

## Senior Design May 22, 43

### MicroCART Senior Design Team

### Week 15 Report

*February 08 - February 14*

*Faculty Advisor: Philip Jones*

#### Members:

Ryan - System architect

Zach - Groundstation lead, co system architect

Reid - GUI team lead, Test station sub-team

Ellissa - GUI sub-team

Colton - Git manager, Firmware lead

Carter - Web Master, OptiTrack Lead

Brandon - Project Lead, Test Station lead

#### Links

- [Shared Google drive folder](#)
- [Order list](#)
- [Crazyflie inventory](#)

#### Summary of Progress this Week

- USB flashing fully streamlined! Found the correct procedure and memory address to jump to in order to set the STM32F405 into bootloader mode. Crazyflie can now be easily flashed over USB with the command `'make flash_dfu'`. Sends a USB request to the crazyflie, causing it to reboot into DFU mode, then uploads the new firmware version, once finished uploading reboots the crazyflie into the new firmware version. - Colton
- Pitch/roll mounts issues resolved, new prototypes built and tested - Brandon
- Removed safety in firmware that shuts off drones if they are upside down - Ryan
- Finalized PCB design now that QT PY arrived - Reid

- Submitted pull request for USB flashing streamline to the official Crazyflie GitHub, <https://github.com/bitcraze/crazyflie-firmware/pull/939> - Colton

## Pending Issues

- -----DR. JONES ATTENTION REQUIRED-----  
No longer need temp\_crazyflie\_repo (<https://git.ece.iastate.edu/danc/temp-crazyflie-repo>), but don't have permission to delete it. Jones needs to delete it, settings > general > advanced > delete. I created this repo while troubleshooting.

MicroCART\_Crazyflie\_Firmware repo can also be deleted ([https://git.ece.iastate.edu/danc/MicroCART\\_Crazyflie\\_Firmware](https://git.ece.iastate.edu/danc/MicroCART_Crazyflie_Firmware)), this was a pre-existing repo that was blank and unused, currently only has a copy of the stock Crazyflie firmware and will not be used - Colton

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## Individual Contributions

Team Member	Contributions	Hours	Total Hours
Brandon Cortez	-Addressed team feedback on pitch/roll mounts, fine tuned tolerances, printed and tested new prototypes	8	89
Reid Schneyer	Finished PCB design, created mock test stand for ground station testing	6	84
Colton Glick	- Explored Micropython, a different utility that runs python on microcontrollers, to see how they implement DFU flashing - USB flashing fully streamlined! Found the correct memory address to jump to for bootloader mode. - Simplified Python code for send usb request to Crazyflie. Can now be easily flashed over usb with the command 'make flash_dfu' - Submitted new usb flashing feature to the official crazyflie repo	11	109
Ellissa Peterson	Began stripping down previous GUI and creating screen sketches	6	65

Ryan Hunt	Finished first iteration lab document Removed tumble protocol from firmware	8	77
Carter Irlmeier	Uploading documents to website	1	54
Zachary Eisele	-fixed logging issue -Fixed memory issue -Discussed with test stand team on how to get data over serial and found c++ library to do so -Discussed gui capabilities with gui team -Experimented with roll and pitch rate setpoints	10	119

## Comments and Extended Discussion

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## Plans for coming Week

- Ground station has a handful of little things to set up such as making it easier to customize logging and start and stop blocks without restarting. Along with this, just cleaning up code will be done and then work to shift to help with gui.
- Test viability of running using windows in the lab instead of VM. Would simplify some aspects of the lab but some software might not be compatible with windows. - Colton
- Help Ryan refine the lab documents. - Colton
- Merge work in progress branches into master and create a new branch that students will use when developing for this lab. - Colton