<u>EE/CprE/SE 492 - Status Report 7</u>

April 30th - May7th 2025

<u>Group number</u>: may25-32

<u>Project title</u>: MicroCART mini: Microprocessor Controlled Aerial Robotics Team

<u>Client &/Advisor</u>: Dr. Phillip Jones

<u>Team Members/Role</u>:

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

<u>Weekly Summary</u>

This past week was primarily focused on getting the design document done and submitted for 492. Jonah and Yi did some testing with new VM's. The updated .ova from bitcraze had issues working. Lastly, some work to plan out what we will be handing off to next year's team. Aside from this, we are working on preparing for our end of semester final presentation.

Past week accomplishments

- Daniel Zaucha
  - Design Doc
  - Poster

- Jonah Upah
  - Design Doc
  - Poster
  - Testing out new VM's

- Ryan Lowe
  - Design Doc
  - Poster
  - Final IRP Presentation

- Yi Hang Ang
  - Poster
  - Design Doc
  - Tying out updated VM

Pending Issues/tasks

- Hand off to next year's team
  - Summary Video
  - Summary Document
  - Solid Deployment VM
    - Mutable
    - Updated Bitcraze Client

Individual contributions

NAME	Individual Contributions	Hours this week	HOURS cumulative
Daniel Zaucha	- Poster - Design Doc	10	173
Jonah Upah	- VM - Poster - Design Doc	10	176
Ryan Lowe	- IRP Presentation - Design Doc - Poster	12	157
Yi Hang Ang	- Design Doc - Poster - VM Testing	10	160

Plans for the upcoming week

- Daniel
  - Hand off documentation
    - Upload recordings
      - Lighthouse
      - Blue light fix
- Yi
  - Hand off documentation
    - What firmware is what, where to find it.
    - How to edit firmware for part 1 and part 2
- Ryan

- ○ Hand off documentation
- Jonah
  - ○ Create videos for next year's team.
    - GitLab tour
    - Starting the VM, how to use, run code, different applications
    - Creating a VM for deployment.
  - ○ Hand off documentation.
    - Same as above

- Group Plan:
  - ○ Prepare to work on given feedback

Summary of weekly advisor meeting

The deployment itself has gone reasonably successfully, with all of the software and modifications that we made to MP-4 being in working condition. While some of the drones initially had some software difficulties in terms of being able to function, most of these drones were able to be recovered, just in time since a lot of the other drones have started to have hardware failures such as the battery connecting wires breaking off or becoming too loose, after the lab had begun The MP-4 lab document has been updated and is much improved in terms of details and navigability. Some feedback and areas of note for the document itself have been added to the document in a timely manner, and so far our conduct as TAs for the first week has met expectations. +

Website:

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

Tasks / Issues:

1. **<u>Test-stand</u>**: VM crashes if Ctl-C is used to shut down MP-4, while the Test-stand is plugged in. (There is a potential fix)

2. **<u>New Batteries</u>**: Something appears to be different with the new batteries, making it a bit of a pain to plug them into the quadcopters (Haven't heard of this being an issue for students)

3. **<u>Broken wires:</u>**   A lot of the drones that had been working have stopped working due to the stresses of connecting and disconnecting the batteries having caused the wires to break off. (Have to find wires from online that can be resoldered by ETG; ETG has run out of the typical wires that we had been using)

- Logging blocks - check if c code is good or not
- Create Wiki FAQ
    - Blue light fix
    - Problems in MP4 doc & where to check in it
        - Ie 12 logging blocks
- Update part 2 template to include test stand variables in it
- Update bitcraze client on deploy
- Restart quad in 10 seconds issue - diagnosis and fix
- Look into Stack Smashing - find team and diagnose (Switched drones & changed the VM back into an immutable copy(original))
- Some VMs in the back of the lab were mutable - Figure out how this and the missing VM happened (Look into which computer & potential workaround)
- Drone 5 Motor issue / Propellor test fail research
- Obtain drone repair parts:

05/7/2025 Notes

IRP presentation on 5/8/2025 @ 3:10 PM

To Do Remaining:

Finish Handoff docs

- Git lab tour
- Qt Creator - How to:
    - Edit on/with this -
    - Where to find it on VM
    - Development tools
    - Compile it
    - Code implementation vs Graphical GUI
    - Generated code
- Firmware files
- Explaining what is in part 1 and part 2
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Do summary videos & post to youtube