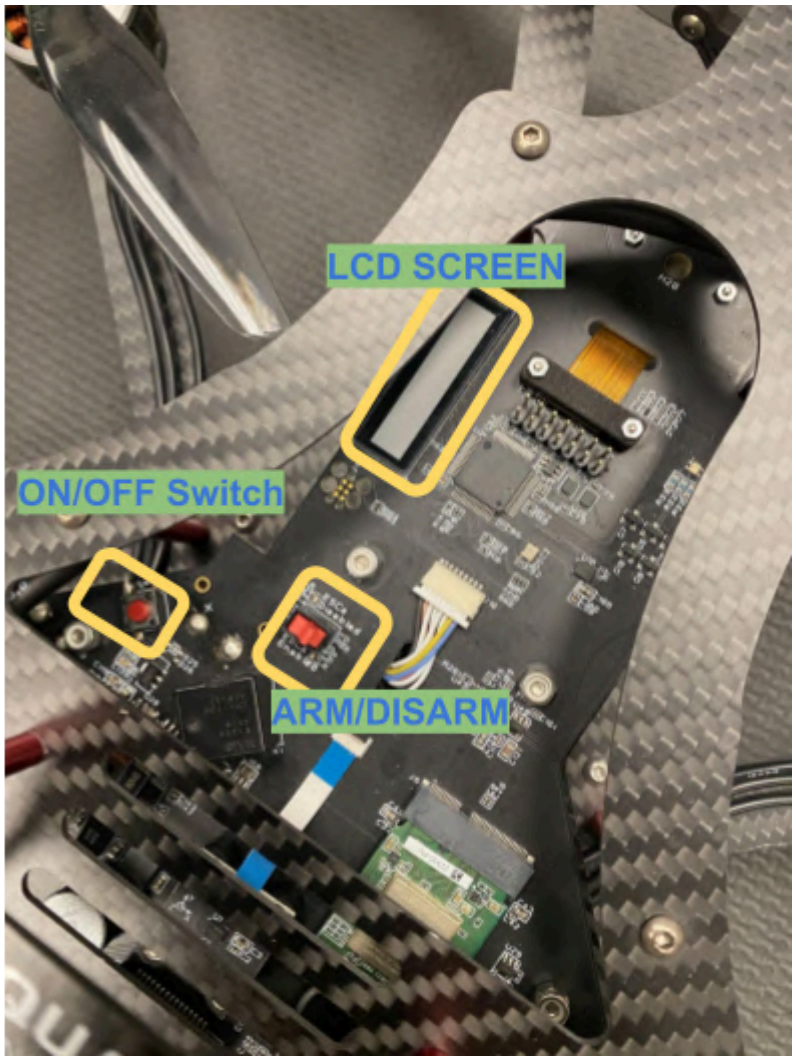
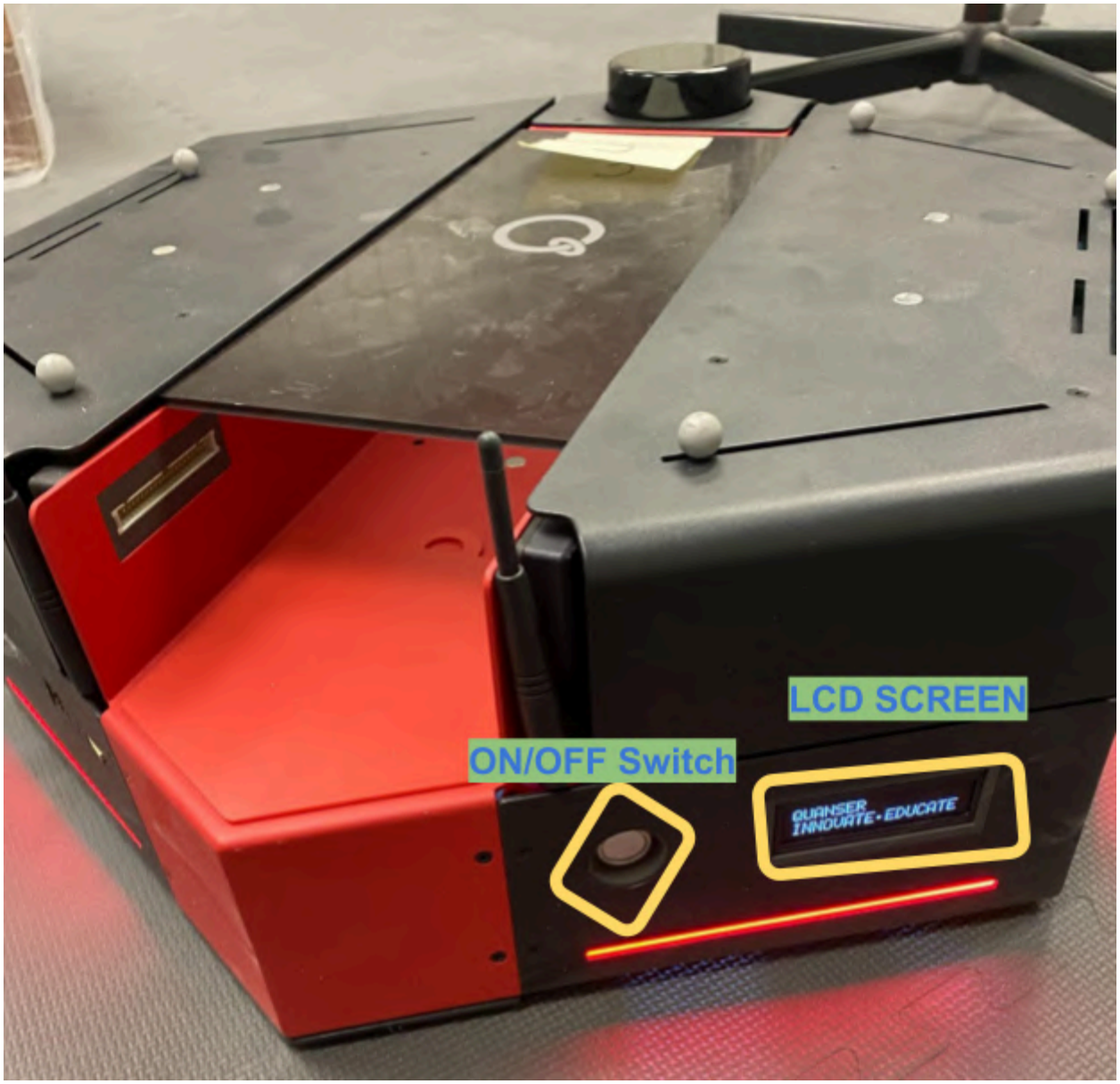
- TURN ON UAV:

