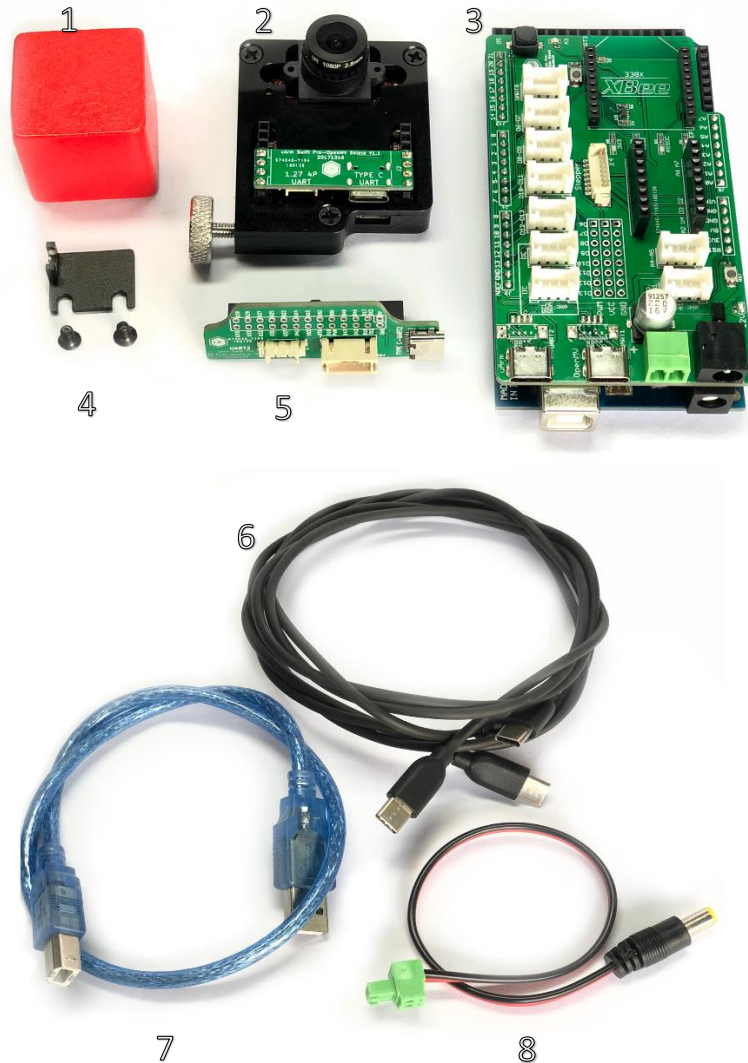


Vision Camera Kit User Manual

Materials



Hardware

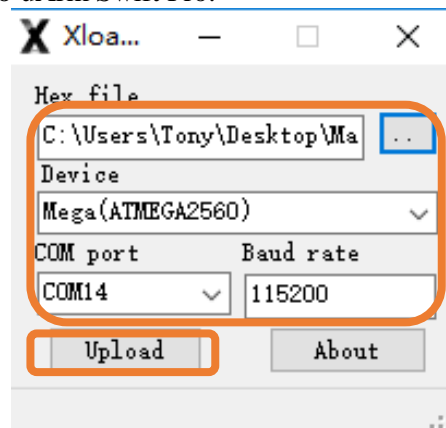
1. Tracking Object (Red Cube) * 1
2. OpenMV Kit* 1
3. Arduino Mega 2560 Kit* 1
4. OpenMV Mounting Kit (M3 Screws Included) *1
5. uArm 30P Extension Board * 1
6. USB Type C Cable*2
7. USB Cable*1
8. DC Terminal *1

Software

1. Arduino IDE (www.arduino.cc)
2. OpenMV IDE (www.openmv.io)
3. Vision.ino for Arduino Mega 2560 [[Github](#)]
4. Color_tracking_test.py for OpenMV [[Github](#)]
5. UArmSwiftPro_2ndUART.hex for uArm[[Github](#)]

1. Software Installation

Connect uArm Swift Pro to PC. Open XLoader (xloader.russeotto.com/), load uArmSwiftPro_2ndUART.hex (<https://github.com/TonyLeheng/Vision-Pick-and-Place>) Click “Upload” to upload the code to uArm Swift Pro.



