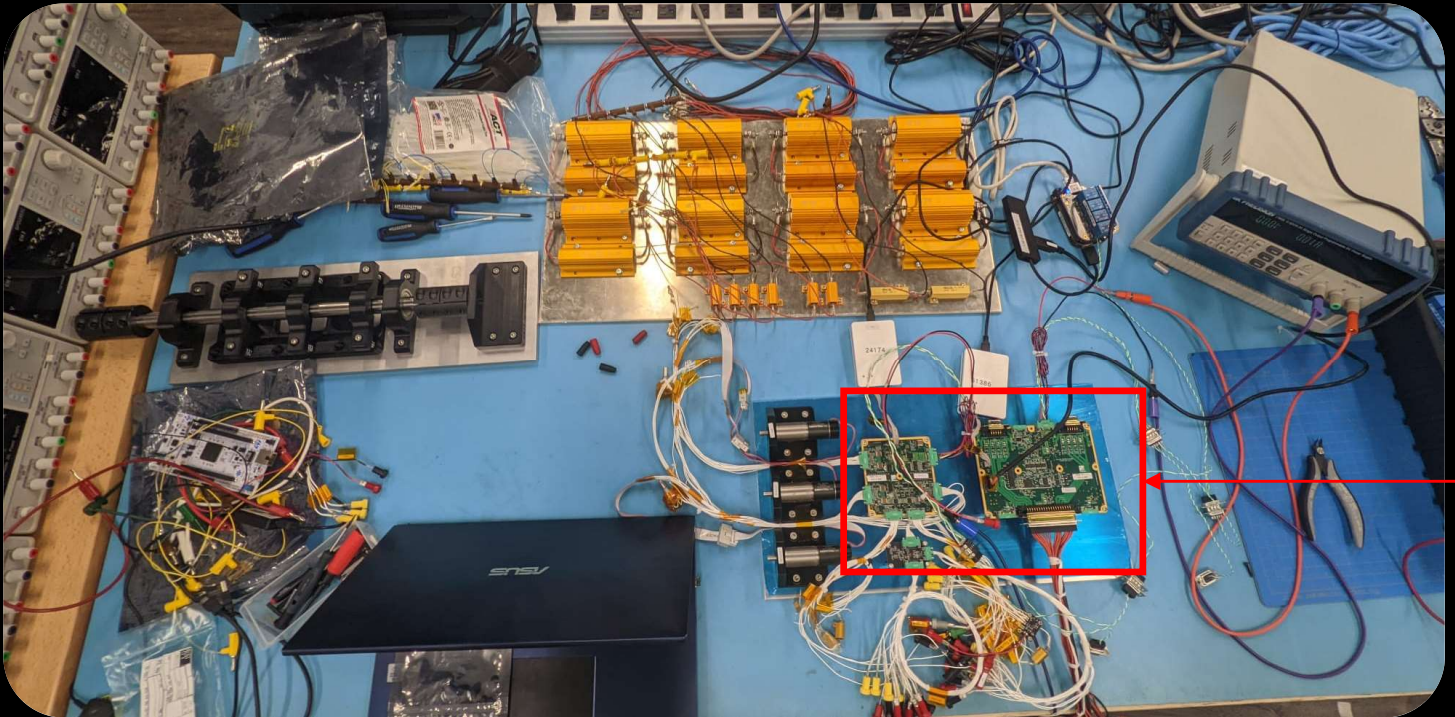
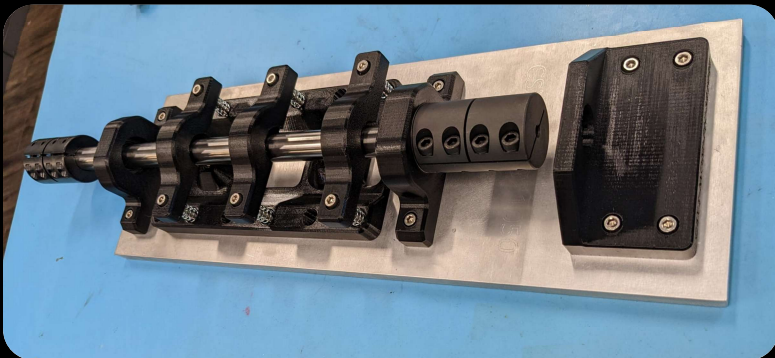




Designed and built entire FlatSat rig to test **space bound hardware**, simulating all the satellites' functions: requiring power draw calculation for each peripheral to simulate with resistor bank, torque tester for motors, power supply bank to simulate solar array etc...



