

Senior Design May 24, 32

MicroCART Senior Design Team

Week 27 Report

Apr 5 - Apr 12, 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](#)
- [Needed Documentation](#)

Summary of Progress this Week

We have finished commenting out all of the code that is hardware specific, however, when we run the makefile now it throws an error about the configuration of FreeRTOS. We believe this is because the raspberry pi is 64 bit and the crazyflie is 32 bit. We will send an email today with screenshots of the specific issue we are dealing with.

We have compiled a list of documentation to be done by the end of the semester, and assigned the documentation tasks (tentatively) to group members. This week we will be writing scripts to record some more YouTube videos.

Our proposed git repo structure would replace the Lab 1 and Lab 2 branches with folders in the "firmware" folder on the master branch. The master branch would contain all tested and working code for MP4 and the FlyPi. The develop branch would contain all in progress code that the team is working on. Whenever a new feature is added, a team member would branch off develop and then merge back to develop when they are finished. We will test the other remaining branches to determine whether to merge or delete them to achieve this structure.

Pending Issues

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

Individual Contributions

Member	Contributions	Weekly Hours	Total Hours
Justin Kenny	<ul style="list-style-type: none">• Worked on cross-compiling cf firmware.• Tested plotting issues for MP4• Created MP4 timeline for next year's team	8	173
Steve Frana	<ul style="list-style-type: none">• Started Documentation• Helped with cross-compiling	4	145
Clayton Kramper	<ul style="list-style-type: none">• Kept working through firmware, commenting out hardware reliant code	6	126
Travis Massner	<ul style="list-style-type: none">• Worked on debugging crazyflie client not working on new VM• Debugged crazyflie's not working• General MP4 lab help	5	129
Will Maahs	<ul style="list-style-type: none">• Cross-compiling• Looking into plotting issues, as well as started plotting packet• Re-uploaded new VM image to all the lab machines• Helping Justin	7	146
Trevor Friedl	<ul style="list-style-type: none">• Found solution to submodule issue but discovered issue preventing changes from being made• Tested differences between different logging block parameters for crash/freeze prevention	6	130

Comments and Extended Discussion

- Any guidance with the modifying the crazyflie_firmware code

Plans for coming Week

- Send email with cross-compiled FreeRTOS error (seems to be trying 32-bit instead of 64)
- 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. (High Priority)**
- Refactor default time values for log blocks.
- Test last year's branches to determine what they are for/if they work.
- Determine if timeout is actually the issue with dropped setpoints.

Fixes for next MP4 VM iteration:

- Getting rid of the shared_folder