2. Hardware Installation

2.1 Attach the suction cup to uArm Swift Pro.

2.2 Mount the OpenMV Mounting Kit to the end of the uArm Swift Pro with M3 screws.



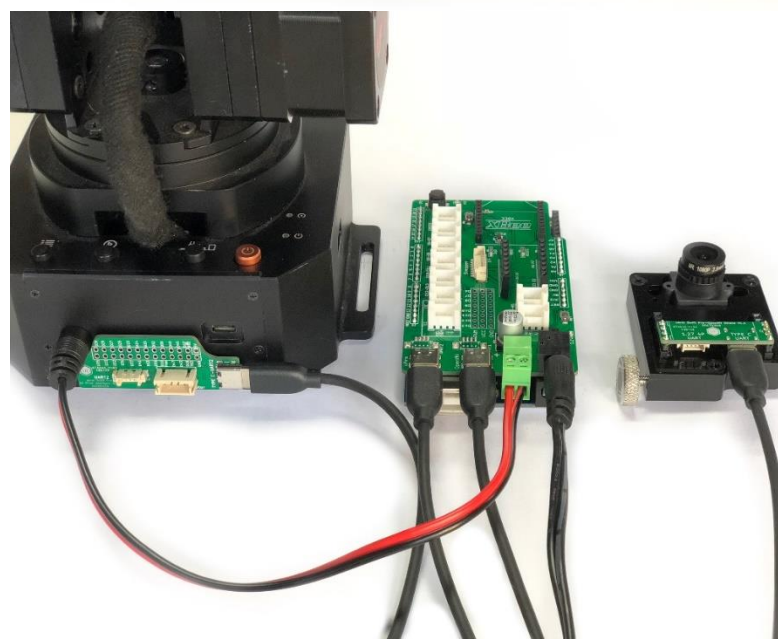
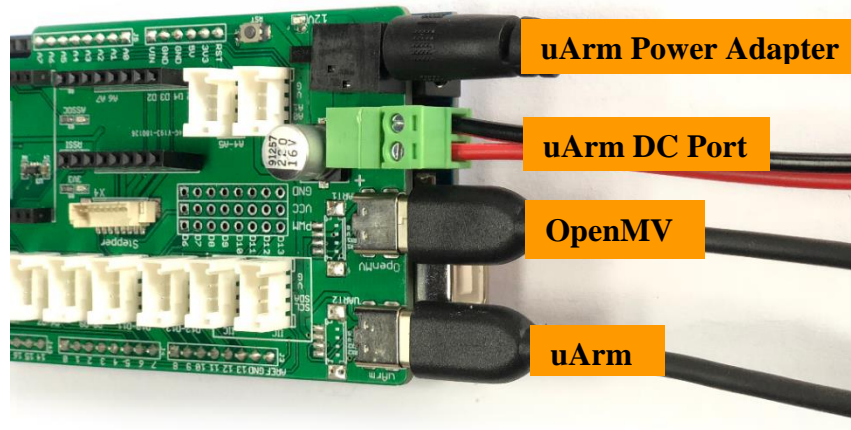
2.3 Attach the OpenMV Kit on the OpenMV Mounting Kit with thumb screw.

