

## **EE/CprE/SE 491 WEEKLY REPORT 01**

Beginning of Semester – Sept 23.

**Group number:** 006

**Project title:** CyVital

**Client &/Advisor:** Dr. Meng Lu

### **Team Members/Role:**

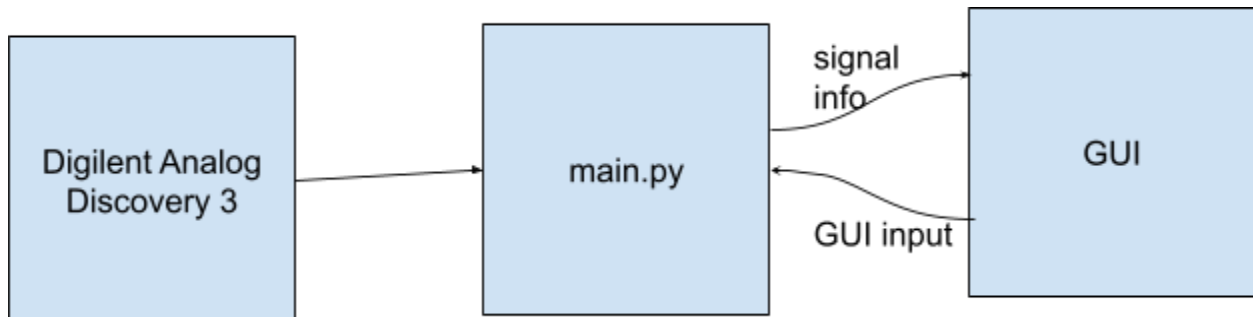
- **Weekly Summary**

The team met several times with the client, Dr. Meng Lu. The team discussed objectives for the project at the end of the semester, and the current status of the project based on prior completed work. Each member was given tasks such as creating block diagrams to understand the current state of the system and envision the future state of the system. In addition, the necessary hardware to understand the system was distributed for the team to explore.

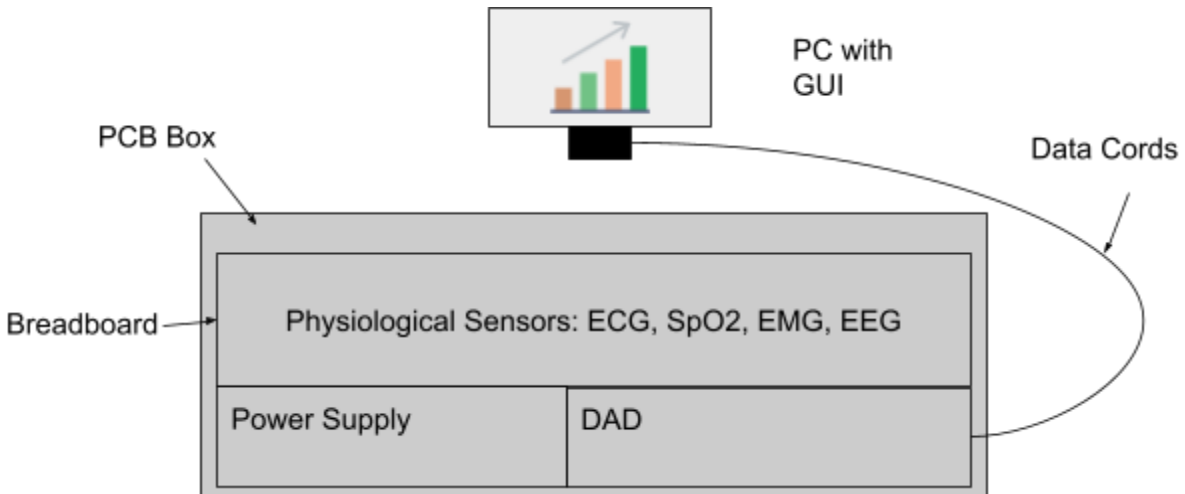
- **Past week accomplishments**

- Kate Endersby:

- Kate started familiarizing herself with the Digilent Analog Discovery 3, the oscilloscope that will be used to read the biomedical information. Kate investigated how it could be used with libraries like dwfpy to display that information in a Python GUI, and how biosppy could be used to analyze those signals. The following block diagram shows basic connections between aspects of the Digilent Analog Discovery and other software components in the CyVital.

