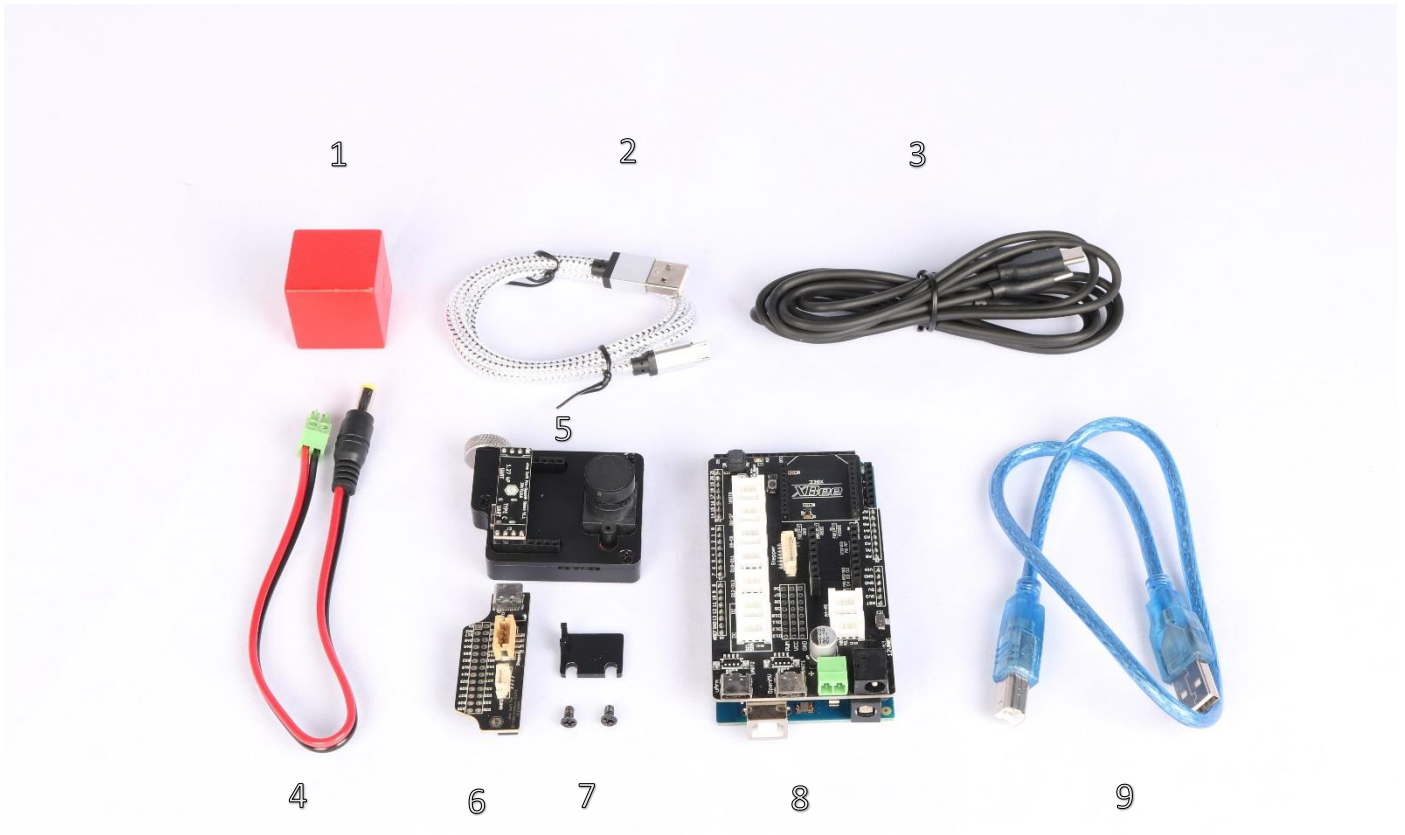


# Vision Camera Kit User Manual

## Materials



## Hardware

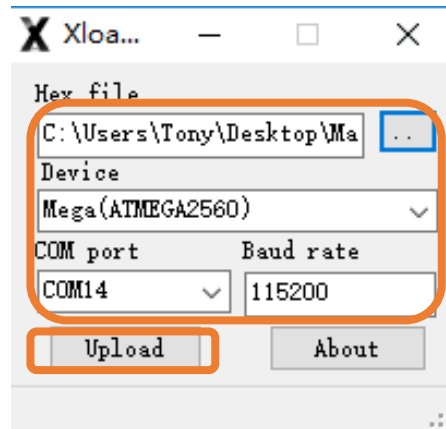
1. Tracking Object (Red Cube) \* 1
2. USB Cable\*1
3. USB Type C Cable\*2
4. DC Cord \*1
5. OpenMV Kit\* 1
6. uArm 30P Extension Board \* 1
7. OpenMV Mounting Kit (M3 Screws Included) \*1
8. Arduino Mega 2560 Kit\* 1
9. USB Cable (Type A-Type B) \*1

