

MicroCart (Microprocessor Controlled Aerial Robotics Team) sdmay19-20

2/18 — 2/24

Client/Advisor: Dr. Phillip Jones

Team Members

James Talbert — *Hardware*

Sarah Koch — *Controls*

Anthony Bertucci — *Ground Station*

Summary of Progress this Report

- **James**
 - I made further attempts to extract log data using an ad-hoc setup, which have not been successful.
 - **Sarah**
 - Verified that the Simulink simulator outputs usable data for the motor PWM signals, which can be compared with the actual motor PWM outputs by probing test points on the quad shield PCB
 - Means we have a way to check if controllers are functioning correctly, but does not guarantee good controller performance
 - **Tony**
 - Made necessary changes to backend to ensure proper population of flight log file
 - Merged Tina's branch from last semester for sending flight data from the quad and handled the integration of this into my branch
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Pending Issues

- **James**
 - The WiFi connection to the quad is not working when following the documented information in the ground station software. There may be network configuration required to enable the connection.
- **Sarah**
 - There are slight discrepancies between logged simulation data and the graphs of the PWM outputs. I am still working out why and suspect the Simulink scopes may have misleading labels.
 - Need a functional quad for comparison between modeled Simulink motor PWM outputs and actual outputs
- **Tony**

- A functional quad is going to be necessary to test the new feature, currently a stable build does not exist

Plans for Upcoming Reporting Period

- **James**
 - Work with Tony to get log data from manual flights for sensor calibration.
- **Sarah**
 - Alter the testing procedure for new controllers based on feedback from team members and Dr. Jones
 - Change the current Simulink simulator to make it easy for new users to add their controller to the simulator for developmental and implementational testing
 - Additionally, enable the user to view graphs of the motor PWM outputs over the course of a simulation
 - Add testing procedure documentation to the git repository and update documentation on the Simulink simulator
- **Tony**
 - I plan to continue testing the new implementation of the real-time flight data logging feature

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
James Talbert	<ul style="list-style-type: none"> ● Determined ways to not get data from the quad. 	3	127
Sarah Koch	<ul style="list-style-type: none"> ● Located motor PWM output simulation data in the Simulink simulator ● Ran simulations to verify the data log reported reasonable PWM values 	6	107
Anthony Bertucci	<ul style="list-style-type: none"> ● Merged changes from <i>sensor_rt_transmit</i> into <i>groundstation_gui_fd_test</i> ● Added new message ID case to packet structure to allow for groundstation backend to interpret flight data as well as print raw data to a log file 	6	96

Gitlab Activity Summary
