

EE/CprE/SE/CybE 492 Period Report

4/3/2020 - 4/16/2020

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

The team have been working hard on the project. It is a lot harder to do things being apart. The hardware team has been working on setting up the sprayer to field test it. Also, the hardware team has been working on redesigning the PCB to a smaller Arduino to fit better in the backpack. The iOS team worked on debugging the app to fix minor issues. The API team has been working on cleaning up the map view and perfecting documentation. The team created a script to manage the amount of data being stored in the Firebase Database.

Past Period Accomplishments

In the past period, the team made progress in adjusting the project deliverables, communicating with the clients and advisor, as well as making progress with the technical side of the project. Specifically, the iOS team worked on debugging the app and cleaning other minor issues. The hardware team soldered the first version of the PCB, which was received from ETG this period. Further, implementing the hardware components with the backpack and testing was worked on. For the next version of the PCB, the Arduino UNO will be used for sizing reasons, so the team worked on the wiring, schematic, and PCB design of this next prototype. Lastly, the API team worked on cleaning up various components of the mapping, such as symbols, fonts, and the map-view in general. The Firebase Database was also cleaned up to better allow for testing during the development phase of the project.

Pending Issues

The GPS sensor is proving to be unreliable, and the team may need to evaluate alternative options. Soldering the PCB was difficult due to the lack of labs/facilities on campus.

Individual Contributions

Name	Individual Contributions	Hours this period	Hours cumulative
Madison Kriege	Tested stay logged in further and worked on issues with XCode setup. Continued working on sync and log in functionality.	16	98
Sean Doran	Worked on project documentation. Worked on updating the MapView and cleaning up the overall interface of how the map will render and display data.	19	100
David Hayes	Worked on design documentation for UNO PCB. Also working on getting the hardware all put together for a prototype.	20	103
Kevin Davis	Worked on v2 of the PCB, for the Arduino UNO. Redesigned schematic and PCB.	19	100
Shuangquan Li	Worked on debugging the configuration of profile view controller/project settings. In addition, worked on refinement of the data view controller by refactoring it to use SwiftUI.	19	106
Donald Laracunte	Worked on Documentation and started planning for the final presentation and final poster.	18	99

Plans for Upcoming Period

Over the next few weeks, the team plans to begin wrapping up testing and finalizing the prototype for the presentation. Due to changes from the pandemic, testing has been moved to using predetermined data in order to check the functionality of the iOS app

components. Similarly, the hardware team will continue testing the backpack elements in a small scale set-up, they will not be able to test in-field as originally planned.

Summary of Advisor Meeting

During the last advisor meeting on April 7th, the team discussed how online instruction is affecting the project along with how the clients want to proceed. After that, the group discussed the strategy for the last few weeks of class.