## Software

1. Arduino IDE ([www.arduino.cc](http://www.arduino.cc))
2. OpenMV IDE ([www.openmv.io](http://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.russemotto.com/](http://xloader.russemotto.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.



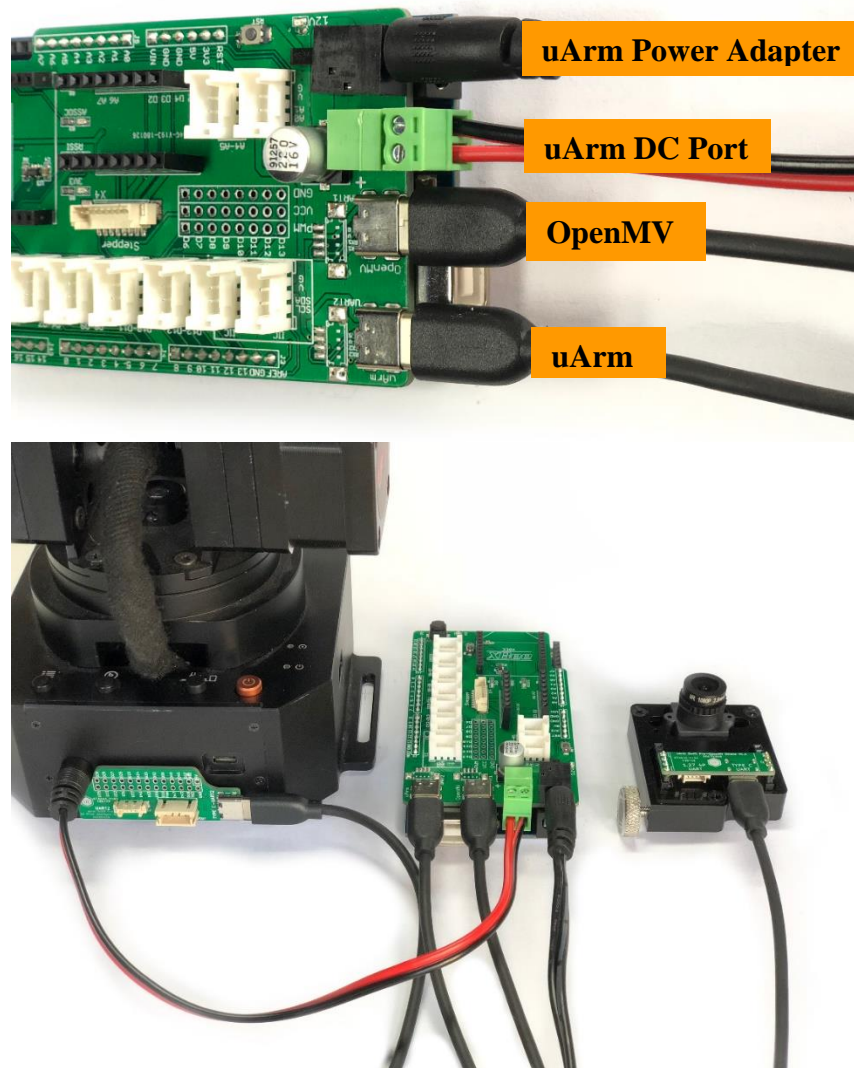
2.3 Attach the OpenMV Kit on the OpenMV Mounting Kit with thumb screw.

