

Drive p5v04a sunny camera with Raspberry Pi 5

Kevin Lee

Github: <https://github.com/kevin-chengchihlee>

LinkedIn: <https://www.linkedin.com/in/kevin-lee-253645167>

This document shows the easy steps to drive p5v04a sunny camera with a Raspberry Pi 5. Python and picamera2 library are used. Also, some information relevant to the environment setting is mentioned. I also developed a script to drive and take shots for testing and further integration into your application.

Please see the following link for the git repository:

https://github.com/kevin-chengchihlee/p5v04a_camera_easyshot

1. Camera HW installation

Use the cable provided in the kit to connect the camera to the RPi.

Mind that the cable has different sides. Attach the side with metal pads to the connector pins.

Power-OFF RPi before connection.

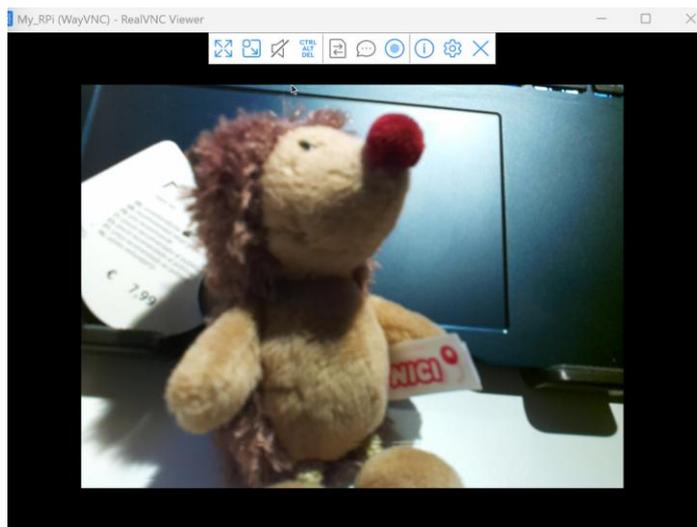


2. Camera Basic Test

On RPi, open the terminal and put the cmd:

```
libcamera-hello -camera 0 -t 0
```

With correct installation, you shall see the camera view.



3. Camera Library

picamera2

Picamera2 is only compatible with **NumPy \leq 1.26**

We are running this on an RPi5, and if we are running it in a virtual env, mins that the **picamera2 is a system package**. Your virtual env probably won't be able to access the system package.

If so, you can change the config in

[your_virtual_env]/pyvenv.cfg

include-system-site-packages = false to...

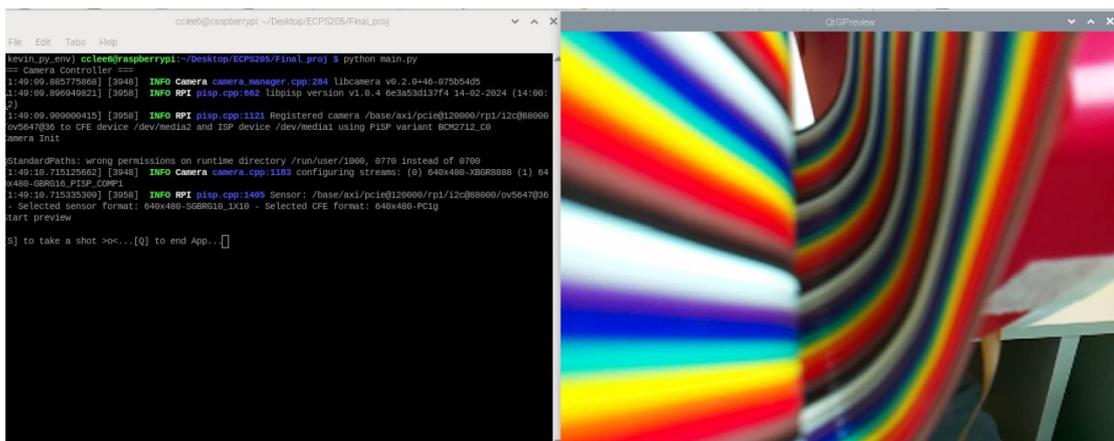
include-system-site-packages = true

And please also mind that **picamera2 is compatible with only numpy 1.24.4 !!! You might need to reinstall for matching.**

