Senior Design May 24, 32

MicroCART Senior Design Team

Week 15 Report

November 27 - December 5

Faculty Advisor: Philip Jones

Members:
Justin Kenny - Scribe
Steve Frana - Technical Lead
Trevor Friedl - Project Manager
Travis Massner - UI/UX Designer
Clayton Kramper - Technical Lead
Will Maahs -Team Organization Lead

Links

- [Shared Google Drive Folder](#)
- [Tentative Project Gantt Chart](#)
- [MP4 Timing Data](#)

Summary of Progress this Week

We have divided into three groups of two and begun to work three separate tasks: rewriting the crazyflie adapter and crazyflie groundstation using cflib, getting the Pycrocart GUI slotted into the infrastructure, and improving error handling for the current GUI. We have also begun designing a new packet structure to be less crazyflie-dependent and to send logging data via the TCP connections rather than writing to files and sending the path.

For the groundstation rewrite, we have fixed some major bugs such as the rate and attitude modes being swapped, and have tried to fix some bugs related to packets being dropped and the logging being slow. We have implemented a timed loop in the code to send the setpoint at fixed length intervals since the drone seems to only hold setpoint for a specific amount of time. The logging seems to slow down the setpoints being sent to the drone and causes more packets to be dropped. We also did a rudimentary test of both the regular and cflib groundstations and timed them both by hand to get the data linked above.

Pending Issues

- Should we continue working on MP4?

Individual Contributions

Member	Contributions	Weekly Hours	Total Hours
Justin Kenny	- Worked Final Design Document, Presentation, and website. - Gathered timing data for groundstations. - Fixed Rate and Angle mode code and documentation error. - Experimented with logging and setpoint timings to try to reduce lag and dropped setpoints.	10	80
Steve Frana	- Worked on packet project - Starting to create logging packets and testing framework - Working on cflib_groundstation	7	68
Clayton Kramper	- Final Design Document and Presentation - Testing Laptop version of VM for use over break - Connected to drone using PycroCart front end for parameter setting	13	63
Travis Massner	- Final Design Presentation - Continued looking through current GUI code for issues - Experimented using QTCreator to debug current GUI - Attempted to trace crazyflie connection problem	5	49
Will Maahs	- Final Design Presentation - Final Design Doc - Connected to drone using PycroCart frontend, setparam works - Working on getting param toc and populating the drop down boxes	10	65

| Trevor Friedl | • Continued to trace issues resulting in CrazyRadio disconnect
    ○ Skeptical about memory clear on program close in "crazyflieGroundstation.cpp"
• Worked with team to finish up website, design doc, and presentation
• QTCreator use for debugging C++ GUI | 4 | 49 |

Comments and Extended Discussion

Plans for coming Week
- Make Pycrocart GUI MP-4 viable and determine how to slot it into infrastructure. **(High)**
- Figure out how to handle baked in cflib commands
- Edit current GUI to improve error handling with backend interactions. **(High)**
  - Moving forward -> getting everything integrated into our branch soon
  - Get a reasonable gauge on the amount of error that still needs to be fixed
  - Work towards documenting changes that have been made
- Combine crazyflie groundstation and crazyflie adapter using cflib. **(High)**
  - Test if logging issues can be solved without removing file operations.
  - Insert cflib groundstation in the crazycart shell script.
  - Increase code comments, clean up unused code, and create wiki pages/YouTube videos to document adapter internal workings.
- Follow last year's instructions to get Raspberry Pi set up for the FlyPi **(Medium)**
- Begin to consider changes to make for MP-4 lab documentation for improvements **(Medium)**
  - Discuss with team what went well and what seemed to cause the most problems
  - Document notable changes to the MP-4 process, figure out how those changes will merge into the current MP-4 document
  - Formulate a plan for gaining student/client feedback on the changes made to MP-4