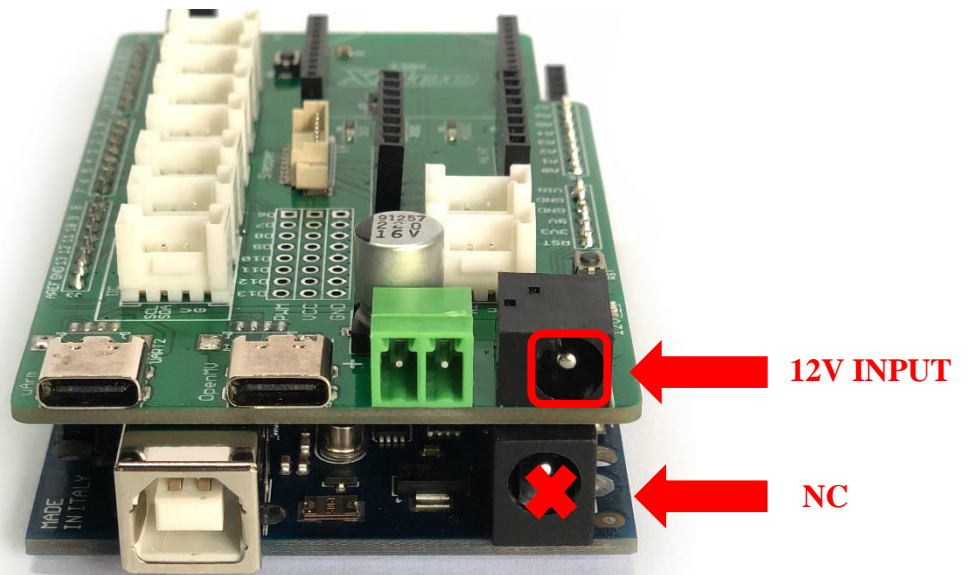


Thumb Screw

3. Wired

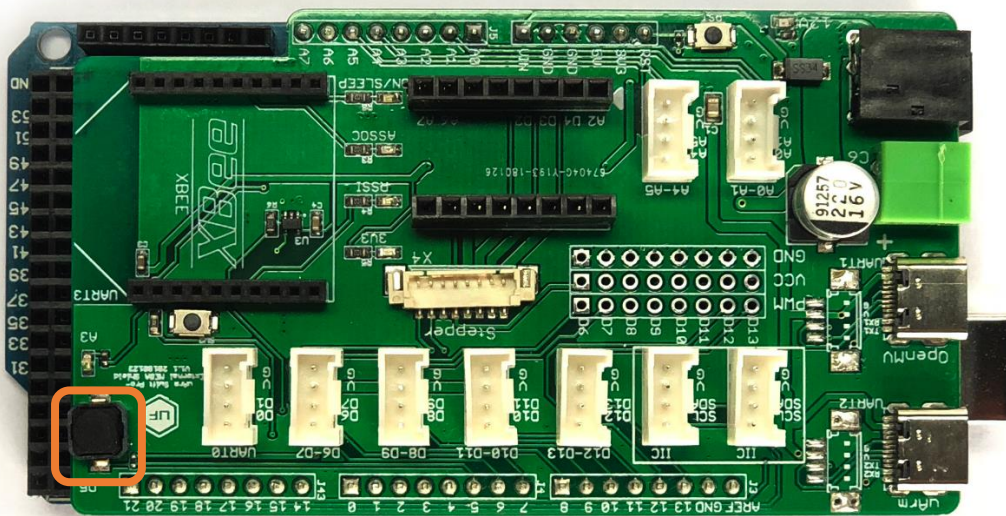
Wired the system as the picture below.





4. Power on

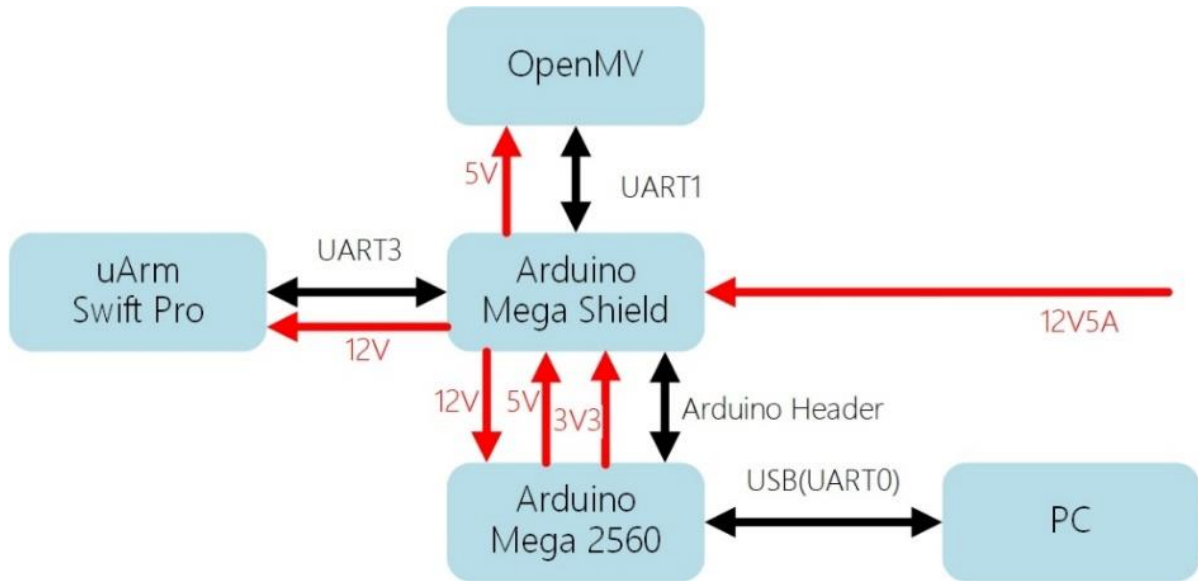
Power on the system with power adapter of uArm Swift Pro (NOTE: Once power on, OpenMV and Mega 2560 will power on with the system, you have to power on the uArm Swift Pro manually. Press the button to run the code and start tracking. (The orange LED would be turned on.)