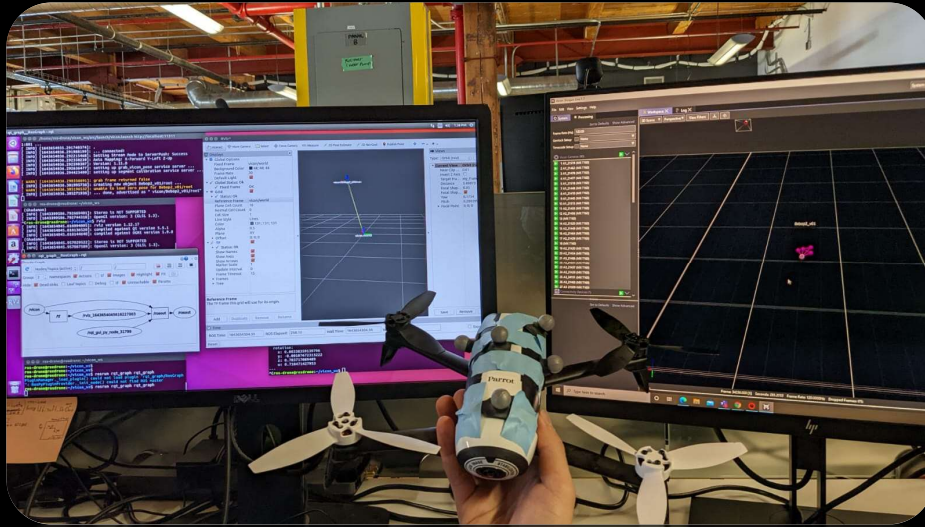
Torque Tester: by tightening clamps on the rod, you add rotational resistance



**These boards** are the ones I performed a derating analysis on, derating each individual component on the boards and deciding based on the ECSS standard (European Cooperation for Space Standardization) whether they are flight worthy



Configuration of Bebop 2 drone to work with Vicon motion capture system using PID loop with ROS.



Path-planning web-app made in JavaScript and HTML

### Drone Path

Kp x: 0 Ki x: 0 Kd x: 0  
Kp y: 0 Ki y: 0 Kd y: 0  
Kp z: 0 Ki z: 0 Kd z: 0  
Kp yaw: 0 Ki yaw: 0 Kd yaw: 0

[Download Launch File](#)

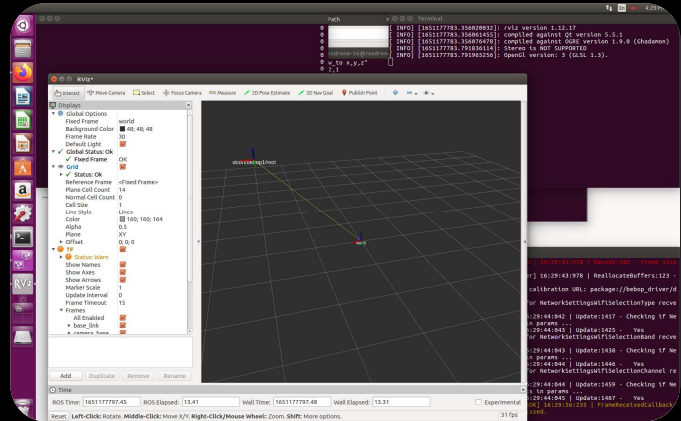
[Download Script](#)

Round to nearest multiple: 0.5  
Z value: 1

Path

X-Axis (m)

