EE/CprE/SE 491 WEEKLY REPORT 7

Start Date – End Date: 10/24/2024 - 10/31/2024

Group number: 13

Project title: PTSD Detection Device

Client &/Advisor:

Advisor: Mohammed Selim

Mentors: Bae Systems - Alice Crutcher, Michael Goderre, Jennifer Plakyda, Ryan Littler

Client: America's VetDogs - Cheyenne Whitetree

Team Members/Role:

Justin Scherrman - Design Engineer - Communications and Sensors

Neil Prange - Software Engineer

Aidan Klimczak - Design Engineer - Microcontroller

Justin Jaeckel - Software Engineer - Embedded systems

Ty Decker - Team stenographer - Security

Katerina Zubic - Team organizer and sensor engineer

- **Weekly Summary**

Our team continued working on research and development of our product. We continued developing our design and software to meet the design requirements of our client. We have reached a point where our hardware will be all purchased so development of a working prototype will be underway once all parts arrive. Now that all parts are chosen, schematic designs can be developed fully for the prototype. Our PPG sensor is in continued development to get accurate data in C. In all we are making fantastic progress in meeting the goal of a prototype by the end of the semester.

- **Past week accomplishments**
  - Chose a vibration motor for the device on the dog
  - All required parts for a basic breadboard prototype are purchased
  - A power plan for the device was developed
  - A plan for bluetooth implementation was developed

Neil Prange - Research/Testing

- Algorithm is able to detect heart rates with reasonable accuracy, need to convert the algorithm into usable C code.

Aidan Klimczak - Research/Design

- Developed a power plan for both devices.
- Researched small vibration devices.

Justin Scherrman - Research

- ESP 32 microcontrollers have built-in antenna and BLE capabilities, no need to purchase receivers or transmitters.

Justin Jaeckel - Research / Development

- Continued developing software interfacing ESP32 and MAX86150 to get raw data from heartbeat sensor

Ty Decker - Research

- Researched possible accelerometer solution.

Katerina Zubic - Research & Testing

- Bought/received batteries for testing purposes. Hoping to mitigate any EM interference.
- Researched into haptic vibration device for canine. In the works of ordering the part.
- Researched metrics for PTSD attacks, there isn't much usable research

- **Pending issues**

  - Pending Americas Vetdogs reply with data about PTSD attacks.

- **Individual contributions**

NAME	Individual Contributions	Hours this week	HOURS cumulative
Neil Prange	Converting Heart Rate algorithm to C code	4	36
Justin Scherrman	Bluetooth communication between two	4	36

	ESP32 microcontrollers		
Justin Jaeckel	Continued development on the ESP32	4	36
Aidan Klimczak	Developed a power plan for both devices. Researched small vibration devices.	4	34
Katerina Zubic	Found a usable haptic vibration device. Researched into PTSD metrics.	4	35
Ty Decker	Research into mitigating data volatility from motion.	3	34

- **Plans for the upcoming week**

  - Continue Developing ESP32
  - Order remaining parts (vibration device)
  - Develop Bluetooth communication
  - Continue Kicad design now that all pieces are chosen
  - Close to developing prototype

- **Summary of biweekly advisor meeting**

N/A