

## ***EE/CprE/SE 491 WEEKLY REPORT 10***

***Start Date – End Date:*** 11/15/2024 - 11/21/2024

***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 - Security - Stenographer

Katerina Zubic - Team organizer and sensor engineer

- **Weekly Summary**

This week we made strides in our goals for the semester. We completed our plan for Bluetooth between the microcontrollers, and in turn, we were able to have button control for our vibration device on the client side of the microcontroller. The prototype schematic for incorporating the prototype's goals and ideas was also completed this week. The power tree schematic was also completed to highlight power concerns and battery life. We have made plans to have all technical work done by the end of Thanksgiving break into the week before dead week.

○ **Past week accomplishments**

- Bluetooth communication between microcontrollers
- Button functionality with motor control.
- Prototype schematic finished
- Power Tree Schematic finished

**Neil Prange - Research/Testing**

- Fixing some small bugs with C version of MSPTD algorithm
- Got some simple I2C data from PPG sensor.

**Aidan Klimczak - Research/Design**

- Finished project schematic via Bluebeam
- Finished development of power tree
- Researched and purchased a 3.3V voltage regulator

**Justin Scherrman - Research/Design**

- Worked on Bluetooth communication. Used the successful transmission of characters between two microcontrollers to cause a pseudo-distress signal upon button press.

**Justin Jaeckel - Research / Development**

- Continued developing program interfacing ppg sensor and researched accelerometers using the i2c protocol

**Ty Decker - Research / Security**

- Sorted through information from Ryan Littler (BAE) on security standards possibly applicable to healthcare wearable devices.

**Katerina Zubic - Research & Testing**

- Worked on Bluetooth communication. Successful transmission of character between the two microcontrollers
- Implemented button as a pseudo distress signal to send over to the client microcontroller.

○ **Pending issues**

- PTSD biometrics.

○ **Individual contributions**

<u>NAME</u>	<u>Individual Contributions</u>	<u>Hours this week</u>	<u>HOURS cumulative</u>
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Neil Prange	Fixed some issues with MSPTD algorithm, continue debugging PPG interface	4	50
Justin Scherrman	Bluetooth communication between micro controllers works when not plugged into a computer. The pseudo button interrupt is working.	5	50
Justin Jaeckel	Continued development on program interfacing MAX86150 and esp32	5	49
Aidan Klimczak	Finished project schematic via Bluebeam Finished development of power tree Researched and purchased a 3.3V voltage regulator	4	50
Katerina Zubic	Working Bluetooth communication between the microcontrollers. Implemented pseudo button interrupt. Worked with LED indication.	4	50
Ty Decker	Went through information given by Ryan Littler on NIST standards applicable to healthcare devices and applications.	4	46

○ **Plans for the upcoming week**

- Implement blue led to show successful connection via BLE
- Implement full design on the breadboard and record demonstration.

○ **Summary of biweekly advisor meeting**

This week's advisor meeting consisted of updating Dr. Selim on our past two-week progress. We came to an agreement that this next week we should wrap up any technical adjustments to our project and begin working on our final presentation. That being said, we plan to email our presentation the weekend before we come back from break that way he can take a look at it. Then during that meeting, we plan to do a run-through of our presentation and get any necessary feedback from him.

It was a very quick meeting, solely focused on updates and ensuring the team is on the same page in expectations as we wrap up the semester.

We also met with America's VetDogs. They answered a few of our questions about security and how far away the canine would be from the handler. We also got an update that we will get a prototype vest.