May14-10 Weekly Report

MicroCART 2013-2014
Week 27: April 14- April 20, 2014
Advisors: Nicola Elia & Phillip Jones

Name	Weekly Hours	Running Hourly Total
Kevin Engel	7	179
Nathan Ferris	6	156
William Franey	16	185
Michael Johnson	8	201
Kelsey Moore	15	202
Lucas Mulkey	5	181
Aaron Peterson	7	159

Weekly objectives

Completed Objectives:

- Working killswitch (UPDATE: Sort of..)

TESTING:

- Bluetooth controller
- PID

Issues/Concerns

- Flight testing was unsuccessful, we think that the resolution is too low, and we cannot give the quad accurate enough signals compared to the RC and receiver setup.
- There appears to be no working method for importing the preexisting models of the quad into Matlab. Due to the added complexity of the quad, the method that Matt used to assemble the quad he modeled in the past is no longer feasible. My small knowledge base in CAD design programs, as well as the Matlab program the models are being imported to, has left me with very few plausible debugging

methods. The documentation is very small considering it is an “add-on” and the support community has yet to respond. -Bill

Individual Accomplishments

Kevin Engel:

- Poster editing
- GPS code testing
- Kalman filter code fine tuning

Nathan Ferris:

- Got to know Kevin’s GPS code, seems to be running okay on my unit here (a different model).
- Will be in Ames this coming weekend to work on flight tests.

William Franey:

- Helped Kevin finish up the C-code Kalman filter.
- Verified C-Code Kalman with Matlab Kalman
- Tuned Kalman filter a bit to produce smoother curves
- Worked on CAD model import
    - Downloaded AutoCAD Inventor to try to attack from a different angle with semi-moderate success.

Michael Johnson:

- Kevin, Aaron, and I did a bunch of flight tests with both bluetooth and RC. We are satisfied with the bluetooth responsiveness, but something is definitely wrong with it. The quad at dead center has slight amounts of yaw that we tried to debug, and ultimately we think it is because of the low resolution. We need to figure out how to fix this resolution issue in the code.
- We kind of just dropped the MUX for now… it was messing with our signals and we had no idea why (maybe wires, not sure). Instead, we used Aaron and myself as quad tamers that would potentially go into the line of fire to disable the quad. It was also tethered, of course.

Kelsey Moore:

- Poster
- Documentation
- PID control testing - Tested basestation PID outputs and where all the connections were going to see if I could find where the discrepancy of the sign error was located. Still unable to tell.

Lucas Mulkey:

- Ran some tests with the bluetooth controller. Witnessed some strange behavior when trying to control throttle through the multiplexer. Would expect roll pitch yaw to be constant and throttle to come through RC. Instead we had jumpy, dangerous behavior.

Aaron Peterson:

- Fixed motor problems by resetting high and low throttle as well as trim issue
- Did some quad comparison testing between RC controller and bluetooth USB controller
- Got rid of multiplexer for testing since it adds more problems