EE/CprE/SE 491 WEEKLY REPORT 7

11/11/2025

Group number: 6

Project title: CyVital

Client &/Advisor: Dr. Meng Lu

Team Members/Role:

Kate Endersby - Future Plans, Comments and Extended Discussion

Claire Haas - Advisor meeting, Pending Issues

Reza Choudhury*

Max Tanruther*

Weekly Summary

The hardware team worked on finishing the PCB redesign based on new power budget calculations. Current delays in ordering hopefully should not delay testing schedule, but the team may need to operate with a condensed manufacturing timeline. The team was able to get the BIOPAC blood pressure readings using the BIOPAC proprietary software. Identifying the range of values for the blood pressure sensor readings will help the software team develop the GUI. On the software side, the team got the base GUI code merged with the reaction plotting code so that the reaction plot appears in the GUI that allows for selecting sensors, pausing, exporting, etc.

Past week accomplishments

- Kate Endersby
    - Merged plotting and base gui code
    - Investigated blood pressure cuff readings with Claire
    - Worked on ecg plotting
- Claire Haas
    - Rechecked Bill of Materials to see if in-stock
        - Working on adding parts to a Digikey cart which would make ordering easier
    - Performed power budget based on operational amplifiers as part of the EMG sensor
        - Identified Myoware JFET op amp exceeds power limitations
        - Must find a suitable 5V or 3.3V alternative EMG sensor
        - Redoing EMG sensor and layout
    - Worked with Kate to test analog readings of the blood pressure cuff

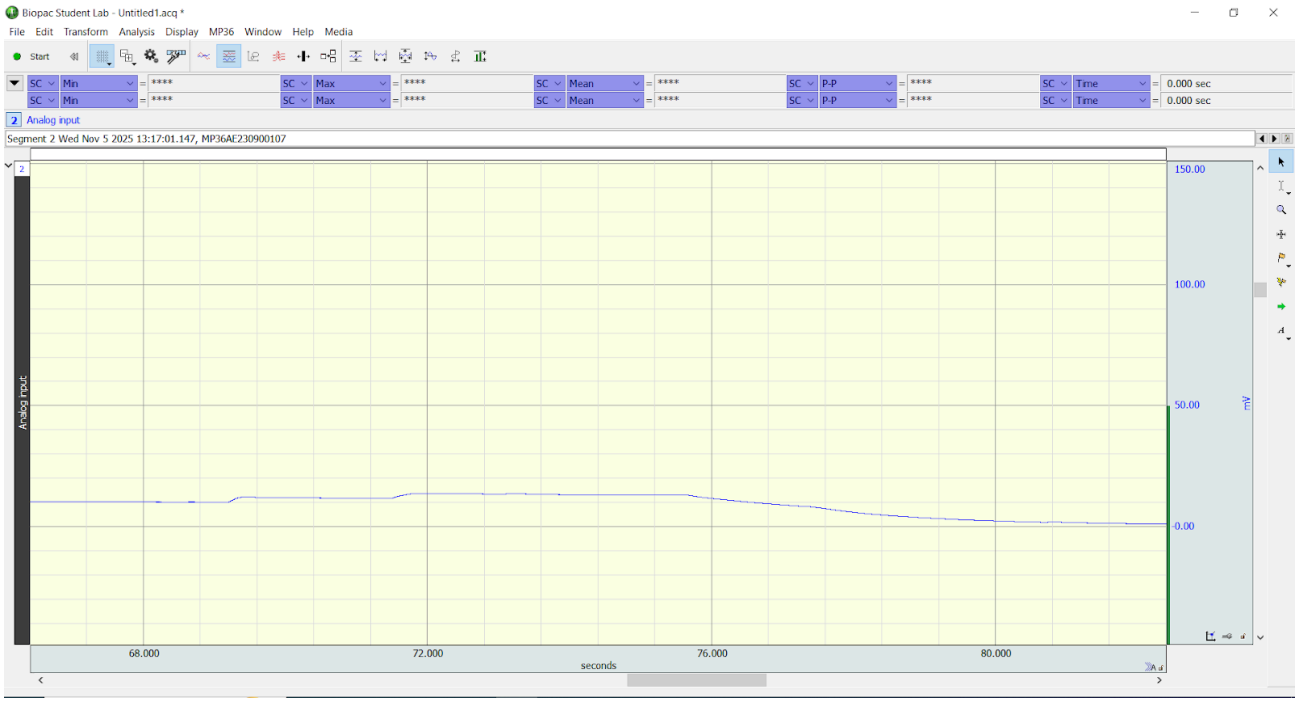

Figure 1: Blood Pressure Graph

Pending issues

- Respiratory chest band still on order
- Ordering of PCB delayed. Client and client's TA schedules free up drastically next week. The team should aim to order by Tuesday (11/18) at the latest.

Individual contributions

NAME	Individual Contributions	Hours this week	HOURS cumulative
Kate Endersby	- Merged codebase - ECG plotting	6	52
Reza Choudhury	-		(37)
Claire Haas	- Add parts to Digikey cart - Power budget - EMG sensor redesign and layout	8	54

Comments and extended discussion

- The team plans to use the 3D printer that is in the lab. The team should plan on ordering and making a prototype of the case as soon as board dimensions are finalized. However, the estimated case should be around 5"x5" since the board is approximately 4"x4".

Plans for the upcoming week

- Software team
    - Goal is to complete the first software system prototype by Thanksgiving Break
- Kate Endersby
    - Pulse oximeter plotting
    - Blood pressure plotting
- Reza Choudhury
    - Integrate EMG & ECG into GUI
        - Fix values
    - Add buttons for pulse oximeter and blood pressure to GUI
    - Respiratory sensor plotting?
- Claire Haas
    - Transition power budget from paper calculations to Excel sheet for record keeping
    - Estimate the amount of material it will take to 3D print the case (and order if necessary)
    - Attend design review check with client and client's TA
        - Perform necessary revisions based on client review

Summary of weekly advisor meeting

Dr. Lu advised that the team switch to a different EMG sensor as necessary to integrate with the Digilent Analog Discovery power supply. Dr. Lu revealed that the students will be in charge of building a stethoscope which allows the students to learn about systolic and diastolic readings at the end of the semester. We decided on using PyInstaller in order to turn our code into an .exe file for the students to download, as well as creating a ReadMe for downloading it from Git for overly enthusiastic students.