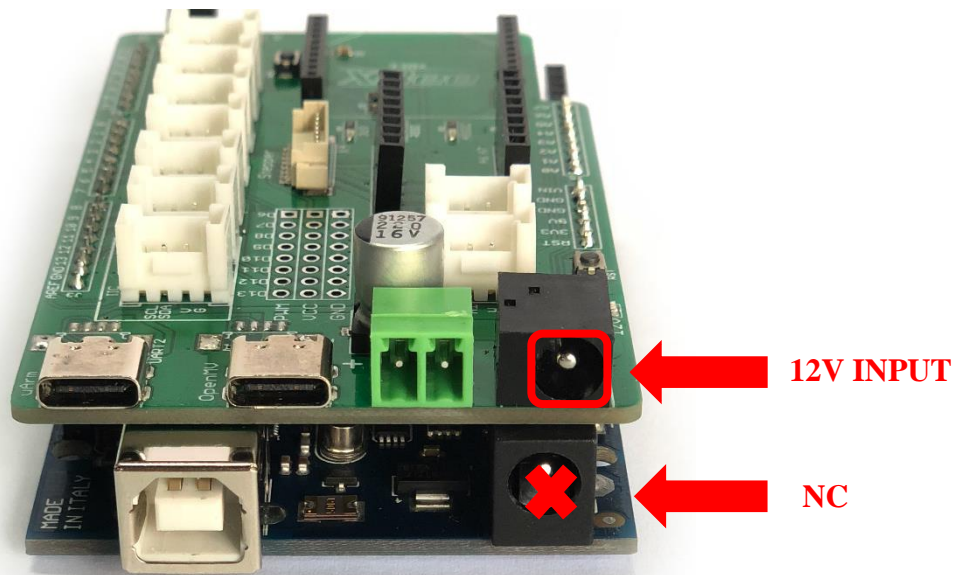


Thumb Screw

### 3. Wired

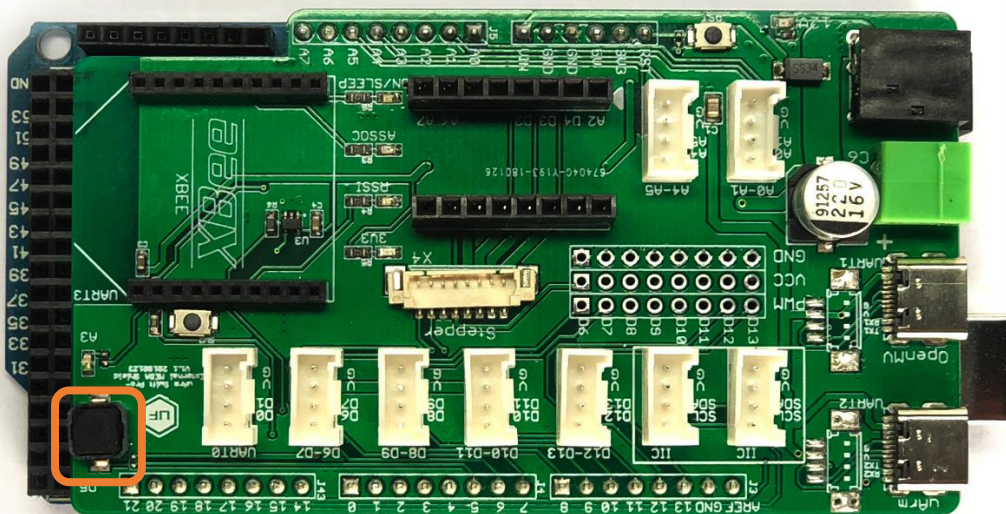
Wired the system as the picture below.





