sddec18-22 Automower (Autonomous Lawn Mower)

Biweekly Report #1
Reporting Period: 8/27/18 - 09/10/18
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 Weekly Report

This past week we prepared for our peer instructor review meeting. We met up as a group, and began plan what each person has to do for this semester. During the meeting we also organised the parts list and determined priority and availability.

Parts List:
https://docs.google.com/spreadsheets/d/1--O7MRrmnK9mFpDoSvGFFyLTsqP6Rjb_k7xr6jm85PI/edit#gid=2084934883 If we could get the parts with a priority level of 5 that would be very helpful for our short term goals.

Tasks Completed:

General Tasks:

- Prepared for peer instructor review meeting
- Reviewed comments and concerns from other teams about our project

Specific Tasks:

- Picked up all the parts that were available at ETG for the perimeter wire
- Mobile
    - Converted code to Kotlin
    - Added ViewModel for safely rotating device
    - Added Room database persistence
    - Added RecyclerView to Scheduler to show selected day's schedule
    - Added swipe to delete to scheduler
    - Added sorting logic to schedule list
    - Added timestamp to DateEntity
    - Created upcoming schedule list
    - Updated next mow logic
    - Added permissions check for location
    - Reduced minimum API

- Raspberry pi
    - Some php code is working.
- Motor
    - Set up motor, motor controller, and battery
    - Test and configure motor movement
    - Started motor service code to control acceleration and basic movement

Tasks In Progress:

General Tasks:

- Perimeter wire circuit
    - Building the perimeter wire onto breadboard
    - Creating parts list of missing parts for the perimeter wire
- Final Project Plan

Specific Tasks:

- Mounting of reel blade to chassis and connection to motor
- Mobile
    - Implement remote database querying
    - Convert local databases to JSON for easy export
    - Add local database table for GPS history coordinates
    - Create logic for importing GPS history JSON and saving it to local database
- 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.
- GPS
    - Research and test WAAS connection
    - Validate GPS data
- Hardware
    - Revise parts list
    - Research blade mounting options and wheels.

Upcoming Tasks:

General Tasks:

- Finish 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
    - Test WAAS configuration
    - Mapping coordinates to GUI
- Mobile
    - Get location data from mower
    - Use location data to make a map of where the mower has been
    - Update weather to use mower's location instead of phone's
- Start assembling hardware for the mower

Name	Individual Contributions	Hours this report	Cumulative hours
Sam Tinklenberg	Setting up and troubleshooting http server.	10	
Andi Li	Parts list revision, tweaked CAD prototype	11	
Bryton Hayes	Embedded code for motor control and GPS, parts list revision and update	12	
Grant Duncan	Worked on the mobile app	15	
Joel Seaser	Reviewed parts list and picked up parts from ETG	12	