

sdmay18-17 MicroCART (Microprocessor Controlled Aerial Robotics Team)

Week 21 Report

Reporting Period: 3/21/18 - 3/26/18

Team Members

Blake Pries -- Communications Lead

Dane Larson -- Ground Station Lead

Matthew Kelly -- Documentation Lead and Webmaster

Tyler Imboden -- Quad Software Lead

Jakub Hladik -- Test Lead

Kyle Trost -- Team Lead

Peter Thedens -- Repository Lead

Austin Rohlfing -- Controls Lead

Summary of Progress this Report

Generals Tasks for entire team:

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Quad Software - Tyler and Kyle:

Summary for progress this report:

- New quad has an issue with initializing LIDAR
- Old quad is in need of some repairs after unsuccessful vivado build flying attempt

Pending Issues:

- New quad isn't functioning
- Old quad may need some slight repairs

Plans for upcoming reporting period:

- Work out bug on new quad for LIDAR issue
- Repair needed items on old quad

Controls - Austin and Blake:

Summary for progress this report:

- Vectorized part of Simulink control model for cleaner implementations later

Pending Issues:

- Matt's paper is unclear (to me at least) in how actual LQR control outputs were obtained. Feedback matrix K is given, but this alone is not enough to even stabilize the Simulink model. From discussion with Robert, we probably need an observer gain to complete the system
- Behind schedule of where we wanted to be

Plans for upcoming reporting period:

- Determine state observer matrix for controller on Matt's parameters
- Create necessary matrices for current parameters

Testing - Peter and Jakub:

Summary for progress this report:

- Set up the new RC transmitter (Jake)
- Corrected (hopefully) motor assignments in JSBSim quad model (Jake)
- Examined the DataAnalysisTool further (Peter)
- Code review of GroundStation merge request (Peter)

Pending Issues:

- Units and orientations still off in the simulator controls (Jake)

Plans for upcoming reporting period:

- Correct units and orientations in the simulator controls (Jake)
- Look into how to run DataAnalysisTool from command line (Peter)
- Work on converting existing documentation to markdown (Peter)

Ground Station - Matt and Dane:

Summary for progress this report:

- Created programming circuit for ESP8266 and working on a Perfboard implementation. (Matt)

- Fixing comments after code review on issue 44. (Matt and Dane)
- Working on documenting wifi bridge directory for future teams and editing for station rather than AP. (Matt)
- hostapd

Pending Issues:

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Plans for upcoming reporting period:

- Finish wifi bridge documentation and circuit. (Matt)
- Get issue 44 completely merged. (Matt and dane)
- Work on debug changes for ground station. (Matt)
- Work with QS team on getting second quad and vivado build tested. (Matt and Dane)
- Communicate with esp to groundstation with groundstation as AP (Dane and Matt)

Name	Role	Contribution	Hours worked	Total
Peter Thedens	Repository Lead	Reviewed code for ground station merge request	4	108
Austin Rohlfig	Controls Lead	Continued control model work	4	139
Kyle Trost	Team Lead	testing Vivaldo build Worked with Tyler in new quad	11	180
Matt Kelly	Documentation Lead	Worked with Tyler and Kyle, work with ESPs and issue 44	10	179
Dane Larson	Ground Station Lead	Corrected code review comments. Worked on hostapd script.	4	129
Jakub Hladik	Test Lead	Set up new	3	121

		transmitter, corrected motor orientation in the sim.		
Tyler Imboden	Quad Software Lead	Troubleshooting new quad and old quad	11	143
Blake Pries	Communications Lead	Worked on manual assist mode	2	91