## 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.)

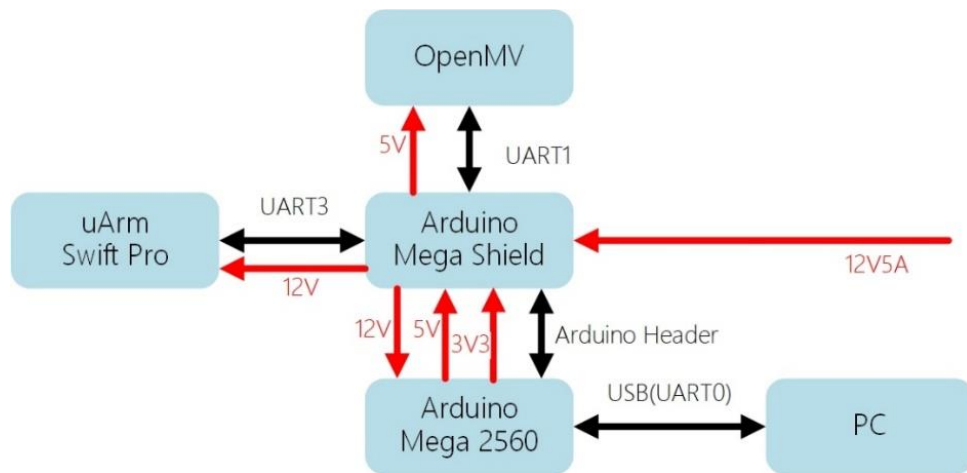


## 5. Watch the demo video

[https://youtu.be/BEpHAaJll\\_g](https://youtu.be/BEpHAaJll_g)

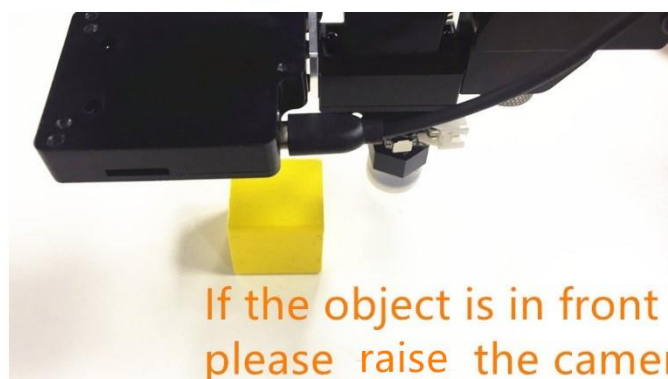
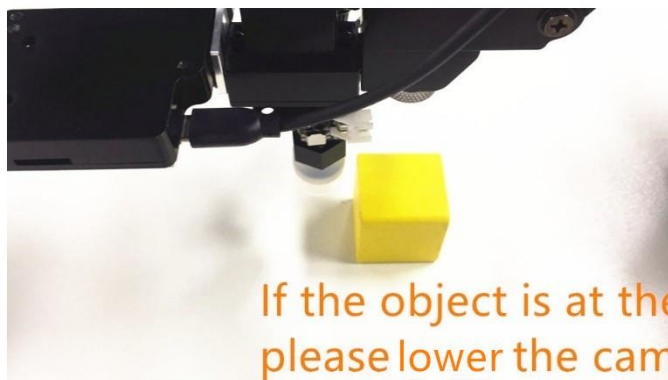
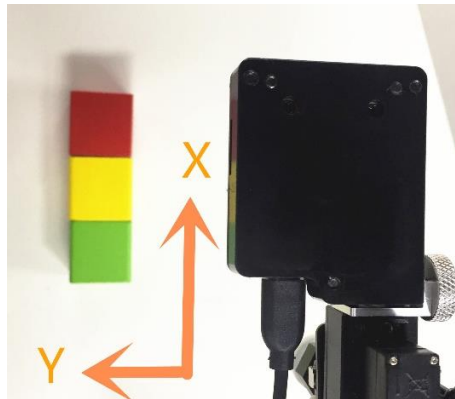


## 6. System Frame



**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.

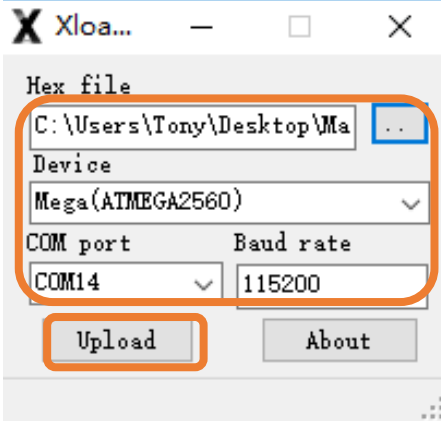
Normally the accuracy of Y is good, X might not be accurate enough. By adjusting the angle of openmv, it can improve the accuracy.



