

EE/CprE/SE 492 - Status Report 3

February 14th - February 27th

Group number: may25-32

Project title: MicroCART mini: Microprocessor Controlled Aerial Robotics Team

Client &/Advisor: Dr. Phillip Jones

Team Members/Role:

- Daniel Zaucha: Client interaction, Communications Lead
- Jonah Upah: Hardware Lead, Team Secretary
- Ryan Lowe: Technical Advisor
- Yi Hang Ang: Software Lead

Weekly Summary

On the week from the 14th to the 20th, we met up with Zak, the TA for 492 in order to go over how 491 went, how we are doing now, and our upcoming plans. Setting this aside, this week we have made decent progress in terms of working through the code and have worked on improving the reading and logging of the drone to groundstation communications. We have mapped out where the GUI's buttons are interacting with the code files and begun to make improvements to the GUI. Meanwhile, we have begun to look into the lighthouses and getting them up and running.

The week from the 15th to the 27th has been a massive week for our group. One of our long-term goals is to ensure the maintenance of the lab materials, and at 4:00PM Sunday (02/23) we managed to find the fix for the blue light issue that has been haunting most of the drones and preventing them from working. A proper updating of the BitCraze client was the solution, although the client does not allow for clients to update to the 2021.06 software we had initially thought the drones were for, but they are still able to be flashed from the MicroCART software so this was actually a non-issue.

Past week accomplishments

- Daniel Zaucha
 - GUI
 - Mapped out button calls to where they go / what they get
 - Began adding small additions to GUI (ie ThrustVal set box)
 - CrazyFlie debugging - BLUE LIGHT FIXED
 - Currently Issues: False-positive low battery signal; No firmware radio
 - Lighthouse work
 - Working with Ryan to prepare for the Scholars day presentation

- Jonah Upah
 - Got the Test Stand connected
 - Test Stand connect.py, new thread
 - Logging file code, thread, and connection corrections

- Ryan Lowe
 - Looked into the Lighthouse Deck documentation and working on getting the base stations set up.
 - Was stuck for a while not getting any sort of communication from the cflclient to the lighthouse deck. Eventually figured out it was because the lighthouse deck was positioned to wrong direction on the crazyflie.
 - Now stuck on an issue where the crazyflie is not being recognized by the base stations. Status says “not receiving,” need to look into more documentation and bitcraze forums for potential solutions.
 - The second week I was able to get connection between the lighthouse deck and the basestations
 - Turned out it was an issue with the lighthouse deck itself because when I used a different one it worked.
 - Flight with the lighthouse deck was pretty unstable

- Yi Hang Ang
 - Had test stand output values to a log file
 - After some digging with Jonah, figured out how and added new Teststand logging variables to GUI

Pending Issues/tasks

- Prepwork for Scholars' Day showing

Individual contributions

NAME	Individual Contributions	Hours this week	HOURS cumulative
Daniel Zaucha	<ul style="list-style-type: none"> ● GUI efforts ● CrazyFlie Debugging ● Lighthouse 	20	119
Jonah Upah	<ul style="list-style-type: none"> ● Arduino connecting ● Test stand correction 	19	90
Ryan Lowe	<ul style="list-style-type: none"> ● Looked through the Lighthouse documentation. ● Able to fly using the lighthouse deck but flight is pretty unstable and the drone flips over a lot. 	16	80
Yi Hang Ang	<ul style="list-style-type: none"> ● Graph logging timeline ● Serial connection test code 	17	86

Plans for the upcoming week

- Daniel

- Diagnose issues with remaining bugged crazyflies
- QT - GUI work
- Lighthouse preparation
- Yi
 - At the minimum, try to have Arduino output correct values
 - Second goal, have Arduino log values to file
 - Third goal, plot said values to GUI
 - Last in the priority list, fix setpoints in log file
 - Also maybe change the name of logging variables (?)
- Ryan
 - Continue work with the Lighthouse Deck to work through problems with the crazyflie flipping over at the start
 - Look into other demos that can be done with the light house
- Jonah
 - Write teststand data to log file
 - Make the test stand send both position and rate.
- Group Plan:
 - Practice learning about lighthouse and plotting out roles

Summary of weekly advisor meeting

Our meeting on the 20th mainly discussed our current progress, and ways that we could improve our methods for working on the project. These included giving a book for study on the program that the MP-4 project uses as a basis, different things to look for in the code, and a way to get the cords for the lighthouses. Aside from that we were told to continue cleaning the old code. On the 26th, we discussed how our findings were going and how the current progress of the project was, and managed to find new areas to look into. We then discussed a bit about how the Scholars day presentation (March 1st, Saturday) will be done.

Website:

<https://sdmay25-32.sd.ece.iastate.edu/#teammembers>