- Press ON button, and you after it turns on you can check the IP Address on the LCD Screen

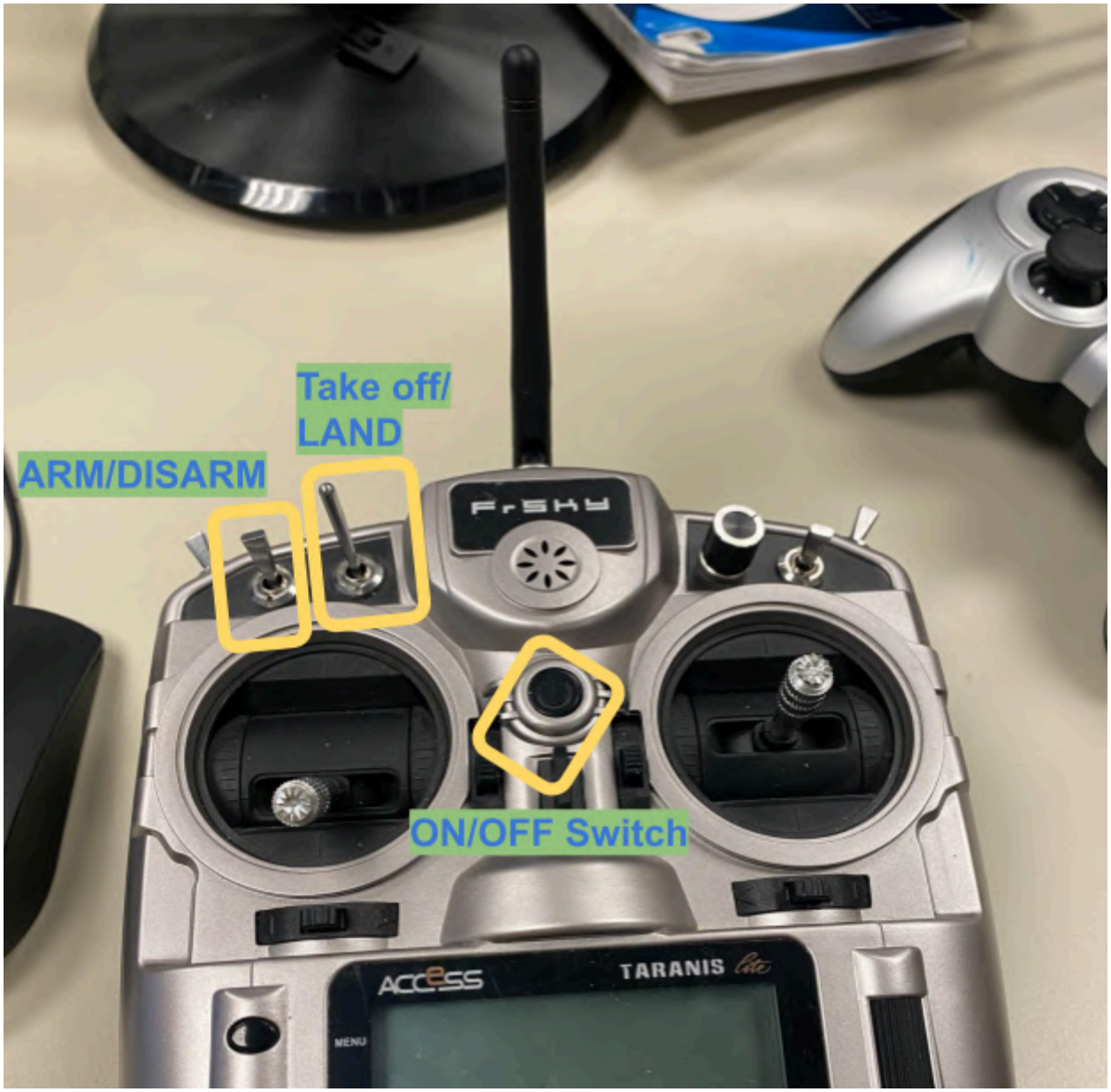


- TURN ON QBOT PLATFORM:

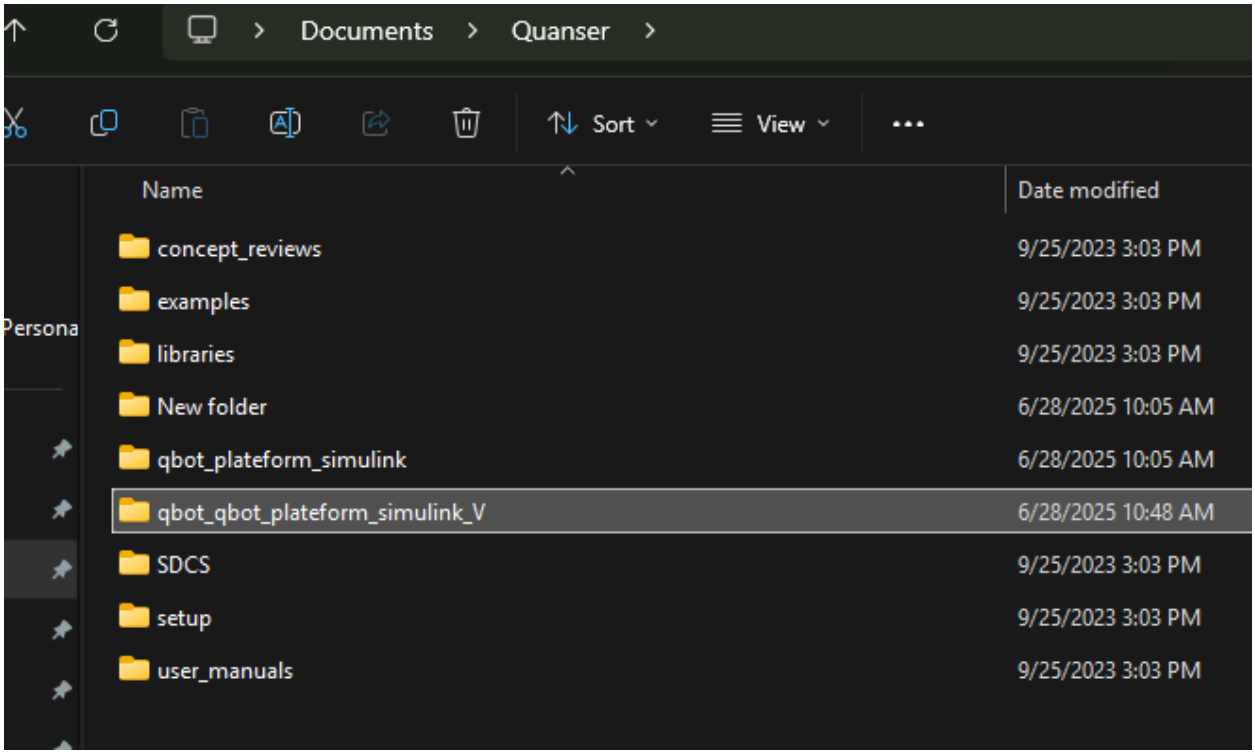
- Press ON button, and you after it turns on you can check the IP Address on the LCD Screen

