

# sddec18-22 Automower (Autonomous Lawn Mower)

*Biweekly Report #5*

*Reporting Period: 10/23/18 - 11/05/18*

*Client: Micron Technologies/Ryan Marion*

*Advisor: Dr. Jones*

## Team Members

Sam Tinklenberg - Team Leader

Andi Li - Meeting Facilitator/Software Dev

Bryton Hayes - Test Engineer

Grant Duncan - Software Lead

Joel Seaser - Hardware Lead

## Summary of Report

This week we reached out to our client, Ryan and provided him with a comprehensive overview of what we have completed so far this semester. We also gave him a status on our project goals and our confidence on completing the goals. The c-channel for the chassis is assembled and we will be finishing up assembly and starting full system testing as more parts come in.

## Tasks Completed:

General Tasks:

- Start assembling chassis and organizing received parts
- Work on high-level system diagram

Specific Tasks:

- Mobile
  - Added RecyclerView to History screen, so that the user can select which date they want to view
  - Added query to select all past dates
  - Added bluetooth support
- Embedded
  - Added blade motor and more functionality to motor control library
  - Started testing GPS library
  - Investigated motor encoder feedback and added to motor control library

## Tasks In Progress:

General Tasks:

- Assemble chassis and organize wiring
- Finalize system diagram

Specific Tasks:

- Mobile
  - Make Polylines the same size as the cutting width of the mower
  - Connect the app with the mower through bluetooth
  
- Raspberry Pi
  - HTTP Server
    - Handle HTTP post and get requests better.
    - Get php scripts to work to add stuff to database correctly.
  - Networking
    - Work on getting the phone and raspberry pi to be able to connect together more automatically and less manually.
  - Database
    - Create other tables for more information from the arduino.
  - Firewall
    - Make a little bit more robust.
  
- Embedded
  - Test and validate WAAS data
  - Test motor control with feedback
  - Send/receive data with Raspberry Pi
  - Add functionality to Arduino libraries
  - Research methods of object detection
  - Integrate libraries with autonomous code
  - Assemble and test perimeter wire circuitry
  - List and handle all errors and safety shutoffs
  
- Hardware
  - Assemble chassis
  - Meet with ETG to discuss mounting blade

## Upcoming Tasks:

### General Tasks:

- Start preparing poster and final presentation

### Specific Tasks:

- Raspberry pi
  - Authentication
    - Come up with a way to authenticate users when they try and send requests to the web server.
  - Connectivity
    - Connect the raspberry pi to the local network automatically.
    - Come up with a solution for the raspberry pi to still be functional when it loses connection while it mows.
  
- Embedded
  - Plumb GPS and motor data to Raspberry Pi database

- Incorporate library functionality into autonomous code
- Finish assembling and integrating methods for object detection
- Finish testing perimeter wire circuit
- Mobile
  - Connect mower and app through wifi
  - Update weather to use mower's location instead of phone's
- Hardware
  - Finish assembling chassis/wiring
  - Compare motor feedback to GPS data and speed control

Name	Individual Contributions	Hours this report	Cumulative hours
Sam Tinklenberg	Raspberry pi web server fix and testing.	12	58
Andi Li	Created High-Level System Diagram and wrote some test autonomous code	8	52
Bryton Hayes	Add functionality to Arduino libraries, GPS integration	12	82
Grant Duncan	Worked on the mobile app	12	64
Joel Seaser	Ordered parts for the rest of the mower. Finalized the perimeter wire	12	56