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



## 8. Postscript

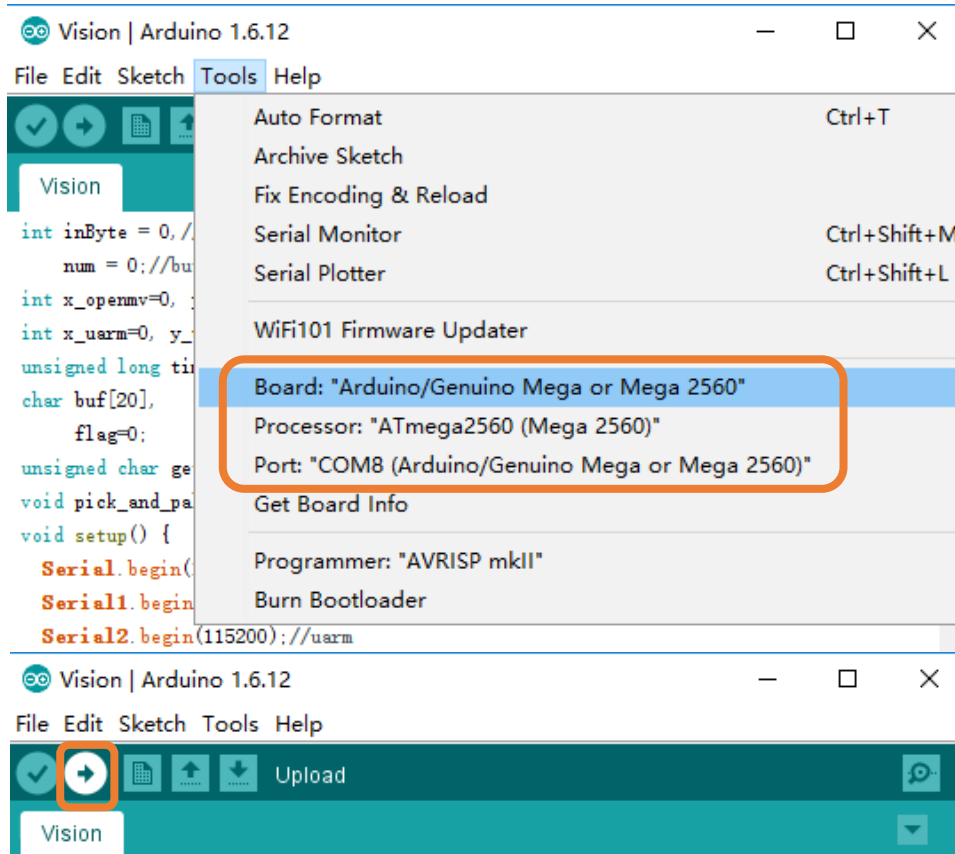
### 8.1 Upload firmware(code) to Arduino Mega 2560

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.

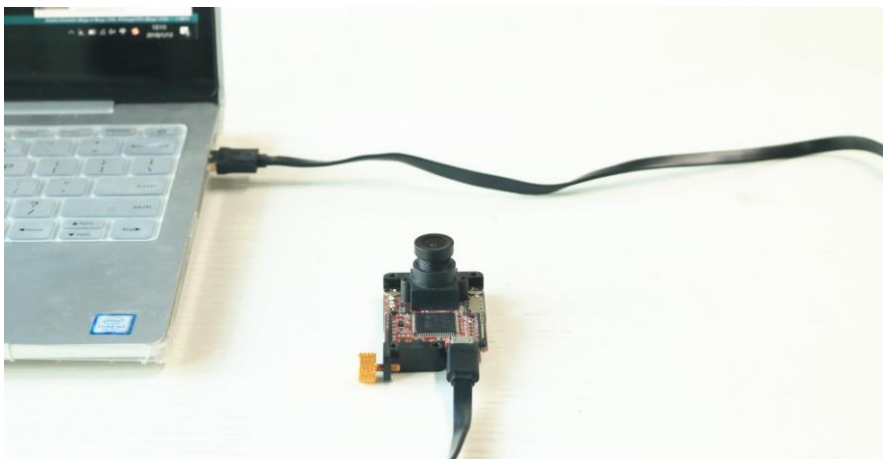


## 8.2 Send tracking code to OpenMV

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.

