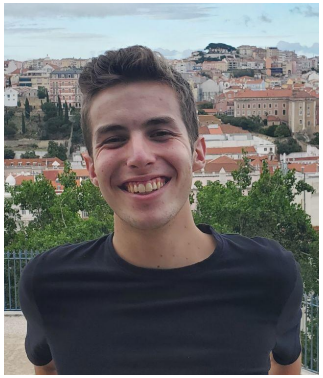
Autonomous Drone with Thermal Imaging Capabilities

Spring Semester 2023

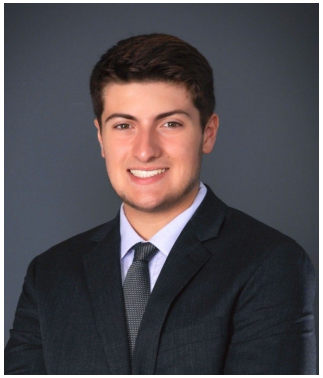
Advisor: Dr. Deese

Team Members

Sean Burtnett



Michael Bond



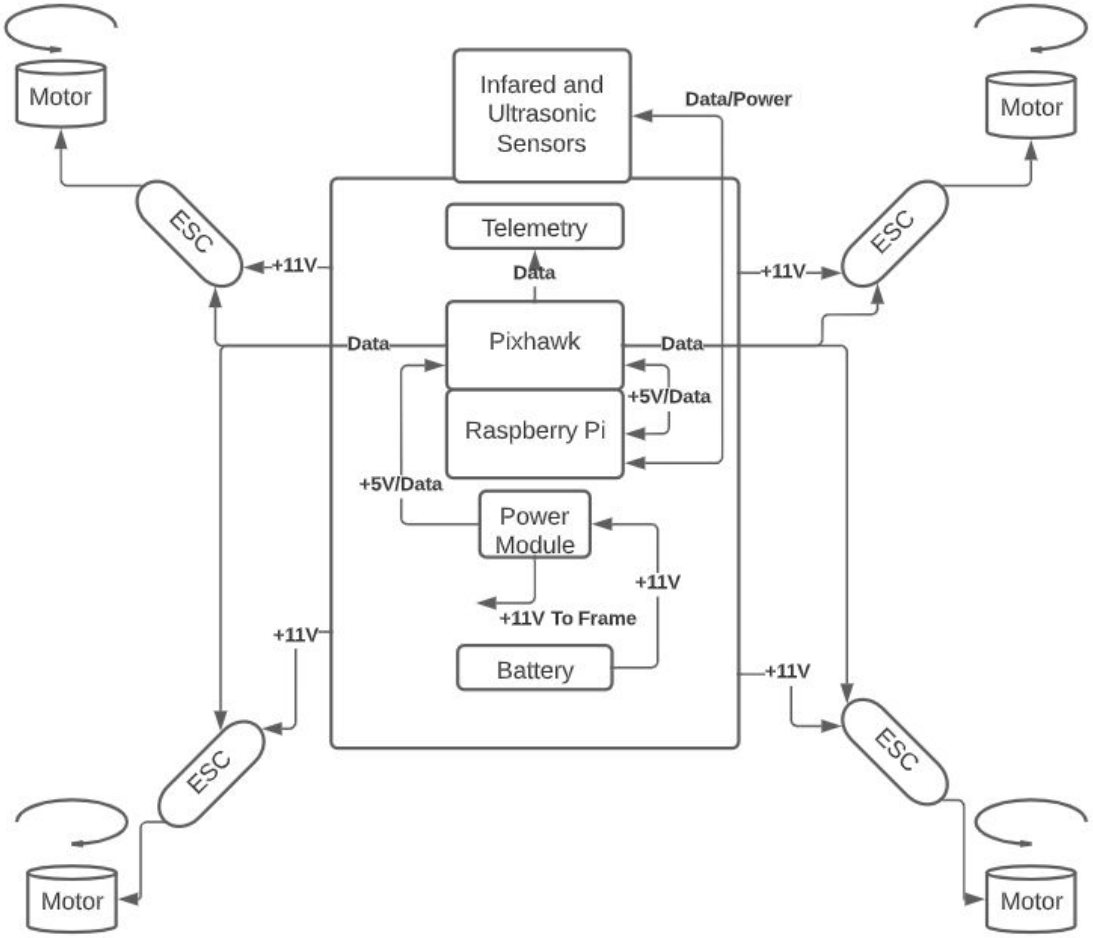
Jack Delvecchio

Darion Parks

Goals/Detailed Specifications

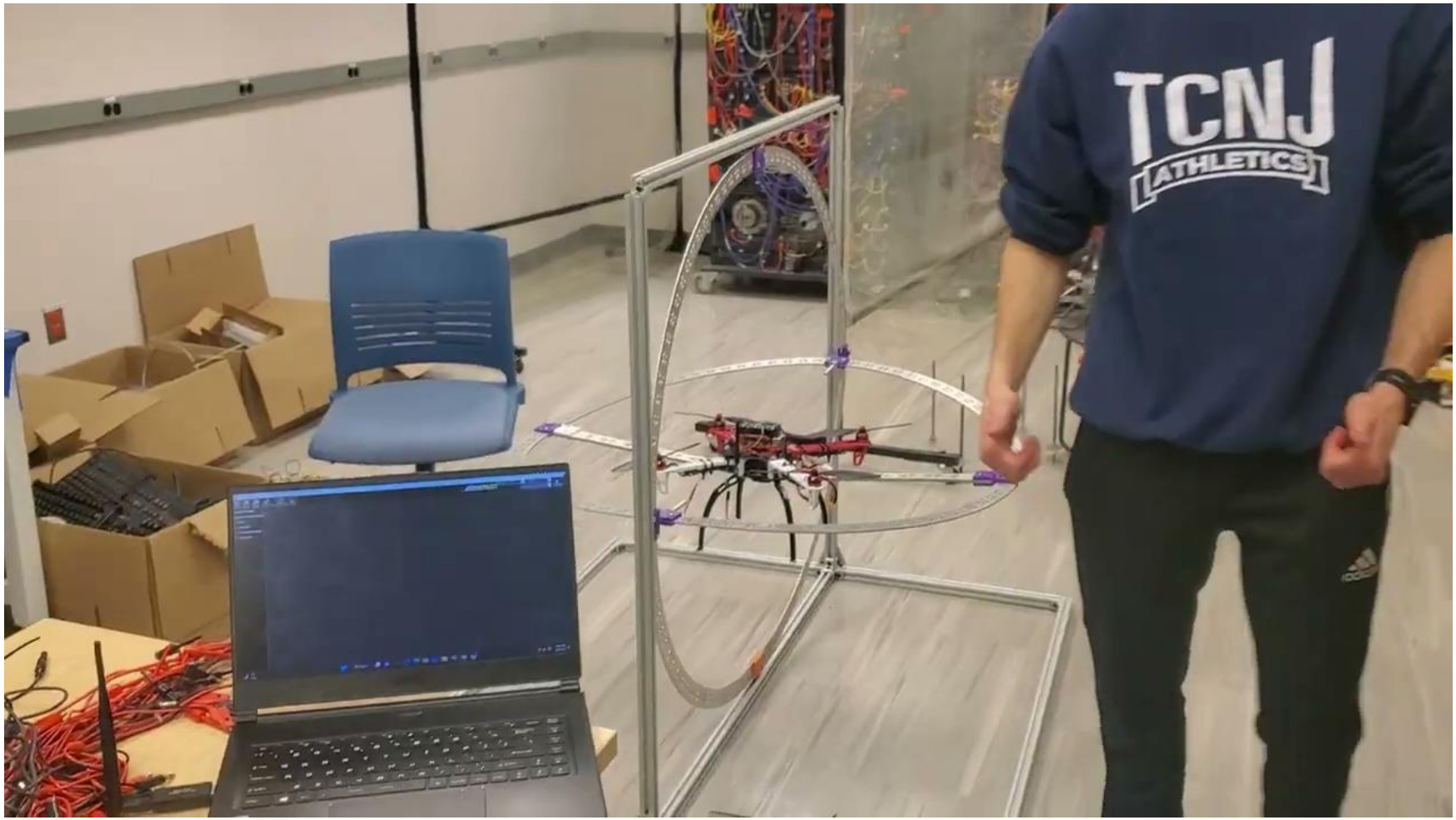
- Goal
  - Build a quadcopter for the purpose of autonomously maneuvering in an indoor environment to relay data on thermal recognition to the user
  - Proof of Concept for Search and Rescue Applications
- Detailed Specifications
  - A run will be deemed ‘successful’ if the drone can:
    - Search a room of at least 100 sq. feet
    - Export a live thermal visual to a computer screen
    - Avoid collisions with objects along the route

