

EE / CprE / SE 492 – sdmay25-12

Pressure Sensor Patch

Status Report 4

February 27th, 2025 - March 12th, 2025

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

Osaïd Samman - Scrum Master/Manager/Team Organization

Sabrina Francis - Hardware Developer

Zane Lenz - Hardware Developer

Ivan Alvarado Santoy - Hardware Lead

Weekly Summary

This week, the team effectively communicated with clients and advanced documentation for product usage. Significant progress was made in hardware development, including reviewing specification sheets to enhance engineering standards, conducting hardware testing, prototyping frames for pressure sensor tiles, and assembling additional sensor tiles. On the software side, advancements were achieved by designing and implementing a Bluetooth connection user interface, creating a heat map visualization for sensor data, and successfully integrating Bluetooth connectivity with the UI through GATT server implementation. Additionally, the team improved the Android application's architecture by researching industry-standard practices, reorganizing the solution accordingly, adopting a modern service locator library, and refreshing knowledge of Compose best practices. Efforts also included setting up a Kafka streaming instance for real-time IoT event processing and researching machine learning algorithms relevant to the project.

Past Week Accomplishments

- Osaïd Samman:
 - Communicated with clients
 - Made progress on writing instructions for product use
- Ivan Alvarado-Santoy:
 - Review Hardware spec sheets to further develop Engineering Standards
- Zane Lenz:
 - Worked on hardware testing
 - Prototyped frames for pressure sensor tiles
- Nathan Turnis:
 - Designed Bluetooth connection UI
 - Dialog opens up to select device to connect to

- Created a simple heat map for the four tiles
- Each assigned a color and the value brought in
- Bilal Hodzic:
 - Finished bluetooth connection to UI
 - Wrote broadcast receiver and notification subscription code
 - Researched correct architecture for android apps
 - Reorganized solution to fit industry standard architecture
 - Converted app to more modern service locator library
 - Connect bluetooth GATT server to hardware
 - Refreshed knowledge of Compose and correct practices relating to compose
 - Setup Kafka streaming instance for event processing
 - Real time event message queue for storing IoT data
- Aina Azman:
 - Reviewed and went through the Bluetooth and notification features added by Bilal and Nathan.
 - Laid the groundwork for the caregiver view of the application.
- Sabrina Francis:
 - Researched more into machine learning algorithm for project
 - Worked on building more sensor tiles
 - Researched more into testing/what data is needed

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Aina Qistina Binti Azman	Groundwork for caregiver view	4	71
Bilal Hodzic	Bluetooth UI push. Project structure. Kafka setup and util	35	111
Nathan Turnis	Bluetooth UI & Heat Map UI	12	81
Sabrina Francis	Researched more into machine learning application	6	71
Osaid Samman	Wrote instructions for product use	3	56
Zane Lenz	3D Modeling, frame prototyping	6	66
Ivan Alvarado-Santoy	Reviewed spec sheets	1	81

Pending Issues

- Testing
- Creating a durable enough board

Plans For the Upcoming Week

- Complete prototype and ship to Adaptive Adventures with instructions