5. Watch the demo video

https://youtu.be/BEpHAaJll_g

6. System Frame



IMPORTANT: When you mount all the parts and system is working, you may get trouble with the accuracy of picking objects. That mainly caused by the deviation of mounting. We provide a way to reduce the error.

1, Place the red object in front of the base (the object should be a little bit right like the picture below)



2, Run the code to see if the suction cup could grab the object in center, if not, we'd better to adjust the parameter to fix the grab position of suction cup. The parameter is at beginning of vision.ino

File Edit Sketch Tools Help



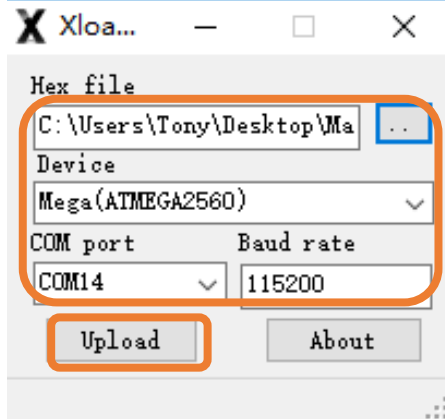
Vision

```
1 //adjust the parameters to make sure the grab position is in the center of object|
2 #define x_rate_of_pixle_to_distance 0.8 //adjust the this parameter when there is offset in x axis
3 #define y_rate_of_pixle_to_distance 0.5 //adjust the this parameter when there is offset in y axis
4
```

7. Standard Firmware Roll Back

You are not able to control the uArm Swift Pro by uArm Studio since we changed the firmware of the uArm Swift Pro on Step 1. If you want to control the uArm Swift Pro by uArm Studio, please follow the steps below to roll back to the standard firmware:

Connect uArm Swift Pro to PC, open XLoader (xloader.russeotto.com/), load SWIFTPRO3.2.0.hex (<http://download.ufactory.cc/firmware/SWIFTPRO3.2.0.hex?atname=>). Click “Upload” to upload the code to uArm Swift Pro.



8. Postscript

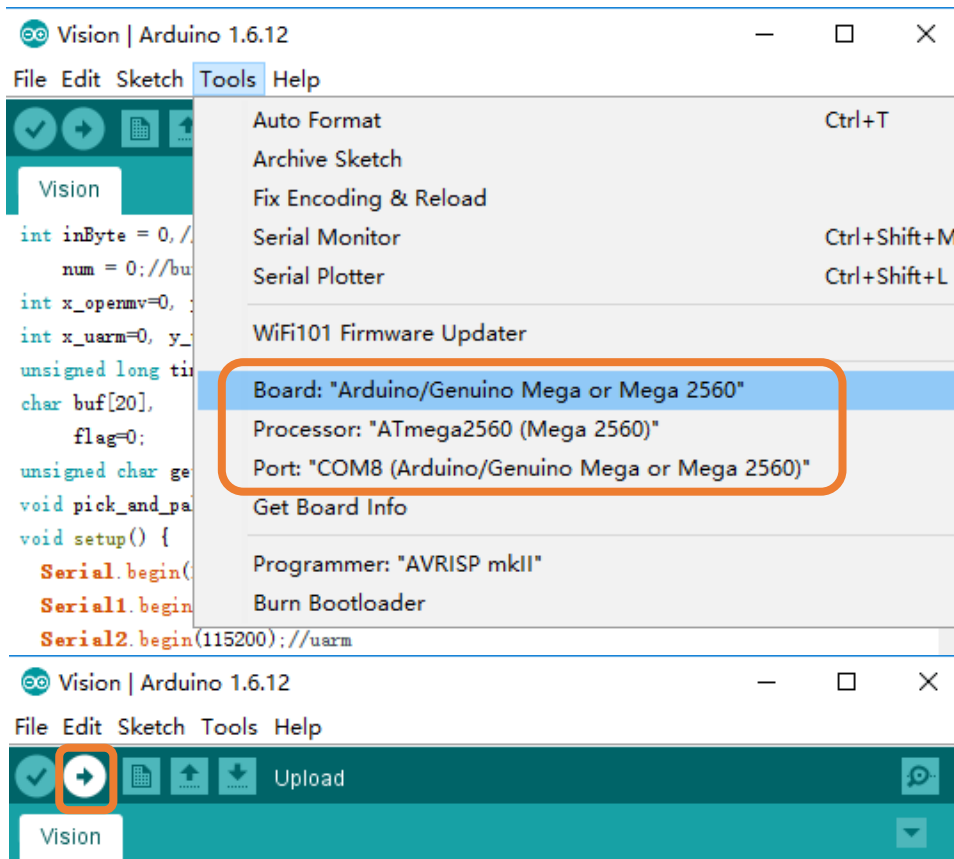
8.1 Upload firmware(code) to Arduino Mega 2560