System Architecture



Assembled Drone

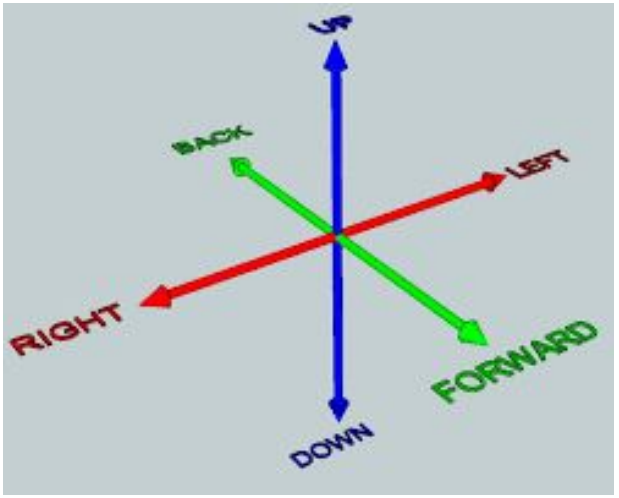
Drone Stability Testing



Sensor Types

1 Thermal Sensor

3 Proximity Sensors



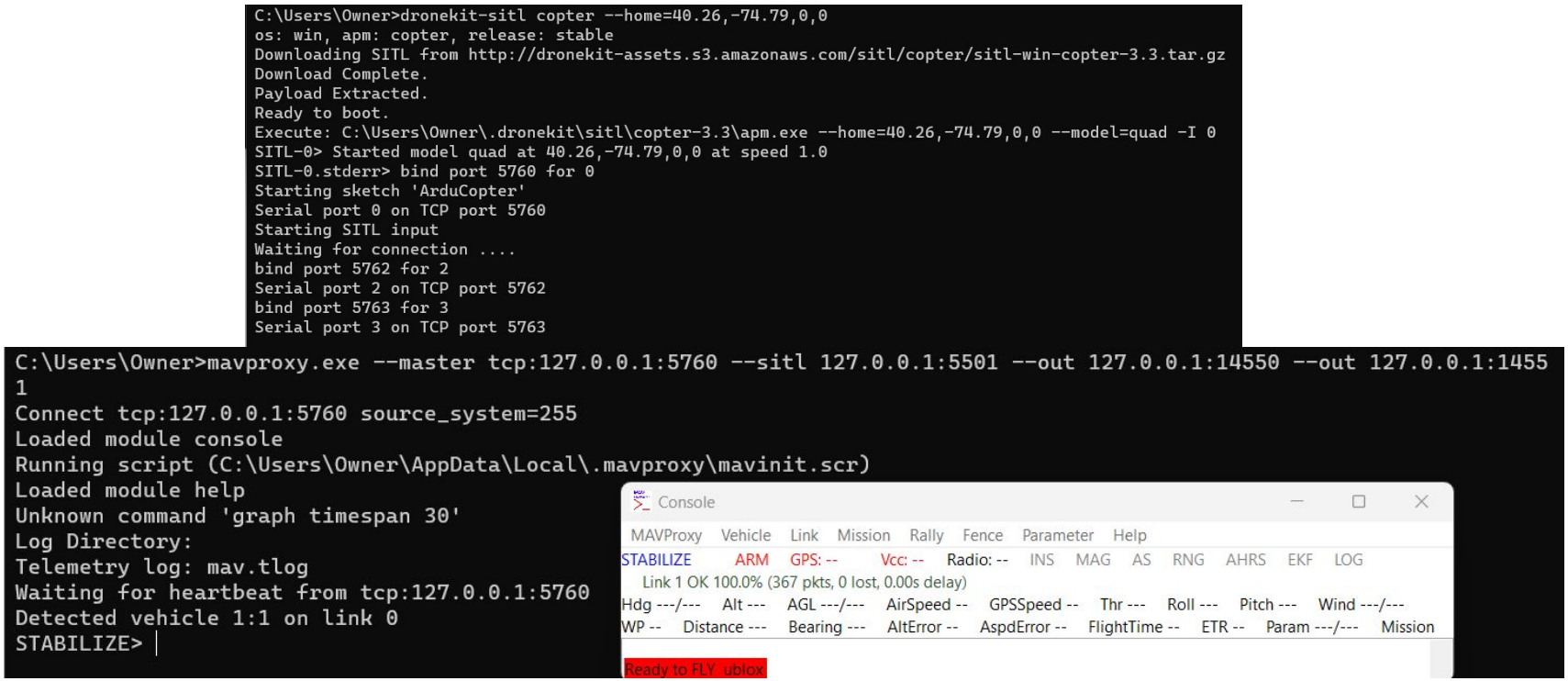
Sensor Design

- Cages to hold the sensors in place will be needed
- These will fit between the legs of the drone to hold sensors

