EE / CprE / SE 491 – sdmay25-12
Pressure Sensor Patch
Week 5 Report
October 10th, 2024 - October 17th, 2024
Client: BAE Systems, Adaptive Adventures
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

We had a meeting with Adaptive Adventures to discuss general project requirements. We were allowed to ask questions and meet the people who are part of the project. See here for our meeting notes. We also had a meeting with BAE Systems where we discussed a general system overview and future meeting plans. We also discussed getting some information on tools we can use for organizing our documented requirements and other useful information for our project.

Past Week Accomplishments

- Osaid Samman:
    - Compiled and organized all the files and information taken from meetings with the client. Maintained contact and updated the advisor as well as both clients.
- Ivan Alvarado-Santoy:
    - Documented project requirements into functional and non-functional categories
    - Experiment with Matrix array sensor from sensitronics to get analog input into a serial monitor on the arduino platform
    - Research the recommended requirements planning tools from BAE Engineers (Doors, Turtle Diagrams)
- Zane Lenz
    - Researched load cells and their feasibility for the project
    - Met with both Adaptive Adventures and BAE Systems
    - Experimented with the different sensors we ordered to try and read data
- Nathan Turnis:

    - After meeting with Adaptive Adventures, they mentioned that they want both an Android and Apple application
        - Continued research into Android. Apple development is hard due to Apple's restrictive requirements and needing a MacBook.
    - They mentioned a notification for "time to move". This can vary by person
        - This type of customization will need to be set up in the app or something. This would require some sort of user-friendly way to decide how much weight is needed, so notifications do not spam.
- Bilal Hodzic
    - Researched code examples for bluetooth communication in Arduino to any external bluetooth device
        - Looked into previous users attempts to do so
        - Looked at code example for support bluetooth modules
    - Researched connecting homemade bluetooth devices to android
        - Looked into difficulty of this and how its done
    - Looked into setting up bluetooth modules on arduino
        - Viable options
        - Recommended options
        - Code abstractions within Arduino for bluetooth communication
    - Researched bluetooth protocols and how bluetooth communication is transmitted
- Aina Azman:
    - Looked into HC-05 Bluetooth Module with Arduino to get a sense on how to create a wireless **system** that connects the pressure sensor patch to the user's phone.
    - Learned and revised the basics concepts of the below hardware, to explore and figure how they can interface with pressure sensors.
        - Arduino
        - Raspberry Pi
        - Multiplexer
        - Shift
    - Researched how these components function and their application in hardware design.
    - Went through the tutorials on getting readings on Sensitronics' MatrixArray.
        - Sensitronics' Reading a MatrixArray tutorial: https://www.sensitronics.com/tutorials/fsr-matrix-array/index.php

- Sabrina Francis:
    - Documented new requirements for our system after gaining new information from AdaptiveAdventures meeting
    - Looked a bit into how to do the Sensitronics MatrixArray sensor tutorial
        - looked into materials needed

- read through documentation on tutorial steps

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Aina Qistina Binti Azman	Explored HC-05 Bluetooth Module with Arduino. Revised key hardware concepts. Read through the documentation on Sensitronics' MatrixArray tutorial.	6	19
Bilal Hodzic	Researched wireless communication between circuit boards and computer devices. Researched android bluetooth communication fundamentals	6	19
Nathan Turnis	Researched app solutions - primarily android. Theorized notification solutions after meeting with Adaptive Adventures	4	17
Sabrina Francis	Read through documentation on Sensitronics MatrixArray tutorial steps and documented some new requirements for our system	6	16
Osaid Samman	Met with the clients and organized the information and requirements given by them. Organized the information and moved the team forward to new tasks.	4	10
Zane Lenz	Researched load cells, experimented with reading data from various types of pressure sensors	6	18
Ivan Alvarado-Santoy	Decompose gathered requirements into functional and non-functional requirements. Explore requirements decomposition tools recommended by BAE Engineers	4	14

Pending Issues

- Choose sensor option that can best meet our functional requirements
- Gather more Engineering standards
- Decomposition of project tasks

Plans For the Upcoming Week

- Meet with the graduate student to discuss current weight scales that are being used in the lab.
- Test sensors received and work on getting logical output.
- Continue decomposing project tasks