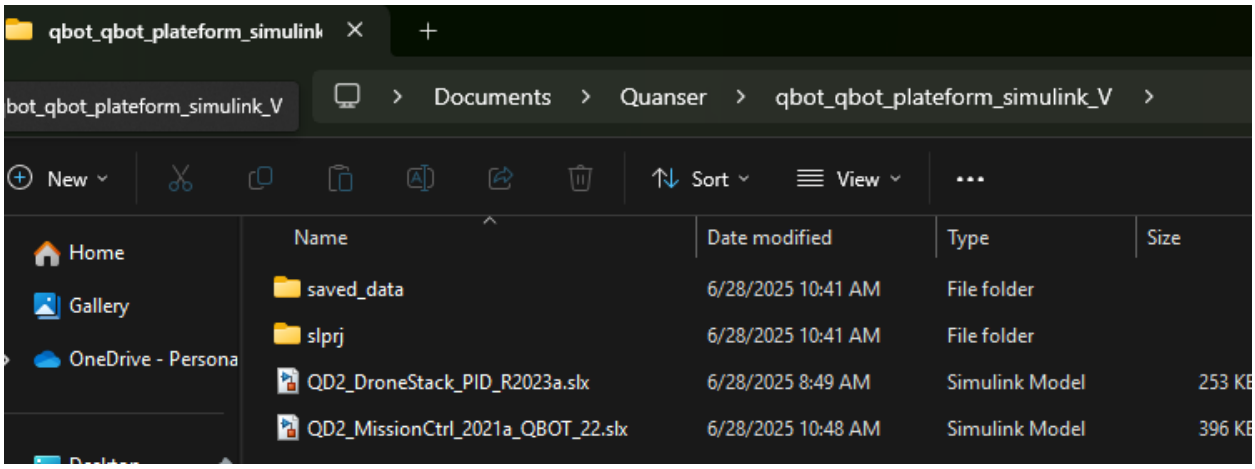


- TURN ON JOYSTICK UAV:
  - Press the ON button for few seconds

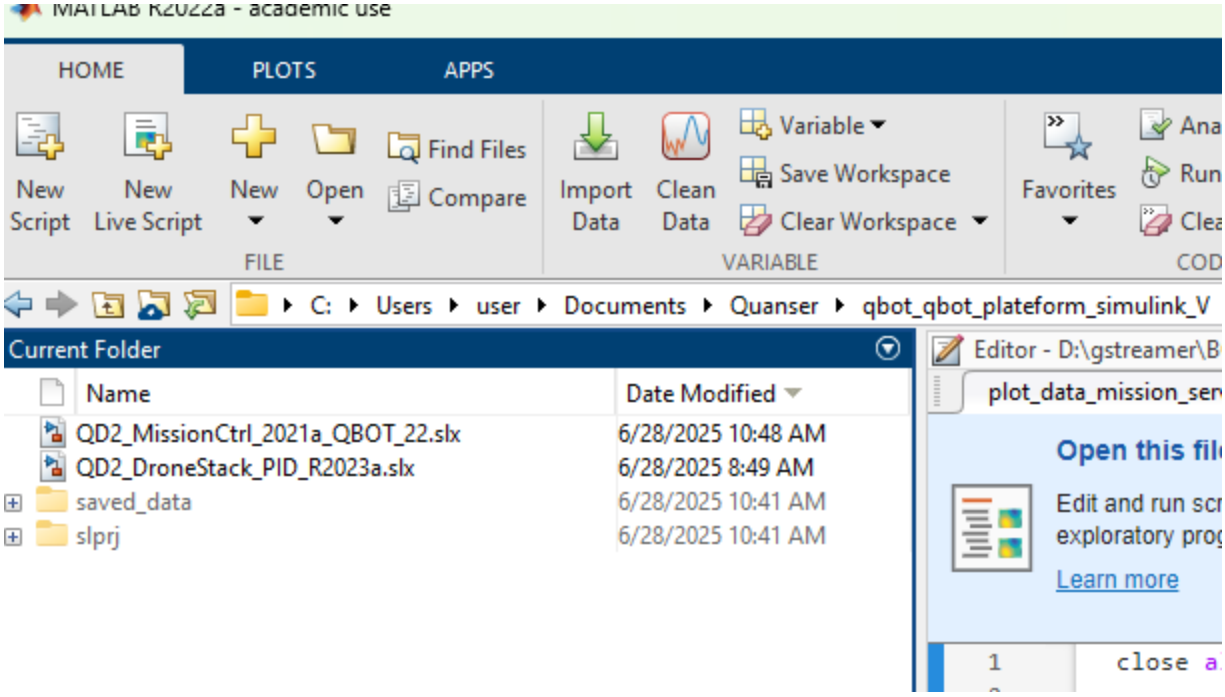


- RUN MATLAB INSTANCE TWO TIMES
- Navigate to the folder shown in the screenshot below:

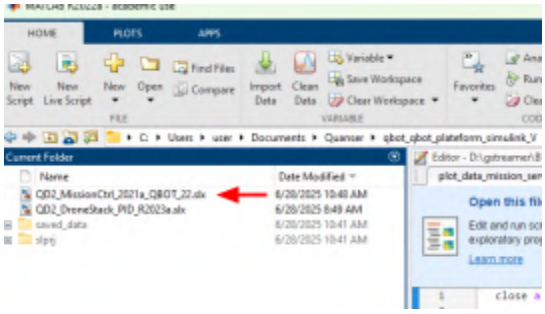
- 



- On One Matlab Instance, Make sure you current folder is the same as the folder with the files to RUN
-



- OPEN MISSION CONTROL:

-


INSTRUCTIONS

1. Turn the QDrone 2 ON by plugging a charged battery and pressing the red button on the PCB once. The LCD screen should turn on.
2. Ensure that the ESC disable switch on the drone's PCB is OFF, that is, the ESCs are enabled. This is indicated by a green LED next to the switch.
3. Place the QDrone2 in the workspace.

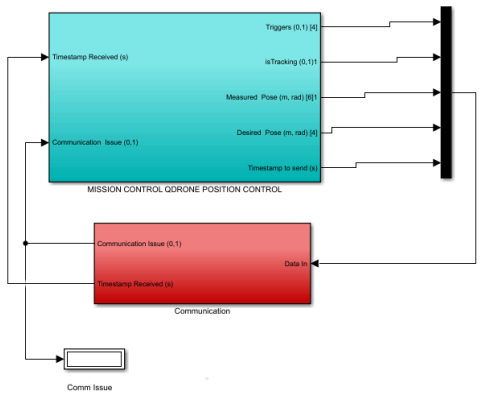
4. Under the MISSION CONTROL QDRONE POSITION CONTROL subsystem, select the appropriate Joystick subsystem and open it, and ensure that the Host Game Controller block's Controller Number parameter is set to either FrSky Simulator or Spektrum Receiver
   NOTE: In case of unexpected behaviour or emergencies, keep the Emergency Stop push button pressed on the joystick to cut all power to the motors (this will result in the drone falling).
5. Select the appropriate Localization subsystem and follow the steps there to set up the correct calibration and rigid body definition files for the selected QDrone.
6. Turn the Joystick ON and ensure all toggles are on the position away from you.
7. Under the HARDWARE menu, click on **Monitor & Tune**. Wait for the model to start running (takes ~1 to 5 seconds for the Motive API to initialize and send localization data).

8. In the MISSION CONTROL QDRONE POSITION CONTROL subsystem, ensure that the isTracking? display shows 1 and that the Joystick Issue display shows 0 (joystick must be powered ON with USB dongle attached to the PC).
   NOTE: To make sure that the joystick is connected properly, toggle the arm or takeoff triggers in the joystick and notice if the Triggers display shows a non zero value in any of the 4 values. If it does, set the triggers to the 0 positon again. If it does not, disconnect and connect the USB dongle to the PC, set all triggers to 0 again.

9. **Start running the QD2_DroneStack_PID.slx model.**
10. Arm the drone by moving the Arm/Disarm toggle on the joystick to the 2 position. (Bringing it towards you). The props will start turning at a low speed.
11. Takeoff the drone by moving the Takeoff/Land toggle on the joystick to the 2 position. The QDrone should takeoff and hover.
12. When finished, move the Takeoff/Land toggle on the joystick to the 0 position to land the drone. The QDrone should land.
13. Move the Arm/Disarm toggle on the joystick to the 0 position. (The QD2_DroneStack_PID.slx model disarms the drone and stops automatically upon landing).
14. Stop this model.

