**Using the Camera Control UI:**

1. Plug in the power supply to stepper motor driver (12V – 5A)
2. Plug in the micro-USB to Arduino and the USB type A into the computer
3. Open the CameraControlUI on the computer (specs do not matter)
   1. Never send commands (click buttons on UI) when the power is not plugged in
4. “Calibrate” should be the only button active initially. Be sure that **NOTHING** is below the camera during calibration. The camera will run into anything in the calibration path. After calibration, the position should read as 5
5. After calibration, the software will prevent you from clicking buttons in an illegal order or moving the stepper motor out of bounds.
6. Nothing special needs to be done to close communication. Always close the UI in between uses as the serial port the Arduino connects to could change.

**Problems that Could Occur:**

* Commands being executed from previous use:

1. Unplug the stepper motor power supply

2. Close the CameraControlUI software

3. Press the small white reset button on the Arduino to clear instructions

To avoid this issue never send a command to the stepper driver through the UI when the stepper motor driver is not plugged in. The command can end up stored in the Arduino and running when power is plugged back in.

* Unknown Error thrown by UI

This occurs when the Arduino receives an instruction it does not understand

1. This will put the UI in a state that will let you move the stepper motor to illegal areas, or it could potentially move uncalibrated. Best thing to do is just to close the UI, reset the Arduino and re-open the UI.

**Parts that could break or come loose:**

-Power Supply – Needs to be a minimum of 3.7A and 5V. Max Voltage ~20V (lower is better)

-Limit Switch – Blue wire goes to GND pin and yellow wire goes to pin 0

-Communication Wire (purple) – Should be in pin 4

There are several other pins connected to the SPI header, but these do not have convenient labels

-Stepper Motor Wires – Connect blue to black and then follow the order they are connected to the motor driver. This order really shouldn’t matter as long as you plug the wire pairs in next to each other (not in the middle though cause then other pair won’t be next to its partner)