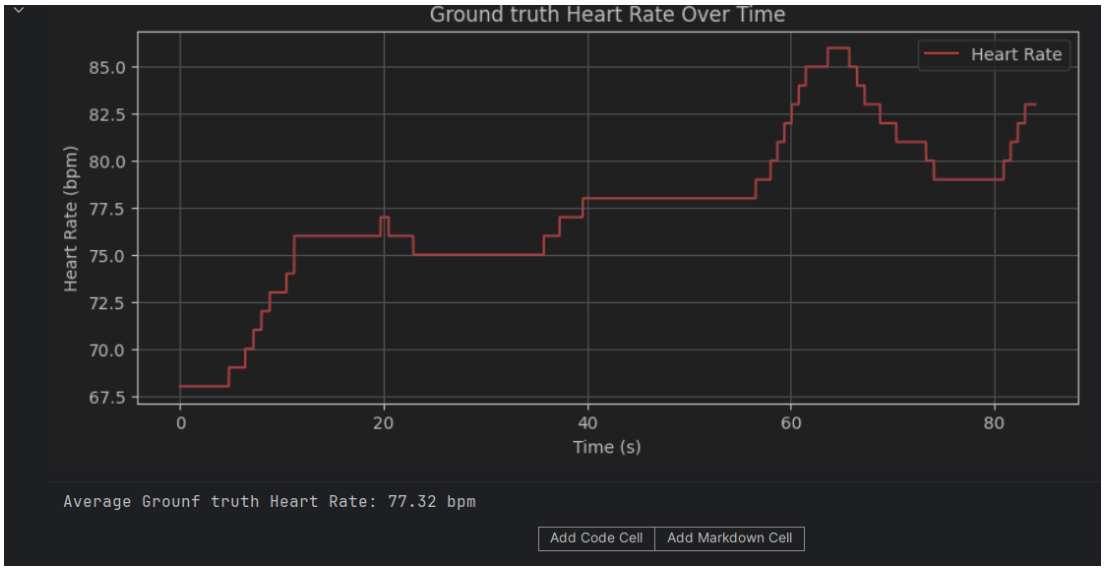


Figure 28: Ground truth heart rate

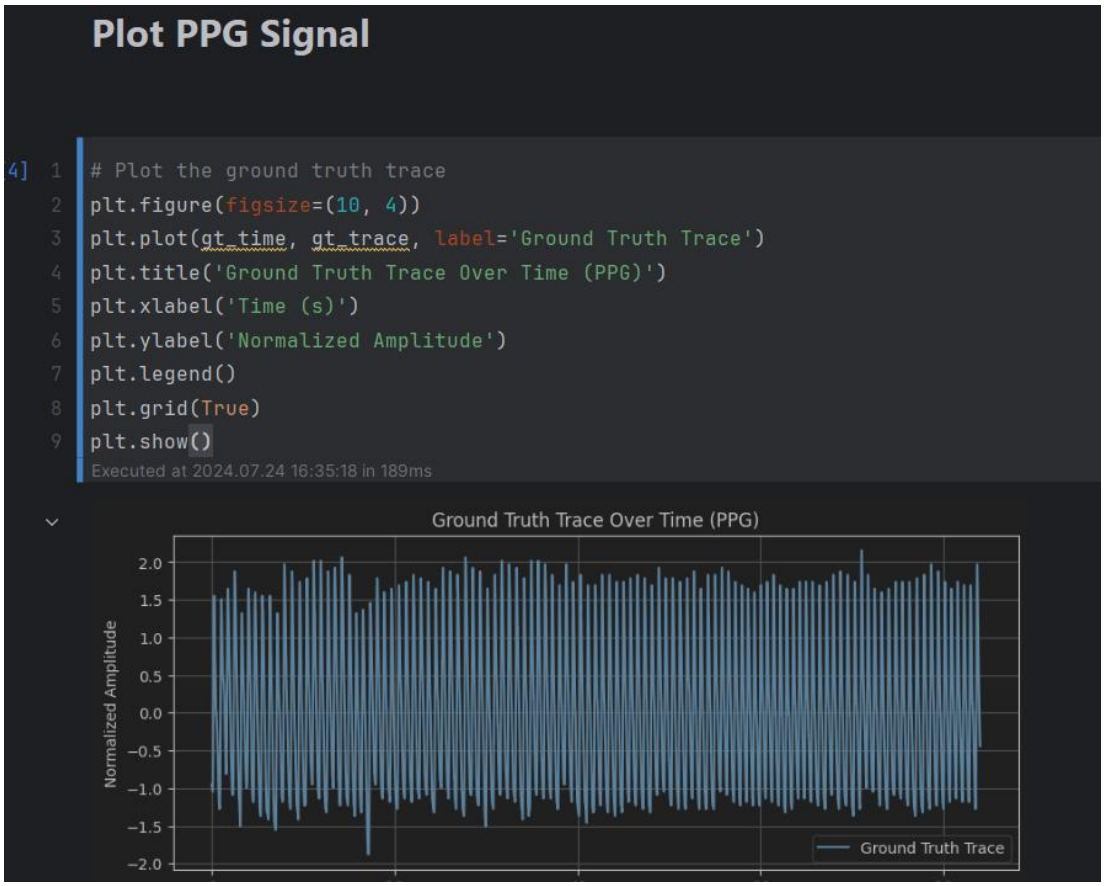


Figure 29: UBFC PPG signal visualization

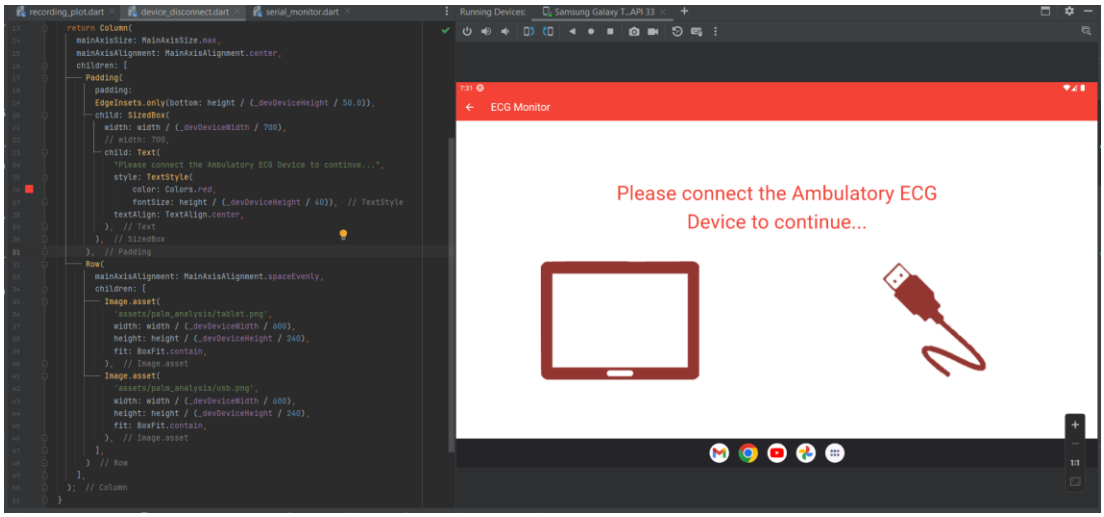


Figure 30: Mobile App UI