QUARC

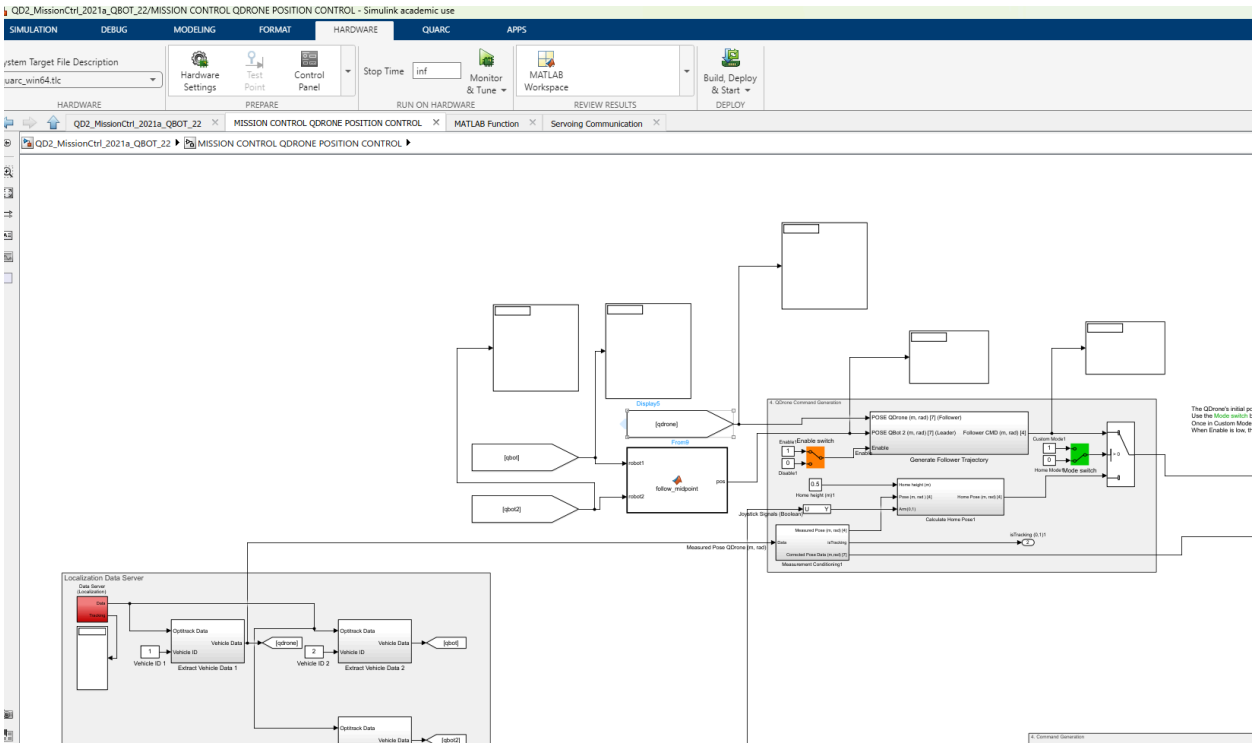
Quanser Autonomous Vehicles Research Studio
Mission Control - QDrone 2 Position Control



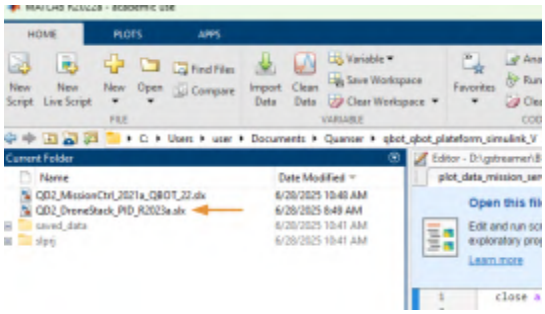
NOTE:
There is **nothing wrong if the LCD on the drone shows a Warning sign.** It shows that the motors were disabled through hardware. When starting a model while the ESC switch is green, it will dissapear.

The first model run after turning the drone on will make the **ESC beep three times** on startup. Any subsequent model ran will **beep 5 times consecutively.** It is normal behaviour.

Enter Mission Control Block (BLUE) if not already:

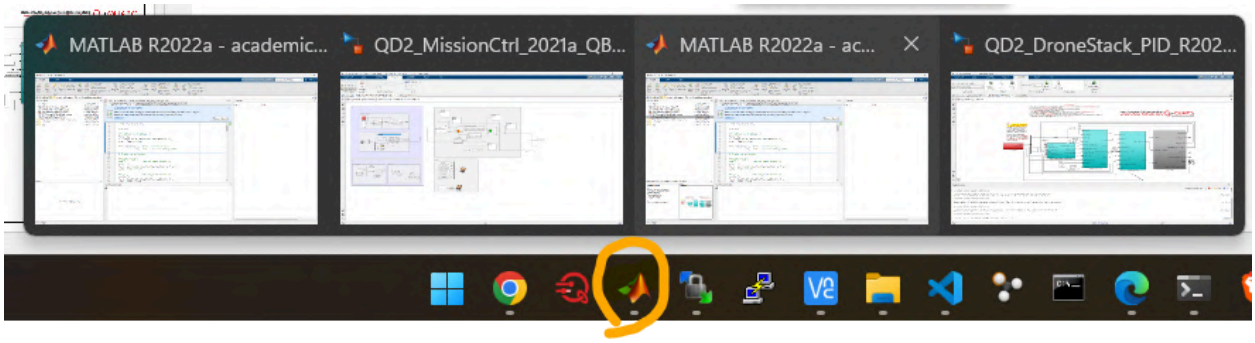


- OPEN in the other Matlab QDRONE 2

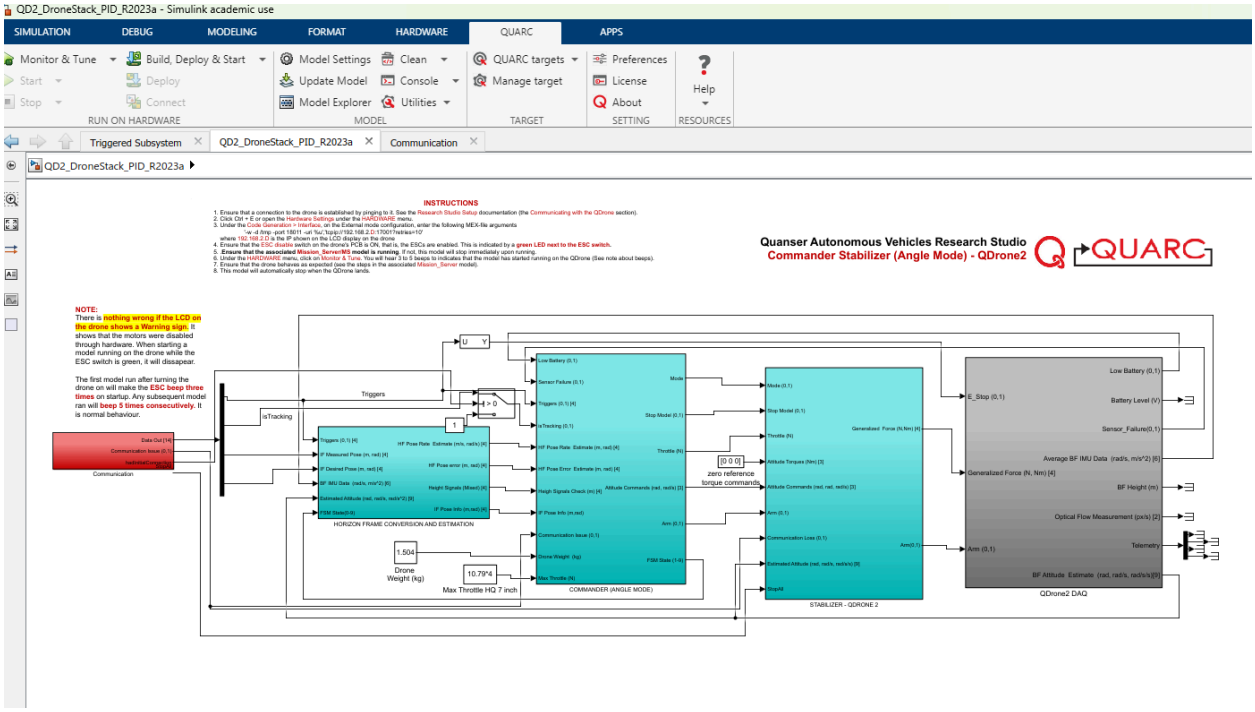


Open the QDrone 2 project in the second MATLAB session.
You should have a total of **four MATLAB-related windows** open:

- **2 Simulink models**
- **2 MATLAB editor/console windows**



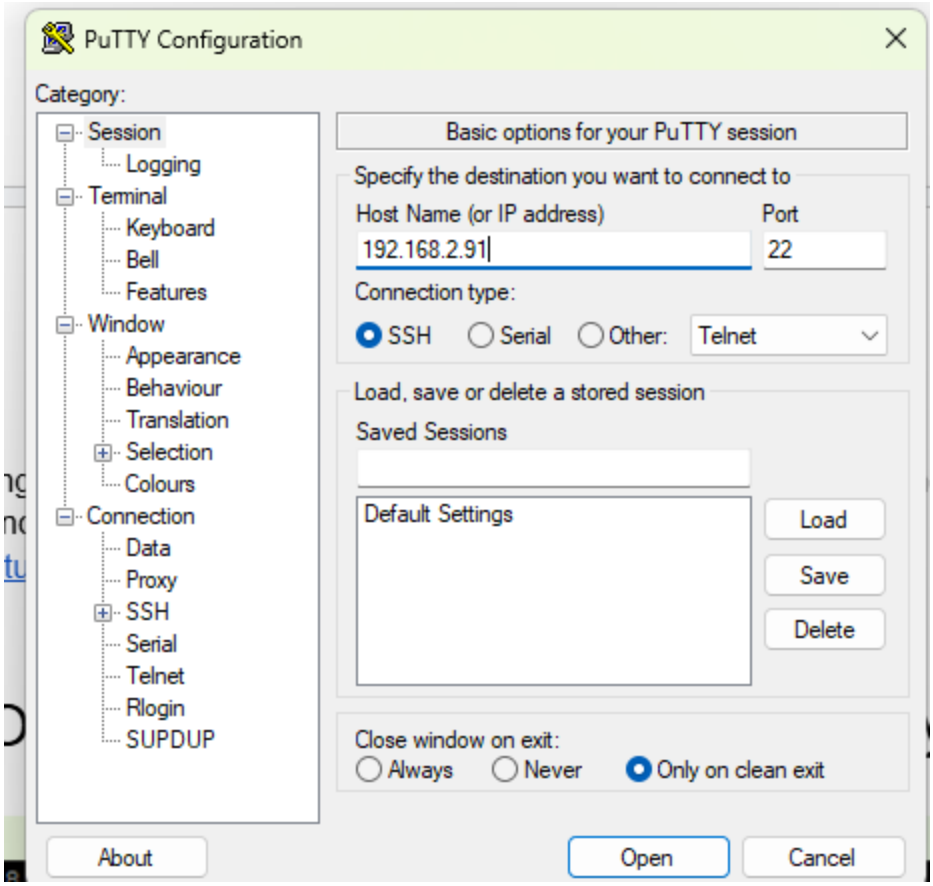
You should see the window below:



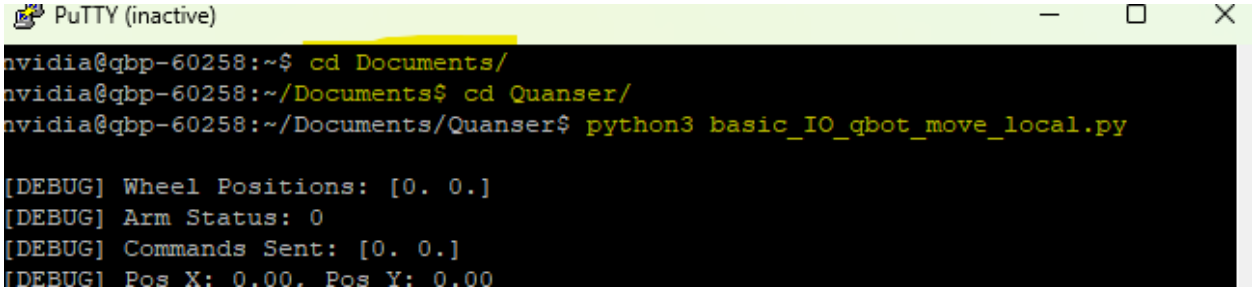
After Setting up the correct IP address of the UAV and the GCS, You can then RUN “Monitor and Tune” as shown in the Training Video.
https://youtu.be/lxrts2ohqok

- REMOTE ACCESS TO QBOT using Putty

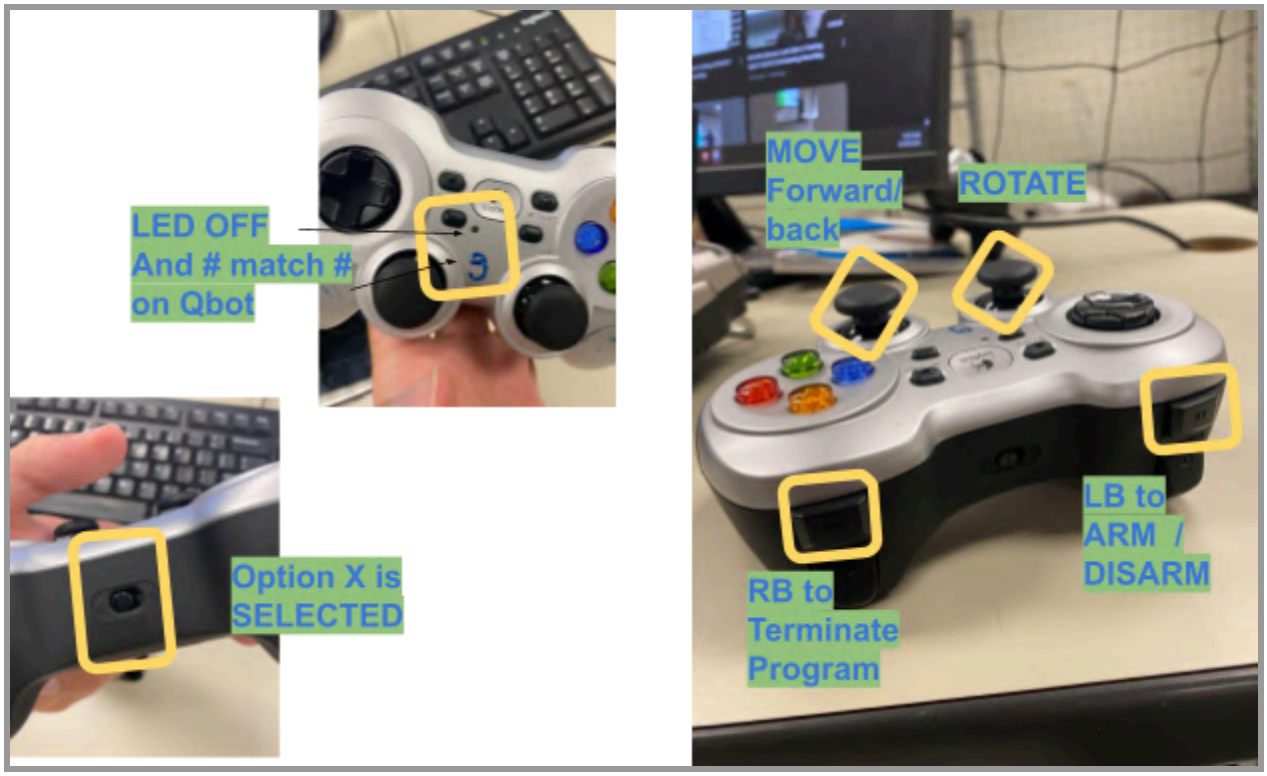
- Open PuTTY and type the Qbot IP Address as shown the screenshot



