EE/CprE/SE/CybE 492 Period Report - 2/26/2020 - 3/11/2020

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 Laracuente

Period Summary

Over the last period, the team has been working to increase the precision of the flow and compass sensors as well as the consistency in the Mapbox visuals and application view. The hardware team has been refining the calculations used for the different sensors and has worked on parsing the data in a way that is usable for the mobile teams. Additionally, they have continued working on the PCB design. The API and software teams have been working on solving problems with the Mapbox setup and continued editing the profile and graph sections. Finally, the team has been working toward getting the CoreData set up to be used with the data flow.

Past Period Accomplishments

During the past period, the team has accomplished several things. First, the API sub-team was able to plot map points on the iOS app based on data sent from the Arduino. This team has also been working to update the Design Document. The Gantt chart has been updated to better match the current project timeline and testing information has been started. Furthermore, the hardware team worked on making equations to convert the raw data from the sensors into useful information for the user. This has been an important accomplishment as the teams continue working intertwining the different components. Additionally, the mobile sub-team is close to finishing the stayed-logged-in feature on the app and has been working to add animated graphs with the API data. Lastly, there were unexpected problems with the Mapbox setup throughout the period, both the mobile and API teams worked to test components and determine the root cause. In the end, a new key was needed in order to continue calling Mapbox.

Pending Issues

Finalize the test plan in the design document and begin testing the iOS components/unit tests.

Individual Contributions

Name	Individual Contributions	Hours this period	Hours cumulative
Madison Kriege	Continued working on the Stay Logged In functionality for the profile page. Also continued testing the current user functionality	17	59
Sean Doran	Fixed Mapbox. Worked on continued integration between the iOS Application and Firebase/Mapbox.	16	56
David Hayes	Worked with the flow and compass sensor to define equations to calculate flow rate and direction facing. Also worked on finishing up the PCB board to be printed. Lastly, worked on getting JSON to parse properly	18	57
Kevin Davis	Focused on PCB board design. The final decision on what all will be included will be made once the backpack is received. Cleaning up HW/Arduino code was also done. Lastly, worked on ensuring that data is accurate and converted properly.	17	56
Shuangquan Li	Worked on setting up the local database with CoreData, created the data table for each activity for Bluetooth data and implemented data parsing algorithm, helped debugging the Mapbox API, and implemented the data structure for the data model.	20	62
Donald Laracuente	Worked on documentation for the design document. Specifically Updated gantt chart for correct semesters and section 5.1 and 5.2.	17	56

Plans for Upcoming Period

Between now and the next period, the goal is to retrieve the backpack sprayer from the client and begin putting together the final prototype. Prior to the next advisor demonstration, the goal is to determine how the Adruino and PCB board will be placed into the backpack and begin hooking up the individual components. From a software perspective, the profile page should be ready for testing by the demo and further testing needs to be done with the Mapbox API.

Summary of Advisor Meeting

The team had a demonstration with the advisor to show that communication between the Arduino device and the iOS application is reliable. This was a success and the team is able to send the needed information back and forth. For the next meeting, Daji would like to see the Arduino combined with the backpack sprayer and have a full prototype in place.