- Cages will be created using 3D printing
- Final sketches are being worked on

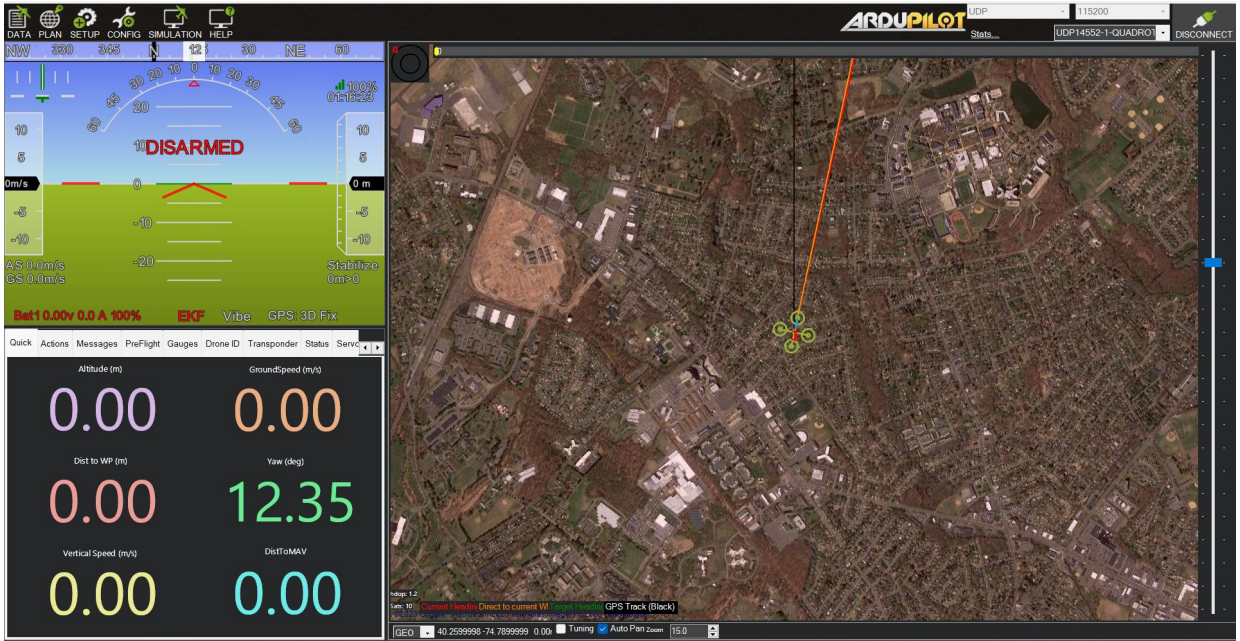
Drone Simulation

- Dronekit-SITL (Software in the loop) allows for simulated drone models
- This can be set up to work with Mission Planner and test Python Scripts