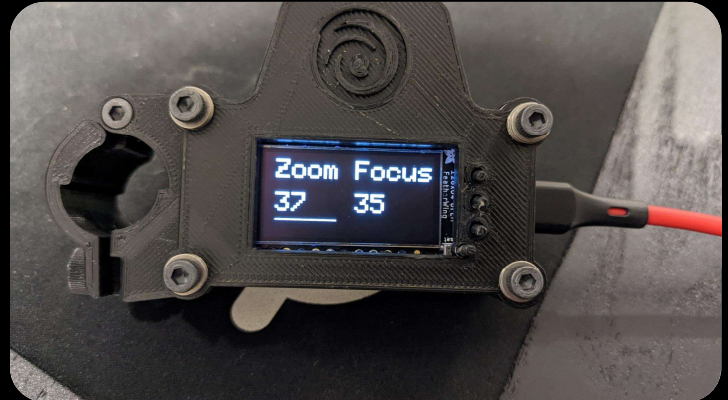
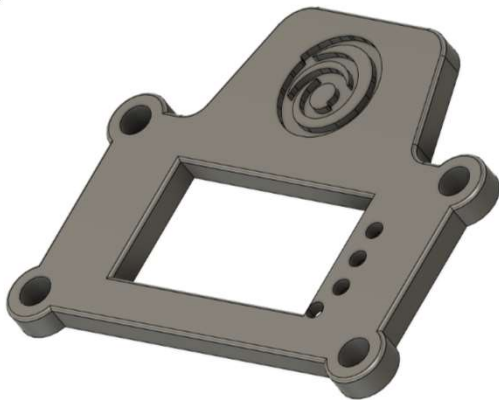
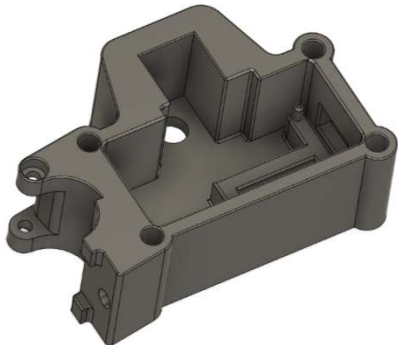
Y-Axis (m)

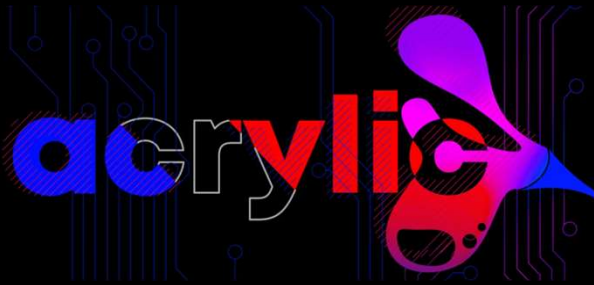




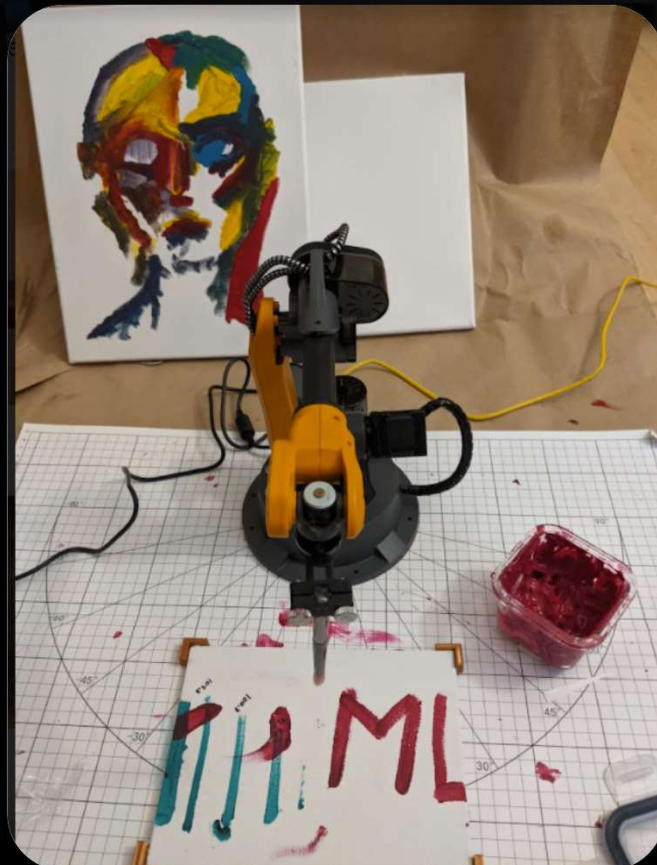
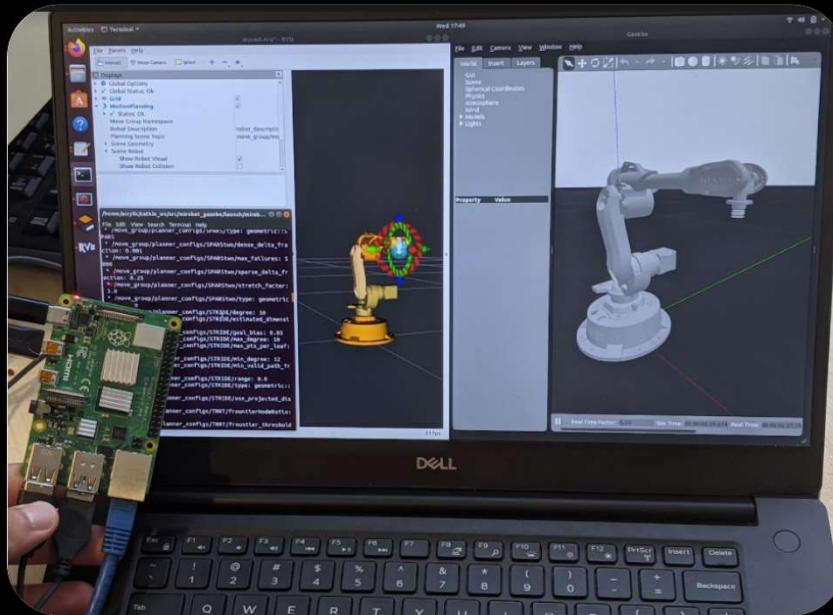


