sdmay18-17 MicroCART (Microprocessor Controlled Aerial Robotics Team)

Week 5 Report

Reporting Period: 10/01/17 - 10/08/17

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:

- Divided work for design document, will work on this coming week
- Attended controls presentation from Matt Cauwels

Quad Software - Tyler and Kyle:

Summary for progress this report:

- Finished merge request regarding xilinx tool introduction. Branch not closed due to lack of Vivado platform to create tools for
- Determined usability and documentation regarding scripts in quad folder
- Created block diagram for quad HW/SW
- Got started looking at driver's for quad
- Developed a good bill of materials for the quad
- Attempted creating a build in the xilinx tools / revised documentation accordingly

Pending Issues:

- Lack of vivado platform

- Quad directory is confusing and needs to be addressed.
- Still need to find a solution for sourcing a couple parts

Plans for upcoming reporting period:
- Create one build for different sensor feedback types(Lidar, VRPN, Optical Flow)
- Restructure Quad directory
- Start determining course of action for Manual assistance
- Consider using DIP switches on zybo board to run multiple modes of operation on one single built
- Finalize all parts changing on the quad

Controls - Austin and Blake:

Summary for progress this report:
- Continued to add comments and go over the controls matlab scripts.
- Added Markdown document to Simulink model of quad

Pending Issues:
- Decent number of still unknown scripts in git directory

Plans for upcoming reporting period:
- Meet with Matt to talk more about his plans for the controls model and switching from PID to matrix multiplication.
- Finish documentation on the matlab scripts and submit them for a merge request.
- Contact last year's control team to discuss existing scripts/tools

Testing - Peter and Jakub:

Summary for progress this report:
- Left comments on Austin's and Kyle's merge request (Peter)
- Looked at different flight dynamics simulators to simulate quad flight - candidate JSBSim. Read through reference manual for JSBSim (Jake)
- First pass through existing Matlab code in controls/DataAnalysisTool/, looking at what is there and what dependencies exist (Peter, Jake) (Issue #28)
- Found bug in the quad logging where quad logs only one component at a time of the set point change (Peter, Jake) (Issue #30)
- Wrote simple matlab code to plot quad flights in 3D (Peter)

Pending Issues:

- Create simple quadcopter configuration for JSBSim.

Plans for upcoming reporting period:
- Communicate between virtual quad (running all controls software) and JSBSim
- Continue reviewing merge requests
- Continue moving to third-party testing libraries (Peter) (Issue #20)
- Meet with Kyle and Tyler to rework quad/ directory (Peter)
- Look for more areas to improve documentation related to CI

Ground Station - Matt and Dane:

Summary for progress this report:
- Added markdown documentation for getting started on ground station (Issue #27).
- Updated documentation regarding frontend, backend, and readmes (Issue #24).
- Discussed with Robert (Controls Graduate Student) regarding Crazyflies and improves he would like to see that we could implement for MicroCART.
- Reviewed documents for recalibrating the camera system.

Pending Issues:
- Awaiting response on questions regarding plans from client.

Plans for upcoming reporting period:
- Finish documentation
- Put all issues up on gitlab
- Finalize the plans for the semester
- Screen Sketches and start adding to current GUI
- Issue #30: log timing is off

Name	Role	Contribution	Hours worked	Total
Peter Thedens	Repository Lead	Reviewed MRs; looked over existing Matlab Tool	9	33

Austin Rohlfing	Controls Lead	Read Ch. 3 & 4 of Thesis. Wrote Simulink model document. Reviewed merge request.	13.5	32
Kyle Trost	Team Lead	Xilinx merge request Block Diagram Quad Scripts	8	43
Matt Kelly	Documentation Lead	Attended Ground Station meeting. Worked on Getting Started documentation. Worked with Robert regarding Crazyflies.	8	38
Dane Larson	Ground Station Lead	Helped prep for the rockwell meeting. Installed Qt to laptop. Traced a button push to the quad send. Planning rules and how to implement. Attended meetings.	8	35
Jakub Hladik	Test Lead	Went through different flight dynamics simulators, chose one. Read through reference manual for the simulator. Working config file for the simulator	6	28

		for our quad. Wrote up issue for logging bug.		
Tyler Imboden	Quad Software Lead	Reviewed xilinx documentation and corrected where needed. Created a bill of materials for quad. Started looking a drivers for the quad.	9	39
Blake Pries	Communications Lead	Continued to go over the matlab scripts and add comments and work on documentation.	5	18