

Senior Design May 24, 32

MicroCART Senior Design Team

Week 25 Report

March 22 - March 29, 2024

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](#)
- [Crazyflie Status](#)

Summary of Progress this Week

We have been working on commenting out the hardware specific functions in the crazyflie firmware code and creating a baremetal application. This has also involved editing the makefile to support the structure of the crazyflie firmware. We are still working through getting it to cross compile without issues.

The issue with git submodules has been sorted out for local branches and tested against both the FlyPi and MP4 firmware (crazyflie_software_bigquad and crazyflie_software). Everything seems to be working as normal now with the dependencies taken out of the submodules, but git is having a weird issue with recognizing the dependencies after relaunching the VM (these changes have been made on a personal VM that is not immutable).

Pending Issues

- Add documentation for PycroCart
- There are still some submodules in the crazyflie firmware/vendor folder (not sure if this has been addressed)

- Crazyflie Radio seems to be disconnecting from the crazyflie somewhat frequently
- Plotting Packet (future)
- How much firmware will need to be rewritten for the Flypi (some folders such as the deck drivers will most likely be left out, for example)?
- Did ETG respond to our email with the immutable VM?

Individual Contributions

Member	Contributions	Weekly Hours	Total Hours
Justin Kenny	<ul style="list-style-type: none"> ● Commented out hardware specific firmware code. ● Debugged header and makefile issues with creating the baremetal application. 	7	157
Steve Frana	<ul style="list-style-type: none"> ● Progressed on setup script. Works with some SSH intervention, looking into a more elegant solution using Linux. 	4	137
Clayton Kramper	<ul style="list-style-type: none"> ● Kept working through firmware, commenting out hardware reliant code 	4	120
Travis Massner	<ul style="list-style-type: none"> ● Tested out drones fixed by 488 TAs ● Worked on moving over git submodules 	4	110
Will Maahs	<ul style="list-style-type: none"> ● Kept working through firmware and commenting out hardware specific code ● Helping Justin 	4	134
Trevor Friedl	<ul style="list-style-type: none"> ● Got immutable build for MP-4 VM stored and ready for lab ● Deletion of submodules working for FlyPi and MP-4, having issue keeping changes permanent in the VM ● Reviewed old branch to be ready to merge back into master for cleanup 	5	118

Comments and Extended Discussion

- Any guidance with the modifying the crazyflie_firmware code

Plans for coming Week

- Cross-compile crazyflie firmware and get it to run on the Pi without crashing.
- Write startup script to run baremetal programs on the Pi without manual starting them through uboot.
- Complete more advanced ring buffer style shared memory program.
- Finish PycroCart documentation on the Wiki of the Git Repo
- Film a video on how to use both of the PycroCart GUIs
- Film a video fully explaining the current state of PycroCart
 - Suggestions for future teams
 - Motivations
 - Things to not do
- Post KiCAD tutorial to MicroCART YouTube
- Plotting Packet -Potentially
- Get FlyPi flying back in the air *without* the use of the test stand
- Create Youtube video/wiki page that shows how to make VM immutable.
- Get ETG/TAs immutable VM by 10 am Monday.
- Reorganize Git repo.