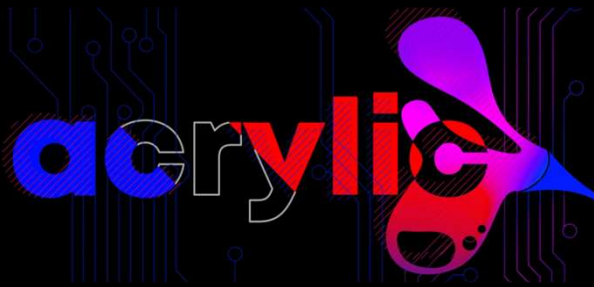
Designed and built remotely controlled camera zoom/focus tracker using Adafruit HUZZAH esp32 with encoder transmitting over network (UDP and OSC), coded GUI with Qt Pyside and Python



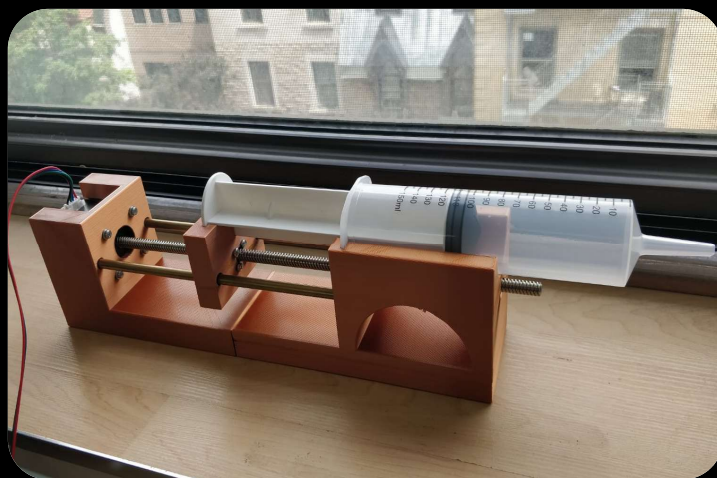
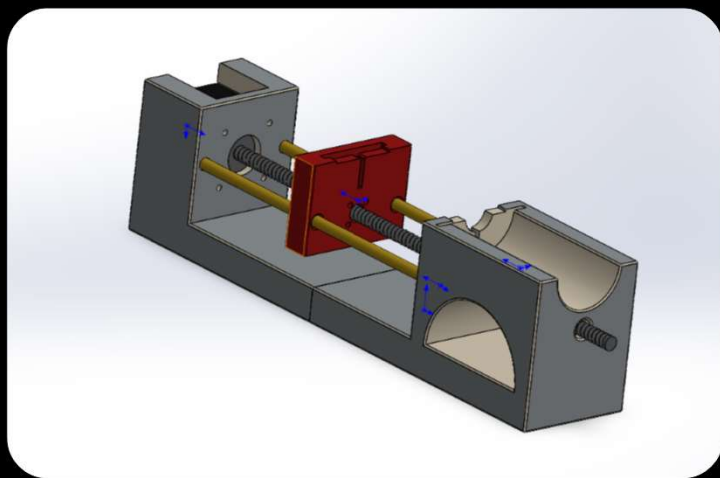


ROS Development on a Raspberry pi running Ubuntu.

