

EE/CprE/SE 491 WEEKLY REPORT 8

11/18/2025

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 - GUI development - Sensor Software Integration

Max Tanruther*

Weekly Summary

The software team worked on improving plotting functions. The hope is to merge everything into one branch that can be deployed for production. The hardware team read through the 10 IC components and 3 power device datasheets to verify pinouts. In addition, some signal integrity simulations were performed to analyze noise performance. The team worked further on testing plans for after Thanksgiving break. This will allow the team to jump right into debugging and solving any issues if necessary.

Past week accomplishments

- Kate Endersby
 - Completed pulse ox plotting
 - Improved plotting functions
 - Started on the blood pressure plotting
- Claire Haas
 - Ran signal integrity simulations and tests
 - Created a Digikey List for easy export of ordering
 - Organized files for sharing
 - Created central component library with footprints and symbols relating specifically to CyVital
 - More efficient than installing each Arduino or Sparkfun library
 - Combed through datasheets for each IC and voltage regulators to verify pin out and package requirements
- Reza Choudhury
 - Scope and scaling of ECG values fixed, window sizes reformatted
 - Respiratory sensor working module without sensor integration - ready to plug in once it comes in

Pending issues

- Lots of noise in first iteration of PCB test
 - Change stack up to SIG and GND/GND/3.3V/SIG
 - Consider dual-sided board

Individual contributions

<u>NAME</u>	<u>Individual Contributions</u>	<u>Hours this week</u>	<u>HOURS cumulative</u>
Kate Endersby	<ul style="list-style-type: none">- Pulse Oximeter Plotting- Blood Pressure Plotting- Other plotting improvements	8	60
Reza Choudhury	<ul style="list-style-type: none">- ECG values & Respiratory module	6	43
Claire Haas	<ul style="list-style-type: none">- Signal integrity simulations (3)- File management (3)- Datasheet verification and package selection (2)	8	62

Comments and extended discussion

- Pros and cons of 6 layer or double sided PCB?
- Switch to a smaller component size (0402) if getting a stencil?

Plans for the upcoming week

- Software Team
 - Software prototype to be mostly complete
 - Reaction, EMG, ECG, Pulse Ox work with CyVital Phase I
 - Have prototyped the code for the other sensors (blood pressure & respiration) we still need, if not tested them since we can't do that without the sensors
 - PyInstaller over break??
- Kate Endersby
 - Finish blood pressure plotting
- Reza Choudhury
 - Implement corrected reaction test - react based on LED or outside trigger
 - ECG sensor full integration
- Claire Haas
 - Reroute PCB for better signal integrity
 - Order PCB with Jacob or Dr. Lu using the P-Card to save time
 - Talk to ETG about ribbon cable connectors and 12V barrel connectors

Summary of weekly advisor meeting

The software team discussed how to perform code merges for a production branch. Dr. Lu wants a PyInstaller or Deployment branch to test upon returning from the Thanksgiving break. Jacob

(Dr. Lu's TA and PCB Class TA) discussed ways to improve signal integrity for multiple voltage rails and mixed signals. Jacob will aim to order PCBs over the weekend, so they can be assembled coming back from the Thanksgiving break.