

## **EE/CprE/SE 492 - Status Report 2**

January 31st-February 13th

**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**

From our meeting last week with Dr. Jones, the team was asked to perform a code audit on MP4 Part 1 and make observations. These observations were meant to find faults with the current system, namely the high usage of CPU power that was being taken by the ./backend. We met several times as a team to review the code audit, making our observations separately, then discussing them as a team and documenting observations and the issues that require a deeper look into to be sent to Dr. Jones.

Once we had finished documenting our observations, Dr. Jones sent us his own write up of observations along with some patches to various files within the project and asked us to run them again and see what changes he made and how they affected the rest of the code. We reconvened and repeated our observances of the now patched files while also noting down which issues were fixed in addition to what happened to issues that we noticed and got down into.

(Week of 6th)

After meeting again with Dr. Jones, we broke down what we planned to do and began working on it, while making sure that communication between the group members was kept up and the tasks that we had assigned for that week were accomplished.

## **Past week accomplishments**

- Daniel Zaucha
  - Code Audit (Testing and observations of CPU issues in the GUI)
  - CrazyFlie debugging
    - MP4 debugging write-up (Class Wiki being out of touch on some errors)
    - Fresh installs of bitcraze client - Ruled out as issue
    - Posted to BitCraze github for assistance breaking down the blue light issue and what has been tried.
- Jonah Upah
  - Teststand arduino.
    - Got the arduino to connect to a comport.
    - There is a button on the GUI for connecting test stand data.
      - Should it be on the plot? I think so.
    - Did the audit part one and two
      - Still an issue with accumulation of programs. Unmerged threads?
    - Thoughts on a final battery retention solution
      - Some preliminary ideas.
  - Found a solution to the duplicating threads issue with Yi
- Ryan Lowe
  - MP4 Code audit, making observations of CPU issues in GUI
  - Implemented patches that were sent by Dr. Jones and made new observations
  - Looking into the LightHouse system for autonomous flight with the drones
- Yi Hang Ang
  - Found a solution to the duplicating threads issue with Jonah
  - Jonah is helping me to understand the Arduino code

## **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"> <li>• Code Audit</li> <li>• CrazyFlie Debugging</li> </ul>             | 22               | 99               |
| Jonah Upah    | <ul style="list-style-type: none"> <li>• Arduino</li> <li>• Code Audit</li> </ul>                         | 8 (+ this weeks) | 65               |
| Ryan Lowe     | <ul style="list-style-type: none"> <li>• Code Audit</li> <li>• Lighthouse Documentations</li> </ul>       | 14               | 65               |
| Yi Hang Ang   | <ul style="list-style-type: none"> <li>• Code Audit</li> <li>• Fixed duplicating threads issue</li> </ul> | 5 (+ this weeks) | 69               |

## Plans for the upcoming week

- Daniel
  - Watch BitCraze forum for replies
  - Trace through button calls from the GUI to the locations in the code
    - Write out and label these locations and the connections that are in between
- Yi
  - Make progress on the Test Stand Arduino with Jonah
  - Run the “fixed” code for an hour to see if it actually works
- Ryan
  - Look into the problem where start logging makes a new thread and doesn't remove the old thread.
  - Continue looking into the lighthouse system to learn more about this and see if it is a viable goal for us to achieve for this project.

- Look into documentation given by the 2023 MicroCART team who shared a video that relates to setting up the Lighthouse system and also their own tutorial video.
- Jonah
  - Figure out how to add teststand data to the GUI.
    - Add a new plotting variable or give the current button functionality.
  - Solution for battery retention
    - Better connector, or header pins with 3D printed enclosure for battery.
- Group Plan:
  - Practice learning about lighthouse and plotting out roles

### **Summary of weekly advisor meeting**

We have created a half semester roadmap that goes until the week after spring break (Week 9: 3/24 - 3/28), which is the week before the MP-4 is launched in CPR E 488. We discussed our findings in person and were able to plan out the work allocation that is necessary for the success of our project in the limited time frame we have until our presentation on scholars day, and before officially deploying what we have done. After we are no longer working on MP4 with the idea of having it ready for CPR E 488, we have decided to reconvene to decide upon what we will be doing next. Some of the temporary ideas that we have gathered include further work on MP4 as well as succeeding in getting the MicroCART project drone up and flying.

We do have to start taking a look at what we are going to do for the Scholars' day showing, which occurs on March 1st, and all that we will want to showcase with it.

Website:

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