

## **sdmay18-17 MicroCART (Microprocessor Controlled Aerial Robotics Team)**

Week 9 Report

Reporting Period: 10/30/2017 - 11/5/2017

### **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:

- Lighting Talk #3

General Question:

- Would a Jenkins Build System be something that would be nice to have for future teams? This could automate the building of our project and we could download the .bin file from the system online. This would not be a focus of our team until later next semester.

Quad Software - Tyler and Kyle:

Summary for progress this report:

- Sample Xilinx project working in Vivado
- Started Doxygen commenting quad\_app directory

Pending Issues:

- No comments in C code in SDC workspace directory
- Tech debt in src folder (needs refactoring and documentation)

- Can't get LEDs working with XPS.

Plans for upcoming reporting period:

- Continue updating Doxygen commenting quad\_app code
- Complete hardware project with same functionality on vivado as opposed to XPS.

## Controls - Austin and Blake:

Summary for progress this report:

- Moved doc for thrust and drag constants to GitLab; converted to Markdown
- Converted parameter identification to Markdown
- Finished documentation and added comments to the MATLAB files in the controls folder

Pending Issues:

- Referencing procedures from Ian's thesis?

Plans for upcoming reporting period:

- Upgrade parameter identification table with new columns
  - Measurement date
  - Procedure description or link
- Work with Peter on the MATLAB files

## Testing - Peter and Jakub:

Summary for progress this report:

- Fixed pipeline by updating gitlab\_runner version (Peter)
- Worked on updating makefiles to compile test (Peter)
  - Workaround was to place necessary files in the test/ directory
- Quad took off and landed with no controls. ↴ (Jakub)

Pending Issues:

- Makefiles are complex and hard to modify (Peter)
- Where should the credentials for the CI server live? (Peter)
- Is the quad realistic enough? (Jakub)
- Quad has no controls so response is hard to test (Jakub)

Plans for upcoming reporting period:

- Continue work on makefiles (Peter)
- Get my testing documentation merge request completed (Peter)
- Review Blake's merge request/branch and resume work on matlab files (Peter)
- Figure out how to connect current quad controls software into JSBSim (probably virtual quad + socket) (Jakub)

Ground Station - Matt and Dane:

Summary for progress this report:

- Outlined changes for GUI (see appendix)
- Continued work on GUI side of issue 30
- Code finished for safety.
  - Need to test and add more rules.
- Looked at packets within Wireshark on the ground station pc.

Pending Issues:

- How to check if the quad is in autonomous mode?
  - Will work with quad software to implement
- Unfamiliar with exactly how the GUI works when it comes to updating parameters.

Plans for upcoming reporting period:

- Start GUI reworking (see appendix)
- Test safety bounds with with the quad
- Get milestone outlined for GUI rework
- Start AP work for groundstation (start for multi vehicle)
  - Maybe start with hostAP on raspberrypi

Name	Role	Contribution	Hours worked	Total
Peter Thedens	Repository Lead	Fixed pipeline and worked on makefiles	6	57
Austin Rohlfing	Controls Lead	Moved/converted param ident docs. Lightning talk	6.5	60

Kyle Trost	Team Lead	Vivado Project Lightning Talks	6	80
Matt Kelly	Documentation Lead	Worked on GUI document, updated GUI for message bundle (near complete)	5	76
Dane Larson	Ground Station Lead	Talked about gui implementation and changes, continued safety changes (may be on going process)	6	61
Jakub Hladik	Test Lead	Worked on the sim quad model and propulsion model. Wrote a script which feeds the propulsion inputs, first flight of simulated quad.	9	60
Tyler Imboden	Quad Software Lead	Worked on monday on trying to build multi-sensor mode, started Doxygen commenting quad_app directory	7	68
Blake Pries	Communications Lead	Finished documentation for the matlab scripts in the controls folder.	9	45

Appendix:

[GUI redesign document link](#)