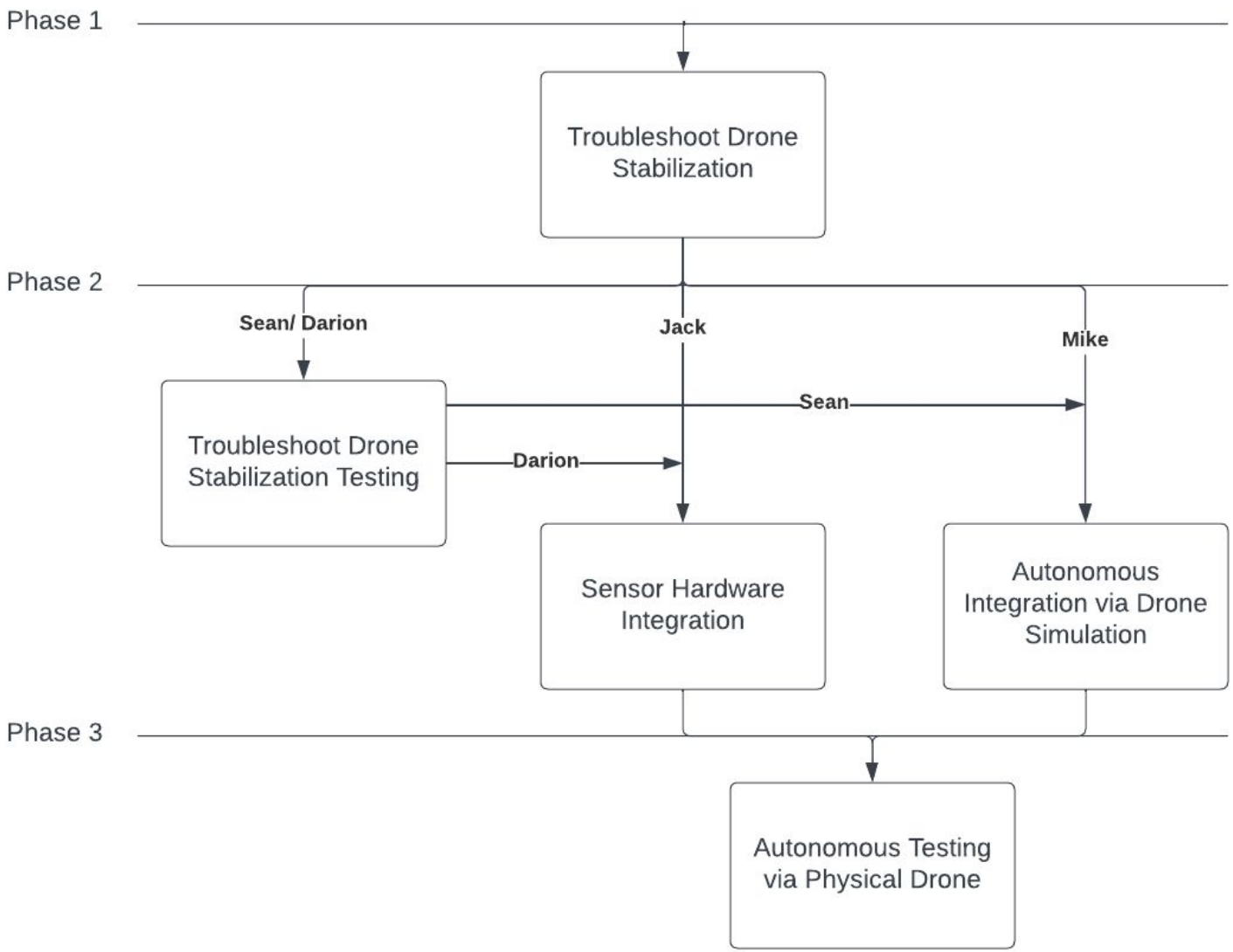


Drone Simulation

- Simulated Drone acts as a model to allow for the development of Python scripts
- The Simulated Drone uses GPS and doesn't have the sensors we will use
  - Scripts will be adapted for our drone



2nd Semester Plans



Questions?