

Senior Design Team may23-45: MicroCART Team

Spring Semester Bi-Weekly 4 report (3/18 to 3/31)

Members:

- Austin Beinder- Simulations Lead
- Cole Hunt - Git Master/Device OS
- Connor Ryan - Physical Systems Lead
- Emily Anderson - Telemetry/Backend Lead
- Gautham Ajith - YouTube/GUI Lead
- Grant Giansanti - Client interaction/Testing
- Tyler Johnson - Project Manager

Weekly Progress Summary

We have moved away from the sprint system as we have begun understanding what our roles are and have met our upcoming deadlines. These last 2 weeks, we have been moving our focus from the MP4 lab drone to the new drone we are designing.

MP4: Tyler, Austin, Emily and Gautham

- Tyler and Austin have been working on uploading the images on the lab computers and testing them
- Austin has been working on the test stand and testing it
- Austin and Tyler have been working closely with TAs to get feedback on the lab document
- Emily and Gautham have been working on adding features to the GUI code based off feedback provided

New Drone: Cole, Tyler, Connor and Grant

- Grant has worked on creating an interface between the motor controllers and the ESC to control them. Worked on getting I2C communication protocol between the drone.
- Cole researched the communication protocol and firmware running the drone. Connor has been working closely with him. It has been determined that the drone will be using FreeRTOS in a core and Linux/WiFi on 3 other cores.
- The hardware side has been taken care of by Connor. He has worked on testing the UVLO and powersupply. The board has been made and is being tested. Pin maps were also made
- Tyler has been working on a CAD design for the landing mechanism for the drone

Youtube: Gautham and Austin

- Gautham has edited and uploaded 4 youtube videos on the demos for the lab and the Scholars day event
- Austin recorded the videos for the 2 MP4 lab parts and 2 demos

Individual Contributions

Team Member	Contributions	Total Hours Spring
Austin Beinder	<ul style="list-style-type: none"> ● Installed MP4 Image on lab computers and had ETG install it on all the machines ● How to use lighthouse video ● How to use simulation demo video ● How to use simple swarm demo video ● MP4 Part 1 video ● Didn't do position controller ● Tried a new version of MP4 image, was bad, gautham is fixing it ● Helped Tyler make the battery holder ● Made Lab part 2 video ● Made code for positional controller, working on tuning it 	121
Cole Hunt	<ul style="list-style-type: none"> ● Researched CRTP packet structure for crazyflie communication ● Researched RF Receiver Driver in crazyflie firmware ● Reviewed FreeRTOS vs BareMetal Info ● Started Setup of Wifi Network <ul style="list-style-type: none"> ○ https://youtu.be/5BkfztZ0pOE ○ SSH to Development Environment not Successful ● Researched Integration for Ubuntu and FreeRTOS 	61
Connor Ryan	<ul style="list-style-type: none"> ● Assembled the hardware ● UVLO showing weird behavior, currently bypassed. SW UVLO could be tested ● Tested power supply and Pi 2W can be powered off the board ● Made documentation for pin outs ● Assembled board with BigQuad deck connections 	100

	<ul style="list-style-type: none"> • Working on using the BigQuad deck but struggling with software/firmware • Expansion board pin spacing is off by one. Will look into fixing 	
Emily Anderson	<ul style="list-style-type: none"> • Downloaded new mp4 image and ran through part 1 on personal machine, everything looks good • Went through TA feedback • Reviewed and left feedback for youtube videos • Added support to automatically connect to backend when first opening GUI • Uploaded image with new features to cybox 	66
Gautham Ajith	<ul style="list-style-type: none"> • Worked on other classes :(• Began recording scholars demo • Caught up on what needs to be done with software • Helped Emily with Auto connect • Worked on progress bar (weirdly working on my computer and not on lab computers) • Posted 4 YouTube vids 	61
Grant Giansanti	<ul style="list-style-type: none"> • Finalized how to move the motors using the Seeeduino. <ul style="list-style-type: none"> ◦ Can use a user friendly function to go from 0%-100% throttle for a motor • Created documentation on the wiki for both the Seeeduino and the ESC we are using • Learning how I2C on the pi works • Reading about the i2c bus in general and for the raspberry pi <ul style="list-style-type: none"> ◦ Needed to recall that i2c bus can have multiple slaves. Just need to change the address that it is writing or reading from. • I2c interface on the seeeduino • Beginning to write i2c handler for the pi • 	78
Tyler Johnson	<ul style="list-style-type: none"> • Airline issues so wasn't able to contribute this week • Resigned test stand. • Made the New battery holder • Tested the new MP-4 Lab with immutable image 	75

Next Week Plans

- Austin will continue testing out the test stand and another controller
- Cole, Gautham and Emily will work on testing if ssh into the raspberry pi and testing the wifi capabilities
- Grant will continue to research I2C and working on integrating it to the drone
- Everyone will be helping out the lab setup for the MP4 lab and being "TAs" to assist students during the labs