EE / CprE / SE 491 – sdmay25-12
Pressure Sensor Patch
Week 4 Report

October 3rd, 2024 - October 10th, 2024
Client: BAE Systems
Faculty Advisor: Santosh Pandey

Team Members:

Aina Qistina Binti Azman - *Software Developer*
Bilal Hodzic - *Software Lead*
Nathan Turnis - *Software Developer*
Osaid Samman - *Scrum Master/Manager/Team Organization*
Sabrina Francis - *Hardware Developer*
Zane Lenz - *Hardware Developer*
Ivan Alvarado-Santoy - *Hardware Lead*

Weekly Summary

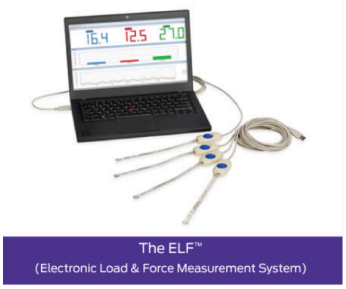
This week, we finalized our meeting schedule with the client, setting up biweekly meetings on Tuesdays at 4 pm, beginning next week. Additionally, we contacted ETG for an update on our parts order, though unfortunately, no useful information was provided.

On a more positive note, we identified valuable campus resources for 3D modeling and printing of custom parts, which will be instrumental as we move forward with prototyping. We also continued discussions with Tekscan regarding pricing and explored alternative sensor options. While the F-Socket and CONFORMat systems are beyond our grant's budget, Tekscan has provided other options that we are now evaluating for potential use in the project.

Past Week Accomplishments

- Osaid Samman:
    - Created a schedule for biweekly meetings with the clients, as well as kept contact with the client and advisor. The other client we are working with also reached out and set meeting times with them.
- Ivan Alvarado-Santoy:
    - Reviewed the capabilities of the Arduino uno & nano built-in ADC's to determine potential limitations with constantly reading analog inputs
    - Reviewed working with the built-in wifi module on the Arduino uno/nano
- Zane Lenz
    - Identified the Student Innovation Center as a resource for 3D modeling, 3D printing, and soldering needs
    - Acquired soldering training
    - Set up time for 3D printing

    - SIC also has 3D scanner technology which may be useful
- Nathan Turnis:
    - Looked into potential UI designs for the potential app. This is just a very rough idea as we are far off from this point.
    - Reviewed previous classwork as how we transferred data from a microcontroller to UART PUTTY
- Bilal Hodzic
    - Theorized design implementations between an Android Bluetooth connection and a microcontroller
        - Specifically looked at how Bluetooth modules connect to Android with Arduino
        - Looked at abstractions in Android Studio for accessing Bluetooth devices
        - Looked at cheap Android phones for testing Bluetooth
    - Looked at Microcontroller UART communication with Bluetooth
- Aina Azman
    - Continue interacting with Tekscan's employees to inquire about pricing and gather detailed information on their two products: F-Socket & CONFORMAT System
        - Learned that both products exceed our grant, making them unsuitable. Tekscan provided alternative options that may fit within the budget and project needs.
        - Evaluating these new options for potential compatibility with the pressure sensor patch: https://www.tekscan.com/products-solutions/force-measurement-systems



    - Looked into figuring out how the application for the pressure sensor patch project will take shape.
        - Researched similar user applications that could serve as a foundation for our project. This research involves analyzing features, user interfaces, and functionality that align with the needs of our target users.
        - Still on the lookout for the right application for foundation reference.
- Sabrina Francis:

- Researched other necessary hardware parts for testing Sensitronic sensors.
  - Need Arduino uno, 2 shift registers, 2 analog multiplexers, 20k resistor, solderless breadboard, and jumper wire
- Also, still researching different sensors that would work for our application.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Aina Qistina Binti Azman	Learned another potential pressure sensor to work with, looked into potential application for foundation reference	6	13
Bilal Hodzic	Researched wireless communication to Android device from microcontroller	6	13
Nathan Turnis	Looked at UI solutions and communication	6	13
Sabrina Francis	Researched needed parts for MatrixArray tutorial	4	10
Osaid Samman	Contacted and created a schedule for biweekly meetings with both the clients.	2	6
Zane Lenz	Identified potentially useful resources, acquired trainings relevant to project	6	12
Ivan Alvarado-Santoy	Reviewed hardware capabilities of built in arduino modules needed for the project	3	10

Pending Issues

- Still waiting for the sensors to arrive
- Still waiting to finalize a meeting with AdaptiveAdventure

Plans For the Upcoming Week

- Meet with the client on Tuesday to discuss the initial phases of the project and find out more information
- Look into multiplexers that may work with the project.
- Look into the external bluetooth module to get some idea for the software part.
- Learn and get ourself to recognize the safe threshold of pressure on human skin before pressure sores happen.