sddec18-22 Automower (Autonomous Lawn Mower)

Biweekly Report #2
Reporting Period: 9/11/18 - 09/24/18
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

For the term of this report, our main focus was determining individual responsibilities and solidifying plans of action for the coming weeks. We are in the process of ordering many parts through the university, and will have many more coding-intensive tasks when we have the physical device constructed.

Tasks Completed:

General Tasks:

- Discussed individual goals and expectations for the following months

Specific Tasks:

- Mobile
  - Added GSON to project
  - Created HistoryEntity for GPS mow history
  - Created query for looking up GPS history by date
  - Created method to convert DateEntity to JSON and HistoryEntity from JSON
- Raspberry pi
  - Validate serial connection to Arduino
- Embedded
  - Started C++ libraries for motor control, motor feedback, and GPS
  - Research and adding parts for motor feedback

Tasks In Progress:

General Tasks:

- Perimeter wire circuit
  - Building the perimeter wire onto breadboard
  - Creating parts list of missing parts for the perimeter wire
- Order supplies to build platform

- Final Project Plan

Specific Tasks:
- Mounting of reel blade to chassis and connection to motor
- Research drivetrain options for the mower
- Mobile
  - Add Google Maps api to project
  - Create map that highlights a HistoryEntity's mow coordinates
- Raspberry Pi
  - HTTP Server
    - Handle HTTP post and get requests.
    - Get php scripts to work to add stuff to database
  - 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
  - Gather relevant data to send to database
  - Construct custom arduino libraries
- Hardware
  - Revising parts list
  - Research blade mounting options
  - Research wheel traction and placement

Upcoming Tasks:

General Tasks:
- Finish and test Perimeter Wire Circuit
- Mounting of Reel blade to c channel and connection to gear motor

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.
- GPS
  - Plumb GPS data to Raspberry Pi database

- Mobile
  - Get location data and diagnostics from mower
  - Use real location data to make a map of where the mower has been
  - Update weather to use mower's location instead of phone's
- Hardware
  - Start assembling drivetrain
  - Meet with ETG to discuss blade mounting options
  - Compare motor feedback to GPS data

Name	Individual Contributions	Hours this report	Cumulative hours
Sam Tinklenberg	Setting up and troubleshooting http server.	10	20
Andi Li	Researched different options for turning and what wheels to use	9	20
Bryton Hayes	Arduino libraries and hardware research	16	31
Grant Duncan	Worked on the mobile app	10	25
Joel Seaser	Created perimeter wire circuit and testing of it	10	20