

EE/Cpr E/ SE 492 BI-WEEKLY REPORT 6

11/6/18-11/19/18

Group 8 - Smart Garbage Management

Advisor: Prof. Goce Trajcevski

Team Members: Colin McAllister, Nick Pecka, Robert "RJ" Duvall, Steven Brown, Brendan Finan, Sam Johnson

BI - Weekly Summary

For this week hardware moved along with finalizing the garbage sensor prototype. Circuit boards were received right before the previous bi-weekly report. Components were received the week afterwards, so Steven and Colin populated the board. Steven then performed testing of the board and found that there was a power issue that was eventually resolved. The board was then passed to Colin, who proceeded to start testing the Pycom FiPy development board integration with the garbage sensor board. A couple issues were found in hardware and software. For hardware, a one trace for the ultrasonic sensor needed to be rerouted and a pin to the FiPy was bridged to another pin because the ADC did not properly work on the intended pin. For software some changes were made with interfacing with the ultrasonic sensor and gps receiver. Code was also added for the garbage sensor to be initially configured by a garbage company before installation and deployment. The only thing that is left for the hardware team's prototype is programming the load cell monitoring chip on the board. Problems were

encountered programming the device over the manufacturer's custom 1-wire serial interface. Once programming that chip is finished, the hardware team will deploy the hardware on the garbage bin in order to fully demo the prototype. This week in software we worked on integrating the individual parts and performing integration testing.

Completed Deliverables

- Nicholas Pecka - Met with team (2 hour), Met with software team (3 hour), Met with advisor and team (1 hour). Worked on development for dashboards for Resident and Collector (3 hours), Worked on final report and slides for presentation (2 hours)
- Colin McAllister - Created prototype code to interface with accelerometer, deep sleep mode, and load cell (3 hours), Added new features to previous code (2 hours), Refactored garbage sensor code (1 hours), Assisted in soldering circuit board (1 hour), Tested & finalized code with breadboard circuit before integrating with circuit board (3

hours), Reconfigured AWS IoT and integrated garbage sensor with database (2 hours), Created code to assist in initially configuring a garbage sensor(2 hours), Wrote initial sections for final report draft (4 hours), Created test stand for circuit board and 3D printed stand (1 hour), Tested circuit board, debugged several issues with board causing unexpected behavior, cut trace and soldered isolated trace to test point on board (3 hours), Tested embedded software running on circuit board, fixed issue where GPS data wasn't being received (2 hours), Read Pycom MQTT library source code to find way to create a callback to acknowledge received messages (2 hours), Started working on integrating load cell signal conditioner (2 hours), Worked on PIRM #2 presentation (1 hour), Attended and presented during PIRM #2 (1 hour) (30 hours total)

- Brendan Finan - Worked on AWS Integrations (5h), Proofread genetic algorithm (1h) , met with team to discuss final steps (1h), created app functionality for new AWS functions (3 hours)
- Robert "RJ" Duvall
 - Wrote initial sections for final report draft (4 hours).
 - Worked on PIRM 2 presentation (1 hour).
 - Unit tests for OSM Route (5 hours).
 - Client meeting (2 hours).
- Steven Brown - Assisting with MAX1452 communications development (10 hours)
Working on DFMEA for hardware (2 Hours)
- Sam Johnson - Wrote code for integrating the GA into the webapp (4 hours).
Familiarized myself with the AWS backend (2 hours). Wrote tests for the GA (4 hours).
Work on PIRM presentation (2 hours).

Name	Hours This Week	Total Hours
Colin McAllister	30	93.5
Nick Pecka	11	96
Robert "RJ" Duvall	12	129.5
Steven Brown	12	127
Brendan Finan	10	95
Sam Johnson	12	126

Plans for Upcoming Week:

- Continue to finish up the project - Robert
 - Work on completing the Poster.
 - Work on completing the Final Report.
 - Work on last tests for Android App.
- Construction of the device - Steven
 - Attach device to enclosure, and then to trash can
 - Verify function of all sensors in situ.
- Continue to develop microprocessor code - Colin
 - Complete final testing of garbage sensor prototype
 - Integrate garbage sensor with garbage bin
 - Assist in writing final report

- Design final poster
- Continue work on views for web/mobile app - Nicholas
 - Work on final report for Senior Design
 - Continue improving look of dashboards
 - Meet with team to connect things for final demo
- Component Integration- Sam
 - Connect genetic algorithm back end with app
 - Continue writing report
- Finish component integration - Brendan
 - Integration tests
 - Final presentation
 - Final Report
 - Poster