All Arduino Mega2560 have the LATEST firmware for tracking, if you need flash the firmware to the Arduino Mega2560, please follow the steps below.

- (1) Download firmware : Vision.ino for Arduino Mega 2560 [[Github](#)]
- (2) Connect Arduino Mega2560 to PC with USB cable.



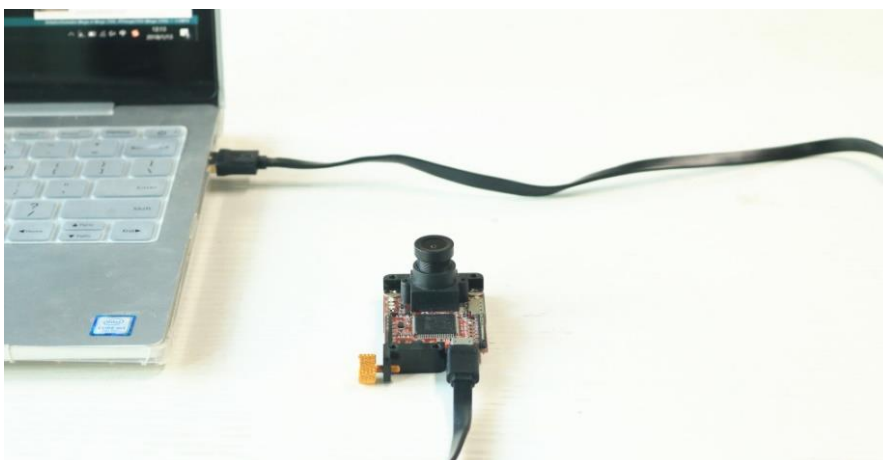
(3) Open the firmware with Arduino IDE, set the parameter as below, click“Upload ” to upload firmware to Arduino Mega2560.