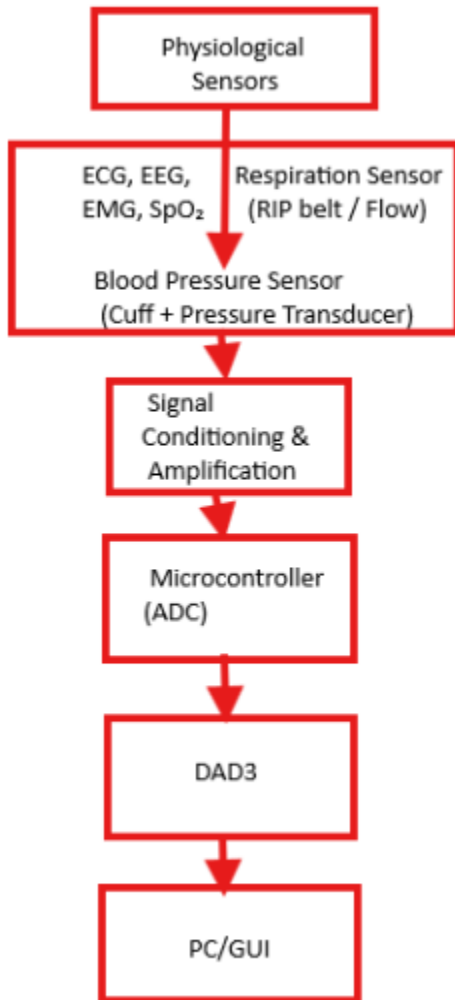


- Claire Haas:
  - Claire researched filtering systems such as power-line filters and notch filters which are common with ECG signals. This included learning about common problems with biosensors, and potential remedies as proposed in academic and healthcare literature. The following is a block diagram that represents the existing system.



- This can be compared with Max's block diagram which includes additional sensors. The above block diagram tries to orient the user to the positioning of the sensors and data acquisition tools which lie in a PCB box.

- Max Tanruther:
  - Max began to refamiliarize himself with pcb making software as well as researching more about the Bio Pac and the sensors that we will be adding to the current module. Max also created a block diagram of the proposed system to further visualize the project.



- Reza Choudhury:
  - Reza reached out to previous team members about getting access to a Git repository. Reza familiarized himself with the sensors' functionality, use, and how they output their data (ECG/EKG, EMG, pulse oximeter). Reza started to devise a plan to see what is currently working vs what still needs to be implemented, and has created a document to start outlining these issues.
  - [CyVital Task Layout 9/23/2025](#)

- **Pending issues**

- No pending issues at this time.

- **Individual contributions**

<b><u>NAME</u></b>	<b><u>Individual Contributions</u></b> <i>(Quick list of contributions. This should be short.)</i>	<b><u>Hours this week</u></b> <b><u>(9/16-9/23)</u></b>	<b><u>Total Hours</u></b>
Kate Endersby	Worked with Digilent Analog Discovery 3, became familiar with 3rd party libraries	6	6
Claire Haas	Filter research and literature review, created existing system block diagram	6	6
Max Tanruther	Created a block diagram, researched new sensors.	6	6
Reza Choudhury	Overview, sensors, tasks document	6	6

- **Comments and extended discussion**

- No additional comments at this time.

- **Plans for the upcoming week**

- Kate Endersby:
  - Create a new Git repository or fork from the old repository. Start to create mock-ups of what new CyVital software should look like and research possible ways to implement the vision in Python.
- Claire Haas:
  - Create a PCB project for the EEs to work in throughout the semester. This will ensure version selection. Start to assemble component files (.stp) to add to the PCB. Reach out to BMEs to see their familiarity with electronics to determine how modular the PCB will be. Make a mock sketch of the PCB and casing to see how that will fit in with the BME classroom.
- Max Tanruther:
  - Start creating a more in-depth diagram with individual components which can later be used to design the PCB. Test new sensors and see what is needed to amplify/filter the signal pending on if the new sensors are delivered
- Reza Choudhury:

- Continue progress on finding what needs to be done to complete a successful final product and map out a game plan for completion. Get access to the Git repo and understand the code. Start to work with the hardware and integration with software.
- Group:
  - Request access to Coover 1045 as specified for Dr. Meng Lu. Each member will explore the prior senior design team's work on the associated website.

- **Summary of weekly advisor meeting**

Dr. Meng Lu shared the vision for the CyVital project. Discussions were had about the learning objectives for the lab, and the knowledge and experience of the biomedical engineering (BME) students with electrical circuits and software. The software vision is expanding the GUI to include new sensors and increase signal integrity, while the hardware vision is to create a modular PCB similar to what is used in the Signals 1 lab. Thus, it will allow the BMEs to focus on what is important about the course such as how sensors work, rather than minute details in code and wiring.