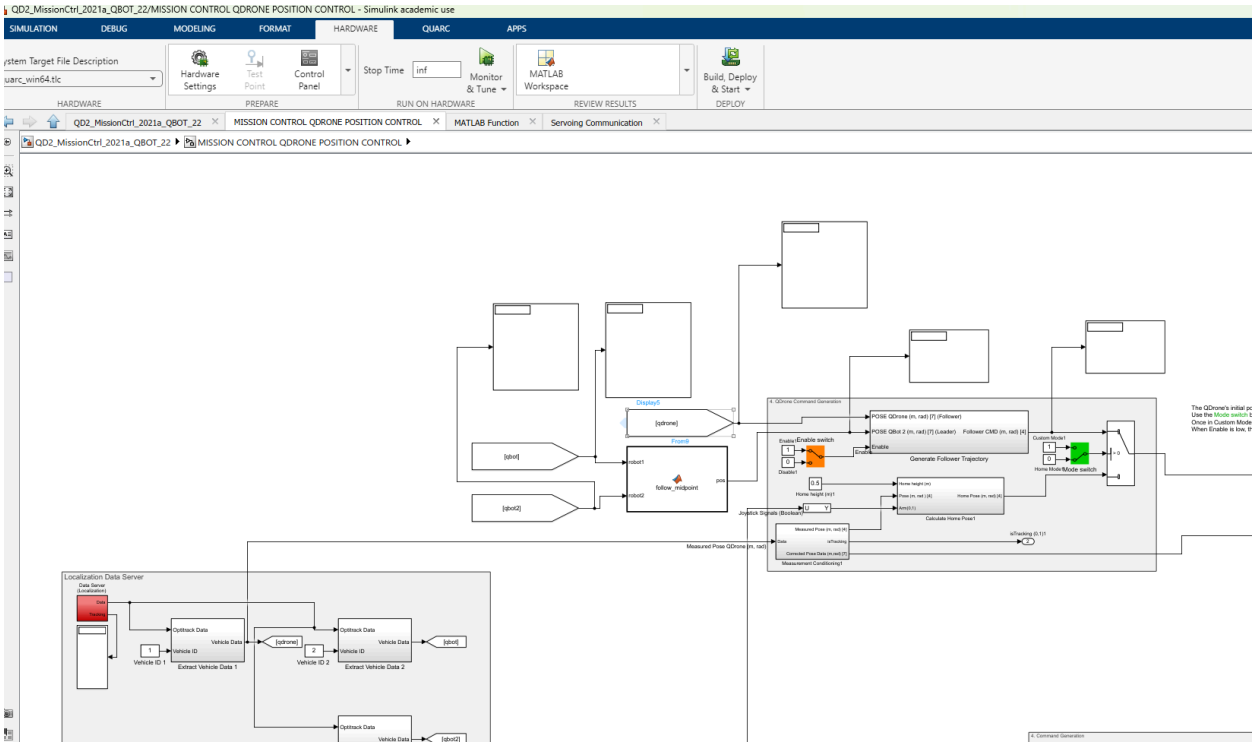
- After typing the Username and password navigate using the CMD to the folders as shown below and run the python file
- Password and username are : **nvidia**

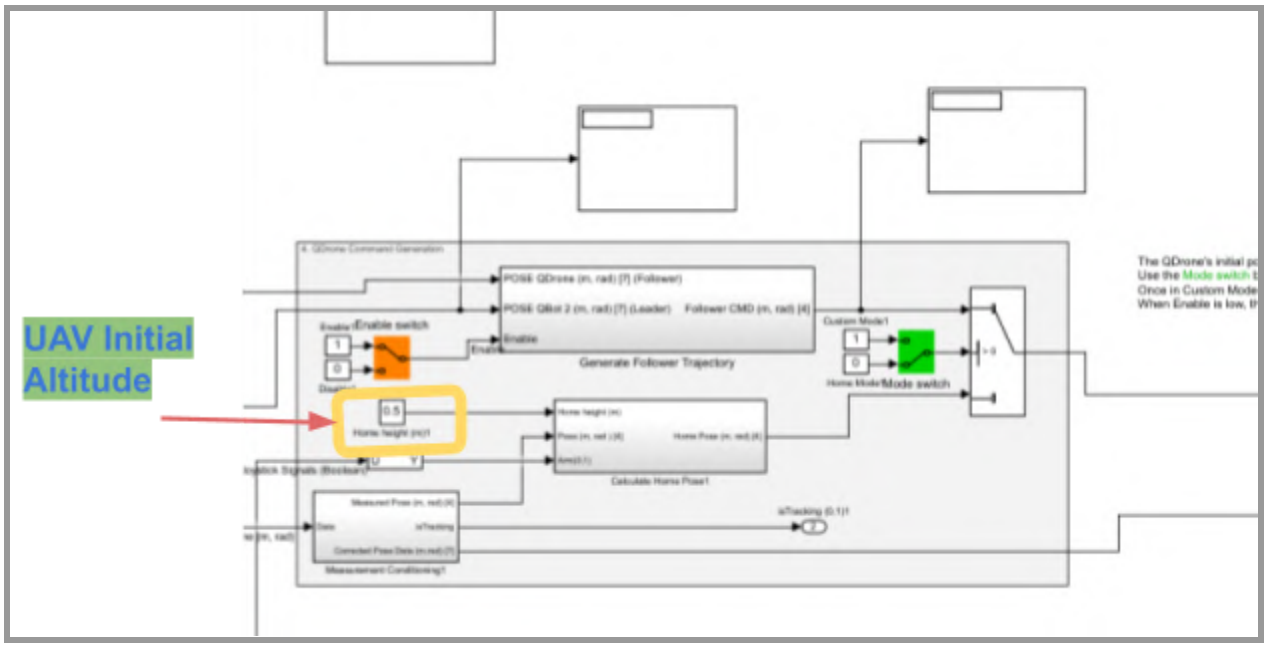


DO IT FOR BOTH QBOTS



Once Both Mission control and QDRONE Simulink Compile Successfully, use The Take OFF button to fly the uav to a Height Set in Mission Control as shown below





After UAV is Hovering at Initial X ,Y, Z, YAW (eg: 0 , 0, 0.5 m, 0), you can switch to **Mode 1** to enable UAV to Track Qbot **(Make sure Qbot is being Tracked and has correct x, y, z , yaw values in the display block)**