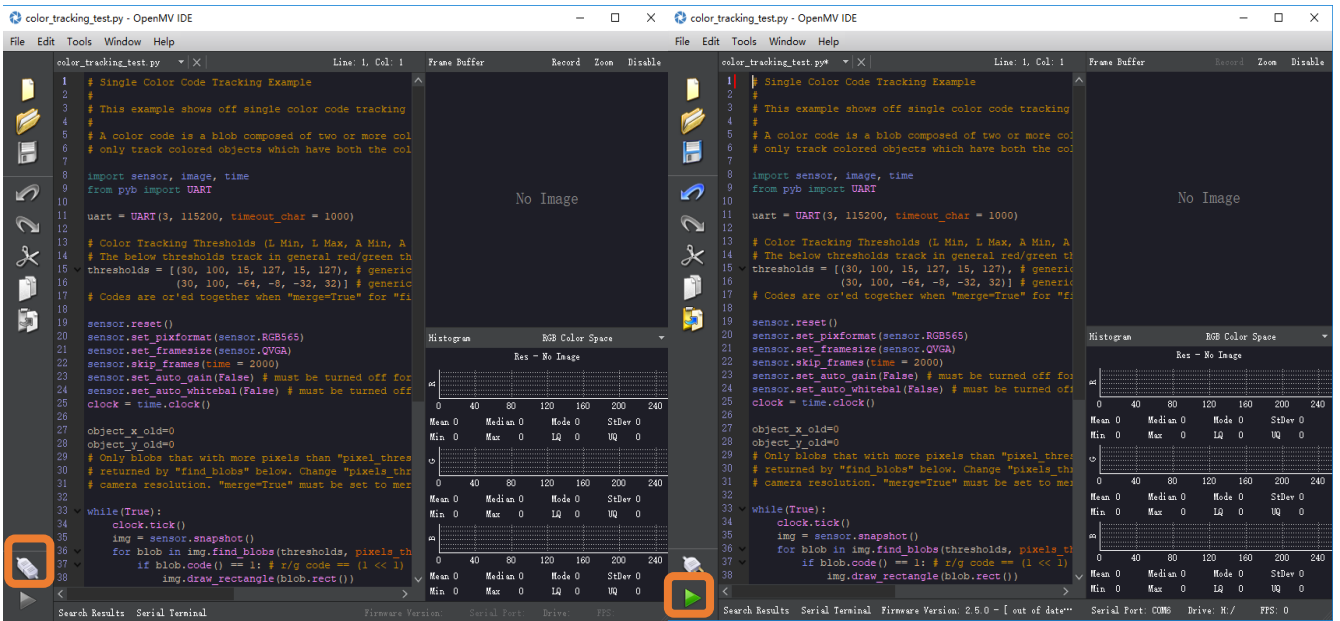
8.2 Send tracking code to OpenMV

All OpenMV have the LATEST codes for tracking before it's shipped out, if you want upload the tracking codes to the OpenMV, please follow the steps below.

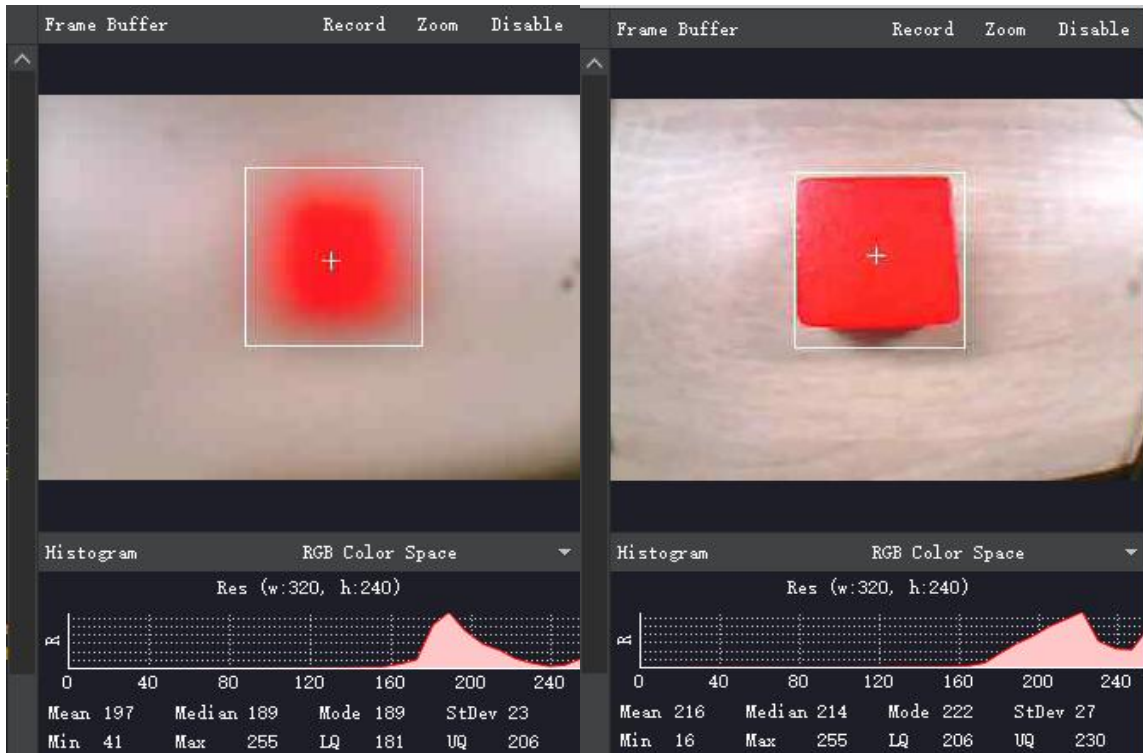
- (1) Download OpenMV tracking code: Open the color_tracking_test.py (<https://github.com/TonyLeheng/Vision-Pick-and-Place>)
- (2) Connect OpenMV to PC with USB cable.



