sdmay18-17 MicroCART (Microprocessor Controlled Aerial Robotics Team)

Week 4 Report

Reporting Period: 9/25/17 - 10/2/17

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

Quad Software - Tyler and Kyle:

Summary for progress this report:

- Kyle:
  - Revised markdown files within the quad
    - Better explained boot.bin
    - Planned out file structure and links within README's and
  - Issue #26 started working on conversion of Xilinx walkthrough markdown
  - Looked at scripts within quad sw folder
  - Looked at basic control loop and started making hand notes on what each struct does.
- Tyler
  - Started on making a "getting started" guide
  - Created a markdown file that will house links for the various generalized documentation

Pending issues:

- Lack of documentation of all code

- Need for an understanding of the controls algorithm

Plans for Upcoming Reporting Period:
- Going to start documenting the drivers
- Revise the demo documentation
- Create Doxygen comments for drivers running on quad
- Document scripts within quad folder
- Need to get into the control algorithm and see what is happening inside it

Controls - Austin and Blake:

Summary for progress this report:

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Pending issues:
- Document Simulink-based quad model (currently undocumented in nearly any form)

Plans for Upcoming Reporting Period:

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Testing - Peter and Jakub:

Summary for progress this report:
- Issue #28: Examined existing MATLAB scripts, discussed how to make more user friendly
- Discussed possibility of using X-Plane/Flightgear to simulate quad flights
- Discussed making 3D plots of data received in MATLAB scripts
- Issue #24: Continued work on documentation improvements
- Issue #20: Began looking at using prebuilt testing libraries, downloaded source, made branch for this

Pending issues:
- Need feedback from Dr. Jones on using X-Plane/Flightgear to simulate quad flights
- Need master access to repo to create issue and merge request templates

Plans for Upcoming Reporting Period:

- Issue #28: Begin process of commenting and restructuring MATLAB scripts
- Issue #20: Continue moving to prebuilt testing libraries
- Peter: Work with other teams to improve documentation and file structure, settle on documentation file structure

Ground Station - Dane Larson and Matthew Kelly

Documentation:

Summary for progress this report:
- Discussed frontend connection with CLI.
- Discussed the sockets open in the backend and their purposes.
- Talked about overall connection between the different areas.

Pending Issues or Questions:
- There are a variety of areas where it mentions block.input, block.output, or other similar names. What are these referring to?
- Is there documentation on the protocol created to do the communication?
- What are the various packets (getnodes, addnode, ect)? (related to last question)

Plans for Upcoming Reporting Period:
- Doxygen comments discussing file purpose at the beginning of all files
- Better documentation on certain functions lacking information.

GUI Redesign:

Summary for progress this report:
- Talked about various screens and potential improvement.
- Talked about main usage and need for the GUI to better understand functionality.

Pending Issues or Questions:
- Where exactly does the GUI fit into the ground station src code.
- What does it call and for what reasons?

Plans for Upcoming Reporting Period:
- Create screen sketches talking about functionality and desired changes. This would be shown to team and advisors to keep everyone involved in the redesign.

Add Safety Rules:

Summary for progress this report:
- Discussed with Quad Software about their plans for safety measures.
- Talked about the types of rules we would be implementing.

Pending Issues or Questions:
- How will we implement rules exactly?
- How will this affect the current codebase?
- Where in the Ground Station flow (backend?)

Plans for Upcoming Reporting Period:

- Implement some mechanism to not allow quad to accept commands that will cause it to crash
- Generate a set of rules for quad commands

Name	Role	Contribution	Hours	Total
Peter Thedens	Repository Lead	Began work on changing unit test framework. Looked into issue and merge request templates and advanced markdown. Examined and ran MATLAB scripts.	8	24
Austin Rohlfing	Controls Lead	Continued reading model documentation. Worked through initial setup of vector bases and transformations to solidify fundamental understanding. Planning to work more hours next week (at least 10)	4	18.5
Kyle Trost	Team Lead	Fixed documentation within "quadcopter" to be more easily understood(specifically for people without FPGA Experience). Replaced old pdf explaining SDK with a md file. Tested merging a test branch with master.	12	35
Matt Kelly	Documentation Lead	Planned ground station goals for the semester and entire project with Dane. Started Doxygen comments on the front end. Started looking into the ground station and quad software packets and communication.	8	30

Dane Larson	Ground Station Lead	Planned ground station goals for the semester and entire project. Modified readme and started new documentation standard on source. Dug into how all of groundstation works. Many meetings.	10	27
Jakub Hladik	Test Lead	Studied current flight analysis tools (mostly MATLAB scripts) and learned how to use them. Brainstormed possibility of connecting our simulink model with X-Plane/FlightGear flight simulator (the new virtual quad).	5	22
Tyler Imboden	Quad Software Lead	Revised Demo Documentation, Start of documentation system for getting started guide	8	30
Blake Pries	Communications Lead	Got a good start looking at the simulink models and I believe that the 2015A model is the one that is working. Also continued to read through the controls documentation and controls thesis.	4	13