Figure 31: Visit to Gem Land Health Care

Figure 32: Visit to Gem Land Health Care

5. RESEARCH PAPER SUBMISSION

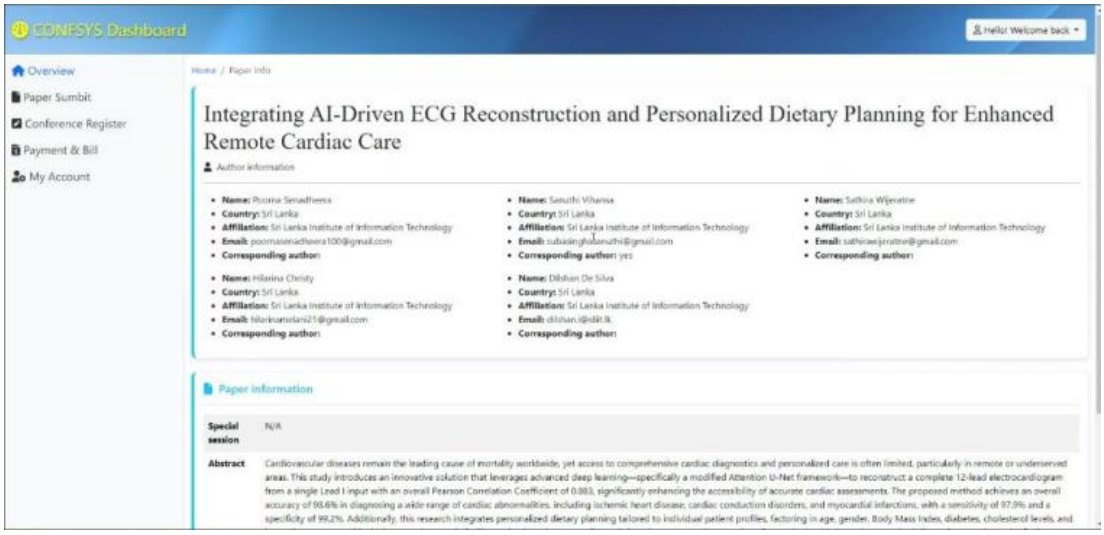


Figure 33: ICCSIT Research paper submission

Figure 34: ICCSIT research paper acceptance