CPRE 492
Jan 30, 2025

Status Report 1

Advisor: Professor Meng Lu

Group: 22

Members:
- Sajan Patel (Fullstack Software)
- Daniel Karpov (Data Processing)
- Jay Patel (Data Processing)
- Ty Beresford (Fullstack Software)
- Chuck Mallek (Physical & Electrical Design)

Project: CyVital

Project Purpose: CyVital project is dedicated to providing modular hardware in the form of sensors and its corresponding software counterpart to read, analyze and display data seen within the sensors. The hardware-software will be used for the Biomedical Engineering Lab, so it must be created so that students, professor(s) and TA(s) can use it with ease.

Languages:
- Graphical User Interface: Python
- Backend Data Analysis: Python

System:
- Configuration: Universally modular
- Open Sourced: GitHub Repository

License:
- For educational purposes through Iowa State

Weekly Summary

Group Success:
As a group, we made solid progress for our EKG device, in which we could pick up a proper signal to the DAQ through our own GUI interface. We have now started the signal processing on our GUI on the data received from the DAQ. We are working on implementing an API that will take the signal produced and will find the “features to extract” from that data.

Individual Roles:

Sajan Patel Hours: 6 Cum. Hours: 53 Issues: N/A	Started looking into the data analysis side of our project. Trying to take data from the tests and turn it into features that students can use for their lab.
Daniel Karpov Hours: 6 Cum. Hours: 53 Issues: N/A	We started working on other data processing modules that we are going to use for sensors that are needed in the final project. I also looked into how to extract key data points from heart rate data.
Jay Patel Hours: 6 Cum. Hours: 53 Issues: N/A	Begun researching algorithm models to move off of predeveloped python libraries. Research data analysis methods to monitor and extract key features.
Ty Beresford Hours: 6 Cum Hours: 47 Issues: N/A	Begun re-prototyping GUI standards to meet IEEE standards and requests made during end-of-semester review. Began experimenting with new DAQ device.
Chuck Mallek Hours: 6 Cum Hours: 53 Issues: N/A	Begun researching other sensors to implement alongside our ECG sensor. Also, I am looking into the new DAQ we were given for our project. It differs slightly from how it connects physically and connects through API software.

Advisor Meeting

Room to improve: None. This week was the beginning of the semester. We found our stride and are ready to ramp up our senior design effort to meet our deadline.

The Good: This week, we received new components to convert our prototype of one physiological sensor to 3 or more.

Upcoming Week

Upcoming Group Success:
→ Meet on Sunday and create a plan for the upcoming week. Start working on testing each sensor.

Upcoming Individual Roles:

Sajan Patel	Start working on a separate sensor module. And implement it into our current system. Look into data analysis for the post-test breakdown of data.
Daniel Karpov	Begin playing around / testing new sensors that will be implemented into the module. We will begin working on a plan to implement the new sensors into Cy-vital
Jay Patel	Begin working on individual module data analysis methods. Will likely meet with Ty and Dr. Lu to verify key requirements.
Ty Beresford	Begin working on individualized GUI pages to consistently pull, refresh and display data.
Chuck Mallek	Resume working on the physical aspect of the project, including figuring out the new sensors we were given and how to connect them to the new DAQ oscilloscope device.