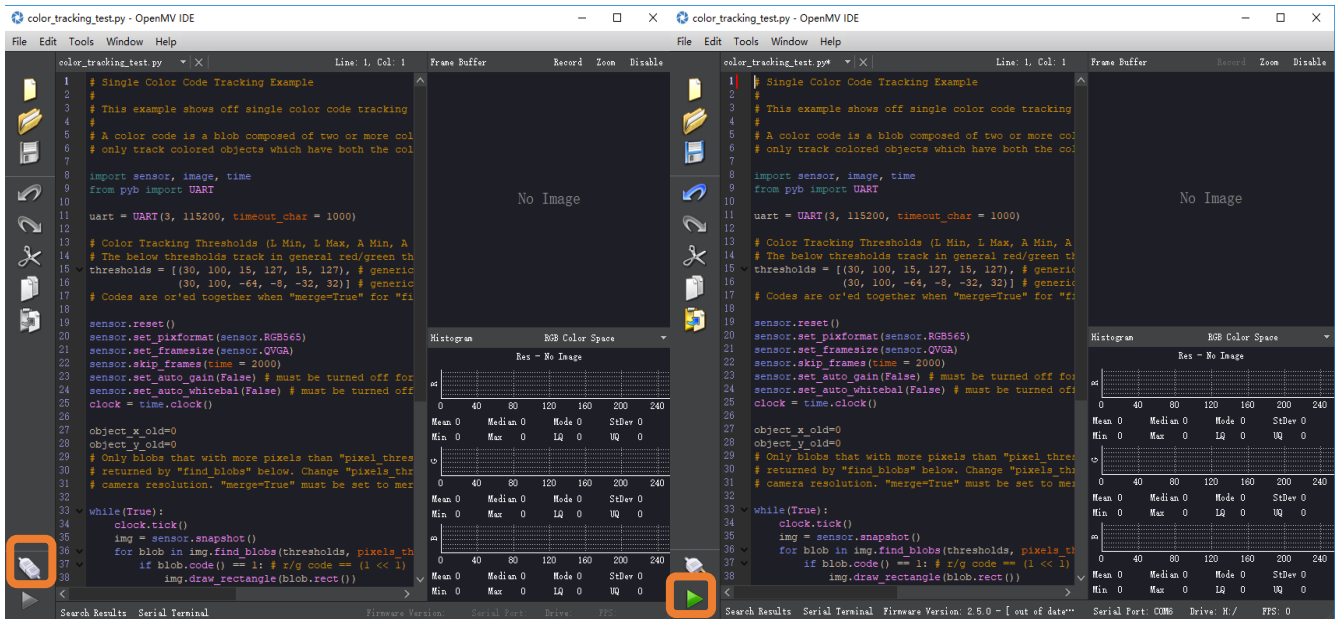
(1) Download OpenMV tracking code: Open the color\_tracking\_test.py (<https://github.com/TonyLeheng/Vision-Pick-and-Place>)

(2) Connect OpenMV to PC with USB cable.