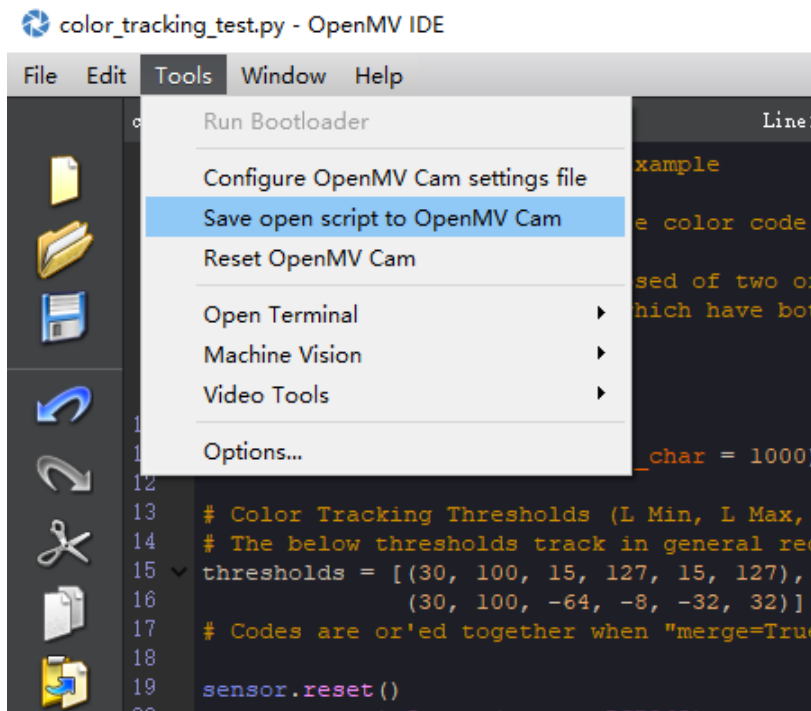
- (3) Open OpenMV IDE, load color_tracking_test.py (<https://github.com/TonyLeheng/Vision-Pick-and-Place>), Press "start" button.



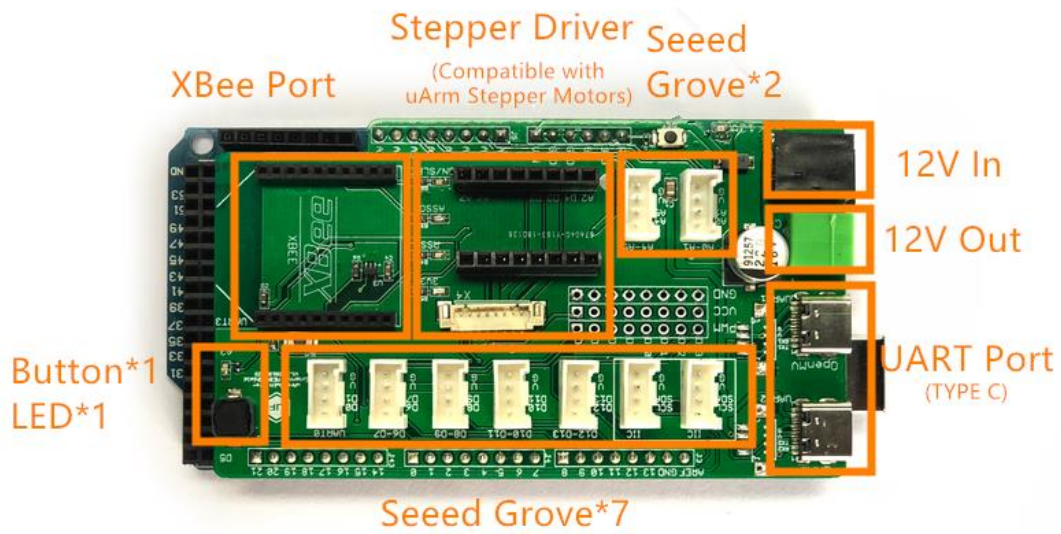
(4) Rotate OpenMV to adjust the focus of OpenMV.



(5) Save the code to OpenMV.



8.3 Arduino Shield Extension Port Description



Contact Us: info@ufactory.cc

Forum: <https://forum.ufactory.cc/>

UFACTORY Website: www.ufactory.cc