4. Run the py script :

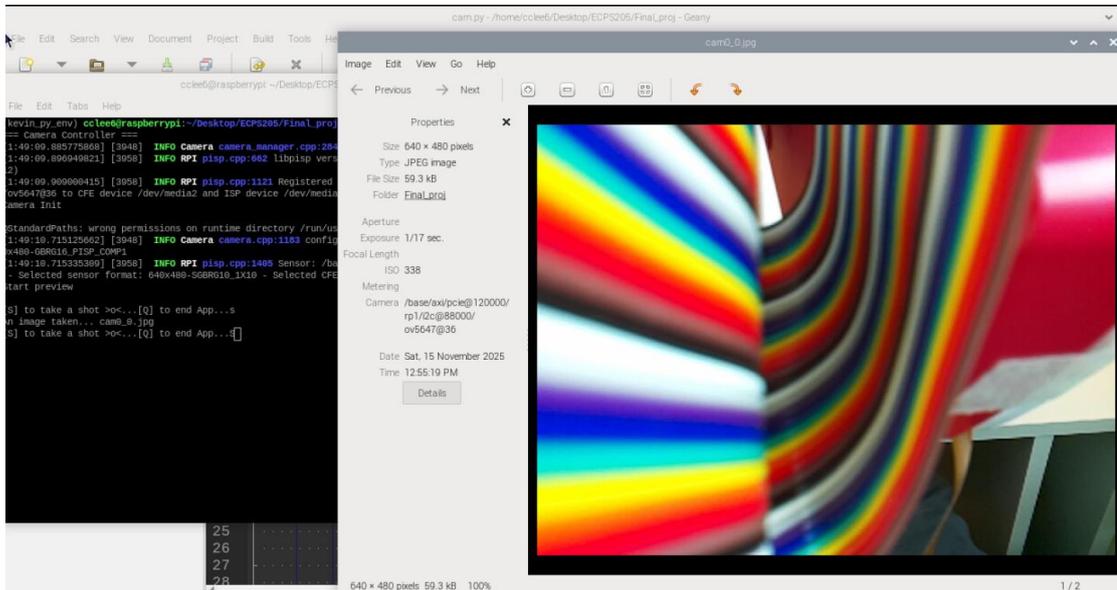
Open a terminal and run the main.py

a.You will see the camera being initialized with a preview window.



b.Type in “s” for taking a shot, “q” for ending application. Other input will be ignored.

Type : “s”



Type : “q”

```

(kevin_py_env) cclee6@raspberrypi:~/Desktop/ECP5205/Final_proj $ python main.py
== Camera Controller ==
[1:40:09.885775868] [3948] INFO Camera camera_manager.cpp:284 libcamera v0.2.0+46-675b54d5
[1:40:09.890949821] [3958] INFO RPI pisp.cpp:682 libpisp version v1.0.4 6e3a53d137f4 14-02-2024 (14:00:12)
[1:40:09.909000415] [3958] INFO RPI pisp.cpp:1121 Registered camera /base/axi/pcie@120000/rp1/12c@88000/ov5647@36 to CFE device /dev/media2 and ISP device /dev/media1 using PISP variant BCM2712_C0
Camera Init
StandardPaths: wrong permissions on runtime directory /run/user/1000, 0770 instead of 0700
[1:40:10.715125602] [3948] INFO Camera camera.cpp:1183 configuring streams: (0) 640x480-XBGR8888 (1) 640x480-GBRG16_PISP_COMP1
[1:40:10.715335390] [3958] INFO RPI pisp.cpp:1405 Sensor: /base/axi/pcie@120000/rp1/12c@88000/ov5647@36 - Selected sensor format: 640x480-5GBRG10_1X10 - Selected CFE format: 640x480-PC1g
Start preview

[s] to take a shot >0<...[Q] to end App...s
An image taken... cam0_0.jpg
[s] to take a shot >0<...[Q] to end App...sq
No image taken...
[s] to take a shot >0<...[Q] to end App...q
No image taken...
Stopping camera application...
Stop preview

(kevin_py_env) cclee6@raspberrypi:~/Desktop/ECP5205/Final_proj $ q

```