Over this semester, I have covered a lot of ground from learning Linux and ROS, to designing and building robotito v2, as well as researching the crazyflie as a viable research drone and creating a method in which to protect drone pilots whilst flying in the robotics lab.

Robotito was challenging for many reasons. The first being that the documentation for the robotito was inaccurate, and the files in the github repository were not up to date for the previous version. This made required a redesign. I created the design of the robotito v2 after the original design but with alterations to fit the new hardware components. The v2 uses 8 Sharp IR sensors instead of 12 on the previous version. Those are connected to an 8 channel adc, MCP3008. It has 4 500rpm motors, which is similar to the motors used in the first iteration. These motors are 6 volts and have a stall current of 1.6amps. They are PWM driven. It utilizes a Raspberry Pi 3 for its CPU and wireless communication. The MCP3008 interfaces with the Pi via SPI, and the motor drivers interface via I2C. The motors are driven by an Adafruit Motor Hat Driver. The OS is Linux based, Raspbian. Most of the coding was done in Python for ease of integration.

Most of my time with the Crazyflie was spent debugging the drivers in ROS. After a good amount of research, I have come to the conclusion that the Crazyradio is capable of flying multiple drones simultaneously. The Crazyflie is also capable of carrying a camera and a transceiver.

All the documentation, code, and part files are in the biorobaw repository on github.