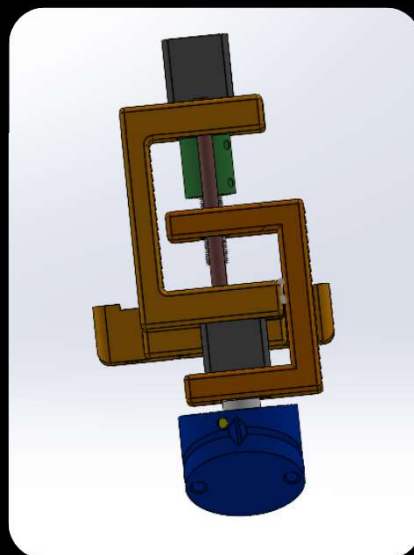
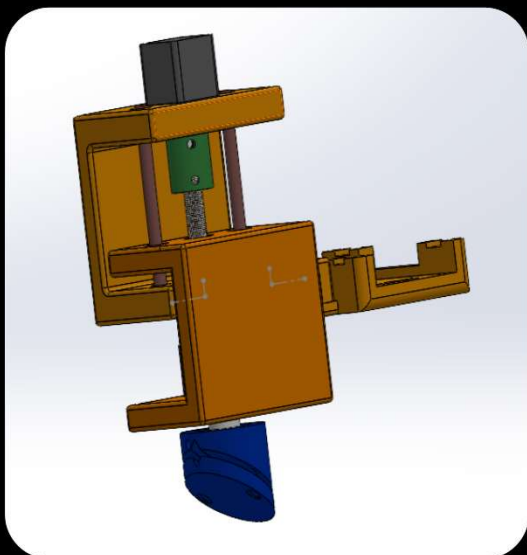




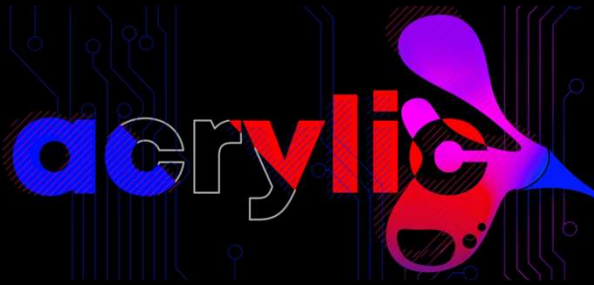
This is a paint distribution mechanism made in SolidWorks. Paint is stored in the syringe and can therefore be extruded through a tube at a constant and controlled rate.



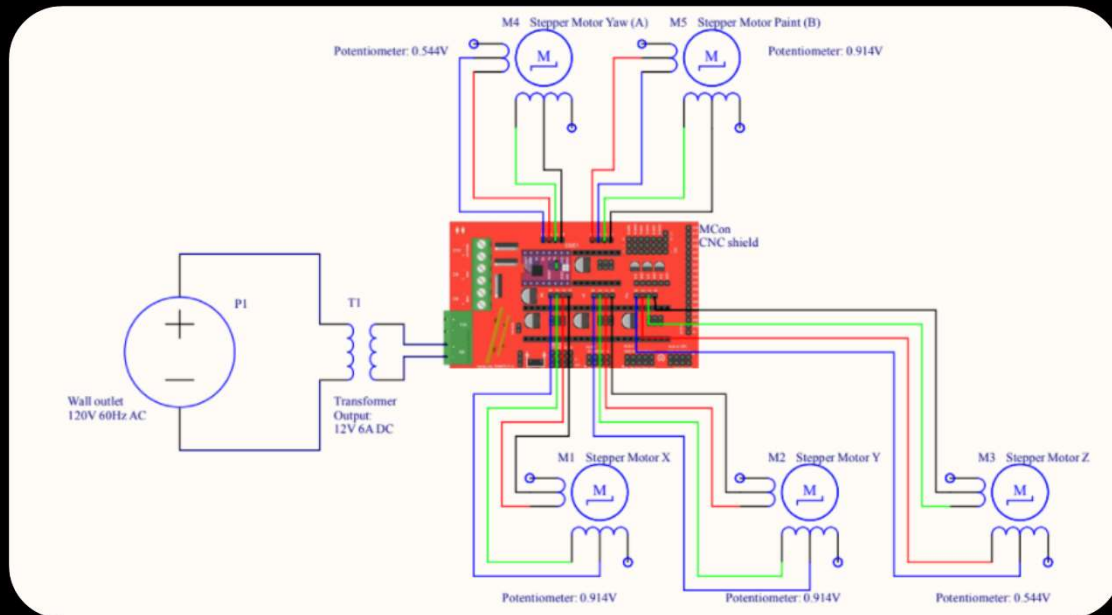
This is the end effector made in SolidWorks. The two motors can control the two degrees of freedom (Z and rotational yaw) that the paintbrush can move at.



