

EE/CprE/SE/CybE 491 Period Report

10/05/2019 - 10/18/2019

Group number: sdmay20-53

Project title: Smart Backpack Sprayer for Small-scale Agriculture Applications

Client &/Advisor: Tim Andersen, Taylor Greiner, and Daji Qiao

Team Members/Role: Madison Kriege, Sean Doran, Kevin Davis, David Hayes, Shuangquan Li, Donald Laracuenta

Period Summary

Over these two weeks, we have worked on gaining a better understanding of the hardware and software through testing. We divided into three different teams consisting of a Hardware Team, an iOS Team, and an API team. Each team has been working on and testing each of their correlating aspects of the project. Hardware has been testing the components for receiving data from the sensors. iOS has been working on gaining an understanding of the interactions between iOS and Xcode. The API team has been working on gaining an understanding of Firebase and Xcode, along with API implementation for MapBox. Besides working on those things, we have collected the missing cables and datasheets for the hardware, solving our pending issues from the last report.

Past Period Accomplishments

Throughout the past period, we have continued testing our hardware and have begun development on the mobile application. We successfully combined developer accounts in Apple Connect and have set up the foundation for the XCode project. Additionally, the mobile team has created the basic diagrams for the application flow and UML documentation. The API-focused team is building off of that by creating prototypes for the different third-party software that we will use. Hardware has reached a point where they can successfully read data from the sensors and the Bluetooth module.

Pending Issues

Mobile - Setting up a Firebase account for database, determining process for sending/collecting data from API team

Hardware - sending data via bluetooth - can connect to the sensor but not send data yet, gps precision and accuracy - the precision/accuracy of the GPS seems a little larger than what we thought. Maybe need a better antenna

Individual Contributions

Name	Individual Contributions	Hours this period	Hours cumulative
Madison Kriege	Set up XCode project for mobile application, created UML diagrams for application uses, put together weekly report	15	46
Sean Doran	Working on understanding the APIs for MapBox. Looked into the Xcode project and how to integrate Mapbox SDK into the iOS App.	15	46
David Hayes	Researched the sensors some more. Found examples and started experimenting with the sensors. Flow rate sensor, and GPS are working and we can read data. Can connect to bluetooth module but read and send data harder. Will continue working with the sensors. Fixed last reports pending issues	15.5	47
Kevin Davis	Research sensors/hardware that was received. Find datasheets/guides for each. Begin experimenting and testing the various sensors/hardware. Mainly focused on flow create sensor, gps module, bluetooth module. Used Arduino with each of these. Currently, we can read flow sensor data and gps data and print it out using the "Serial Monitor" in the Arduino IDE. The bluetooth module can be turned on and connected to, but communicating with the module is a work in progress.	16	47
Shuangquan Li	Set up Xcode project for mobile application, figure out the UML	15	46

	diagrams for application, set up the local database using core data in iOS		
Donald Laracuenta	Worked on gaining a better understanding of Xcode and Firebase and their interactions. Working on understanding the APIs for MapBox.	15	46

Plans for Upcoming Period

For hardware, we will continue to work on reading and communicating with the various sensors. Try to get all sensors to work on an individual basis. We will look at the accuracy & precision of the sensors to ensure that they will work for our needs. We will look at transmitting data between the sensors and another device via Bluetooth.

The mobile team is planning to get the foundation of the storyboard files completed so that the application has a general walkthrough working by the end of the next period. Additionally, we plan to meet with the API team to determine the best way to move forward with the project integration. This meeting will include deciding on the Firebase pending issue.

Summary of Advisor Meeting

- Updated on status of project as a whole and per each team.
- Discussed plans for next 2 week period.