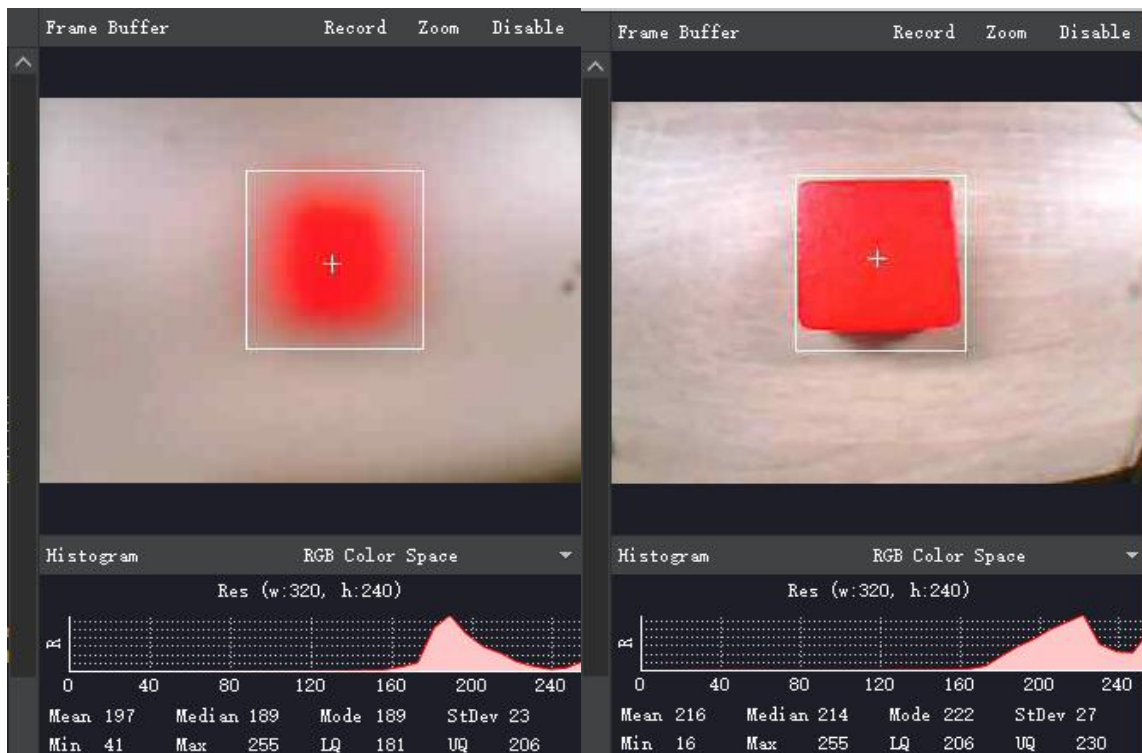


(3) Open OpenMV IDE, load color\_tracking\_test.py (<https://github.com/TonyLeheng/Vision-Pick-and-Place>)

Place, Press “start” button.

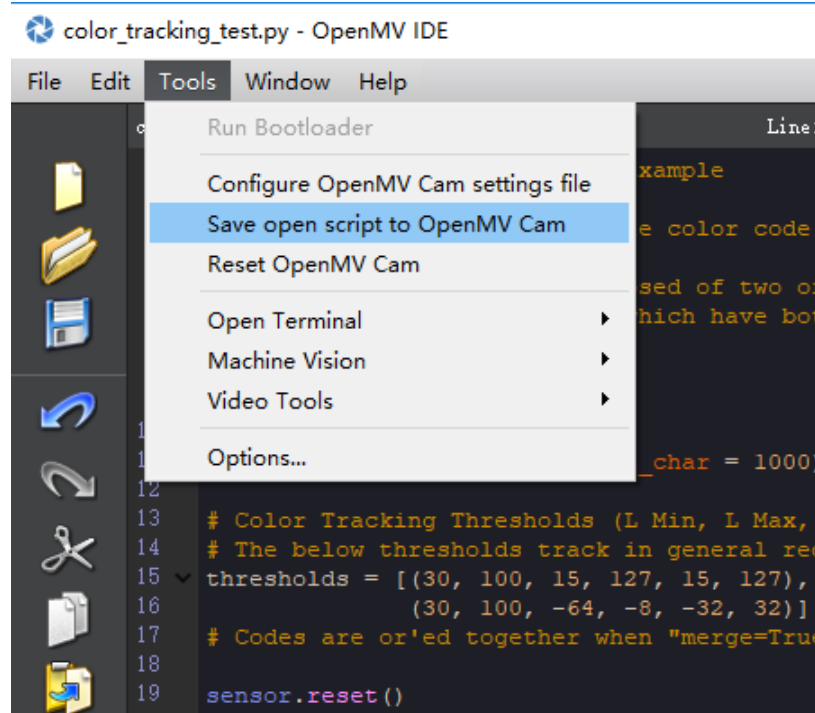


(4) Rotate OpenMV to adjust the focus of OpenMV.



(5) Save the code to OpenMV.





### 8.3 Arduino Shield Extension Port Description



Contact Us: [info@ufactory.cc](mailto:info@ufactory.cc)

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

UFACTORY Website: [www.ufactory.cc](http://www.ufactory.cc)