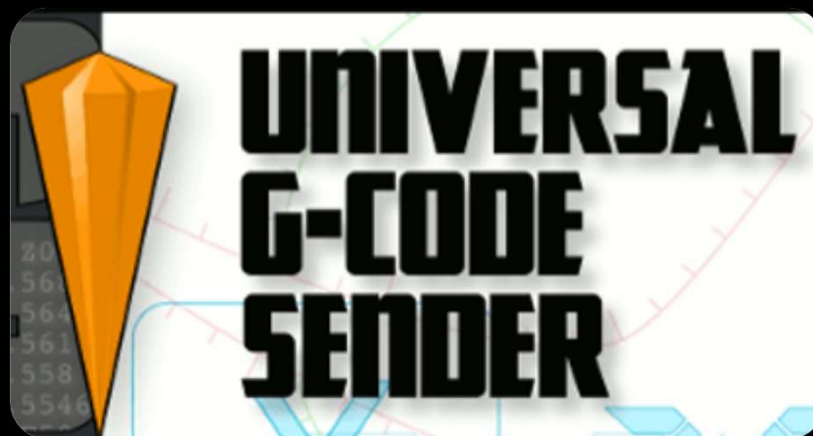




This is a very simple electrical system of the prototype. The wiring schematic was done in Altium.



G-code commands are sent by the UGS to the CNC shield on the prototype.



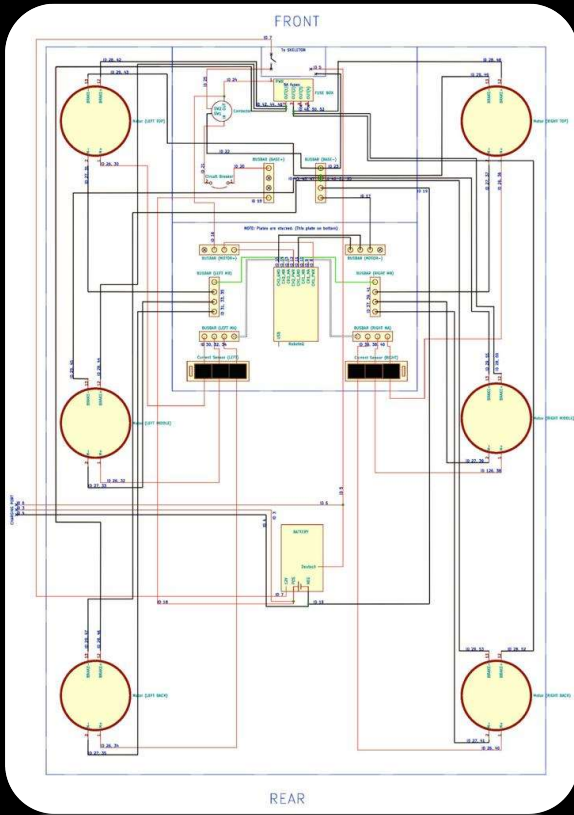
# THR Top Hat Robotics

This is the snow-plow robot I was responsible for assembling/testing. I did everything from drilling to soldering.

I also designed the battery cage and camera mounts.



**THR** Top Hat Robotics



Wiring schematic done in KiCAD along with two electrical plates that I wired and co-created.

