

## Senior Design May22, 43

### MicroCART Senior Design Team

#### Week 7 Report

*November 3 - November 9*

*Faculty Advisor : Philip Jones*

#### Members:

Brandon Cortez - Team Lead, Test Station Sub-team

Reid Schneyer - Test Station Lead, Test Station Sub-team

Colton Glick - Git Wrangler, Firmware Sub-team

Ellissa Peterson - Tech Lead

Ryan Hunt - Firmware Sub-team Lead

Carter Irlmeier - Web Master

Zachary Eisele - Firmware/Groundstation Sub-team

#### Summary of Progress this Week

This week the test stand team printed their latest iteration of the stand and mounting bracket, and wrote a simple program to get positional data back from the encoder.

We also received the ESP8266 programmers, and threw together a simple setup using one as a server and the other as a client.

#### Past Week Accomplishments

- Latest test stand model printed - Reid, Brandon
- Fixed drones 1 and 3, reset drone address and drone channel to eliminate conflicting channels - Colton
- Modified PID values through CrazyFlie client - Colton
- Started working on creating new controller module - Colton, Ryan
- Wrote simple program to display encoder data - Reid

- Communication with Crazyflie through groundstation (very little but still communicating)  
- Zach

### Pending Issues

- We currently have no working absolute encoders (besides the DIY ones)
- Create user controller in CrazyFlie firmware - Colton
- Need to acquire a debugging hardware for crazyflie, still looking into what is required - Colton

### Individual Contributions

| Team Member      | Contributions   | Weekly Hours | Total Hours |
|------------------|---|--------------|-------------|
| Brandon Cortez   | Updated test stand design, printed test stand   | 5            | 31          |
| Reid Schneyer    | Printed test stand, wrote test stand code   | 5            | 31          |
| Colton Glick     | - Fixed Drones 1 and 3<br>- started looking through CrazyFlie firmware to better understand architecture<br>- Working on creating user defined controller   | 3            | 33          |
| Ellissa Peterson | Closed old issues on gitlab and made a new issue and a label for close closed issues  | 3            | 24          |
| Ryan Hunt        | Looking into crazyflie PID functions  | 5            | 30          |
| Carter Irlmeier  | Transferred website over to 491 provided ISU theme, recorded news report lightning talk, downloaded CrazySwarm on my personal Ubuntu system and started to look into its capabilities for demoing with it later | 4            | 28          |
| Zachary Eisele   | began updating old ground station code  | 7            | 35          |

### Comments and Extended Discussion

- Ask Jones about ordering additional decoders (and maybe dowels for new test stand)
- Unfortunately, the old ground station adapter was referencing an outdated version of the Crazyflie firmware, which means some of it will need to be converted to work with the current versions. They were using ports to communicate that are no longer defined

under the Crazy Real Time Protocol. However, this may be why some of the crazyflie's will not communicate using the python library. The older crazyflie's may be running on old firmware while the python library references the newer version.

## Plans for coming Week

Work on ESP8266 communication and interfacing with Crazyflie - Reid, Brandon

Work on mounting of the absolute encoder to the test stand - Brandon

Figure out crazyflie PID process - Ryan, Colton

Create user controller in CrazyFlie firmware - Colton, Ryan

Add crazyflie firmware to git lab repo - Colton

3D model the side version of the test stand mount - Brandon

Go through all of the adapter code and convert as much as possible so that it can begin use.

## Summary of Weekly Advisor Meeting

### 11/3/21 Jones Meeting

Jones brought in a new box of stuff

Crazyflie adapter has 3 parts - microcart ground station, crazyflie ground station, interface between

Zach is working on it, might be why some crazyflies don't connect

Colton made inventory spreadsheet

Look into commercial esp8266 programmer

<https://www.amazon.com/ESP-01S-Programmer-Adapter-Wireless-4-5-5-5V/dp/B07V556Q82>

Carter is now "looped in" in youtube stuff, jones will be doing more today

Planning is looking good, one of the strongest teams for that

current concern is "on paper" we look good/superstar, but in person we have less urgency

less than 80 individual hours at the end of the semester is a red flag

need to start getting stuff done

email to remind jones

bring projector

send us a few videos of previous ground stations

pointers to previous year's final reports

Discussion of cleaning up old gitlab issues(done)