Documentation (Arm with A1)

Setup:

- WidowX Arm:
  - Connect the micro-USB from arm to A1.
  - Connect external power supply (12V 5A) using barrel jack.
- Jetson Nano:
  - Connect USB Wi-Fi Adapter* to Jetson.
  - Connect external power supply (5V 4A) via barrel jack.
  - Connect Intel RealSense to Jetson via USB.

How to use:

1. Power on A1 and press L2 + B to put it to damping mode.
2. Open 3 terminals on Jetson.

Now for teleoperation:

3. On terminal 1, 2 and 3:
   - ssh jetson@192.168.123.12
   - password: raspberry
4. Now on terminal 1:
   - cd/Desktop/Abhishek/
   - python3 controller.py
   - This activates the arm torque and brings it to initial position.
5. On terminal 2:
   - cd/Desktop/unitree_legged_sdk_331/pranav.
   - ./run_trotting9_abhishek
   - Press enter when prompted on the terminal
   - The robot should trot in place
6. On terminal 3:
   - cd/Desktop/ cd/Desktop/Abhishek/
   - python3 get_angles.py
   - This code will wait for the angles to be received from the Jetson.
7. Teleoperation:
   - Press A / B to toggle between standing and trotting.
   - Press X to quit the program anytime. You will have to run ./run_trotting9_abhishek again.

- In trotting using the left / right joystick to move fwd/back/sideways/turn.
- In standing mode, you can change the height using L1/L2 and pitch using R1/R2.
- Press UP Arrow on Joystick to bring arm to initial position.
- Press DOWN Arrow on joystick to bring arm to rest and disable torque. After this the controller.py should be run again to enable the torque.

Now for Object Detection:

8. On terminal 4 on Jetson:
    - cd/Desktop/Abhishek
    - source bin/activate
    - cd codes
    - python send_angles.py
    - This will run the object detection and perform the pick and place.

Make sure to that the controller.py and get_angles.py are running on pi before running send_angles.py on jetson.

Extra Hardware:

* USB Wi-Fi Adapter - https://www.amazon.com/dp/B008IFXQFU?ref=ppx_yo2ov_dt_b_fed_asin_title