A programming introduction to AI models in computer vision

Applications of computer vision

Optical character recognition: python tesseract

3D model building

Warehouse logistics

Motion capture

Surveillance

Biometrics

Helpful references

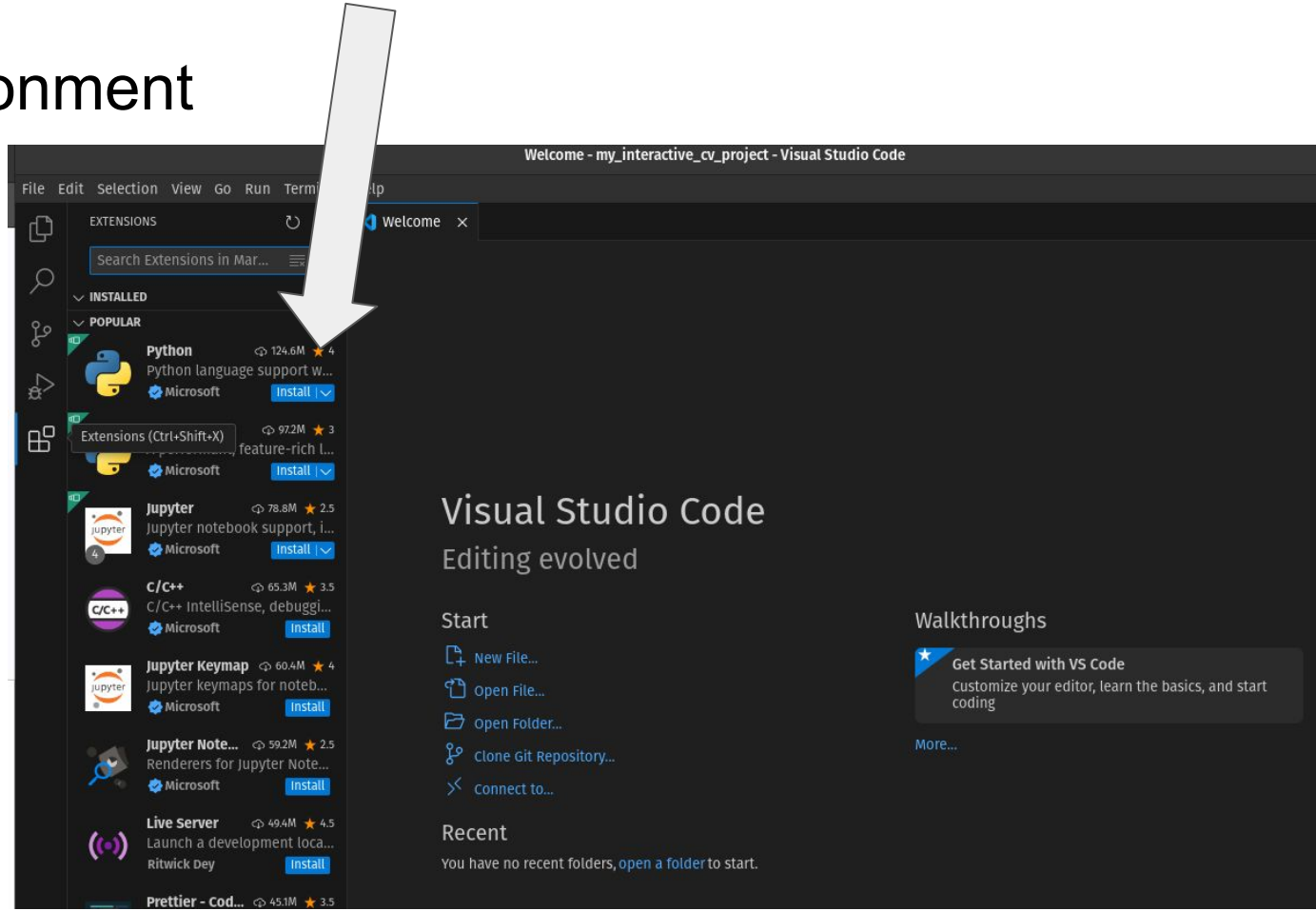
1. VS Code quick start guide for Python
2. OpenCV-Python tutorials
3. Models prediction with Ultralytics YOLO

Setting up your development environment

1. Installing Python https://www.python.org/downloads/
2. Installing VS Code https://code.visualstudio.com/docs/?dv=linux64_deb

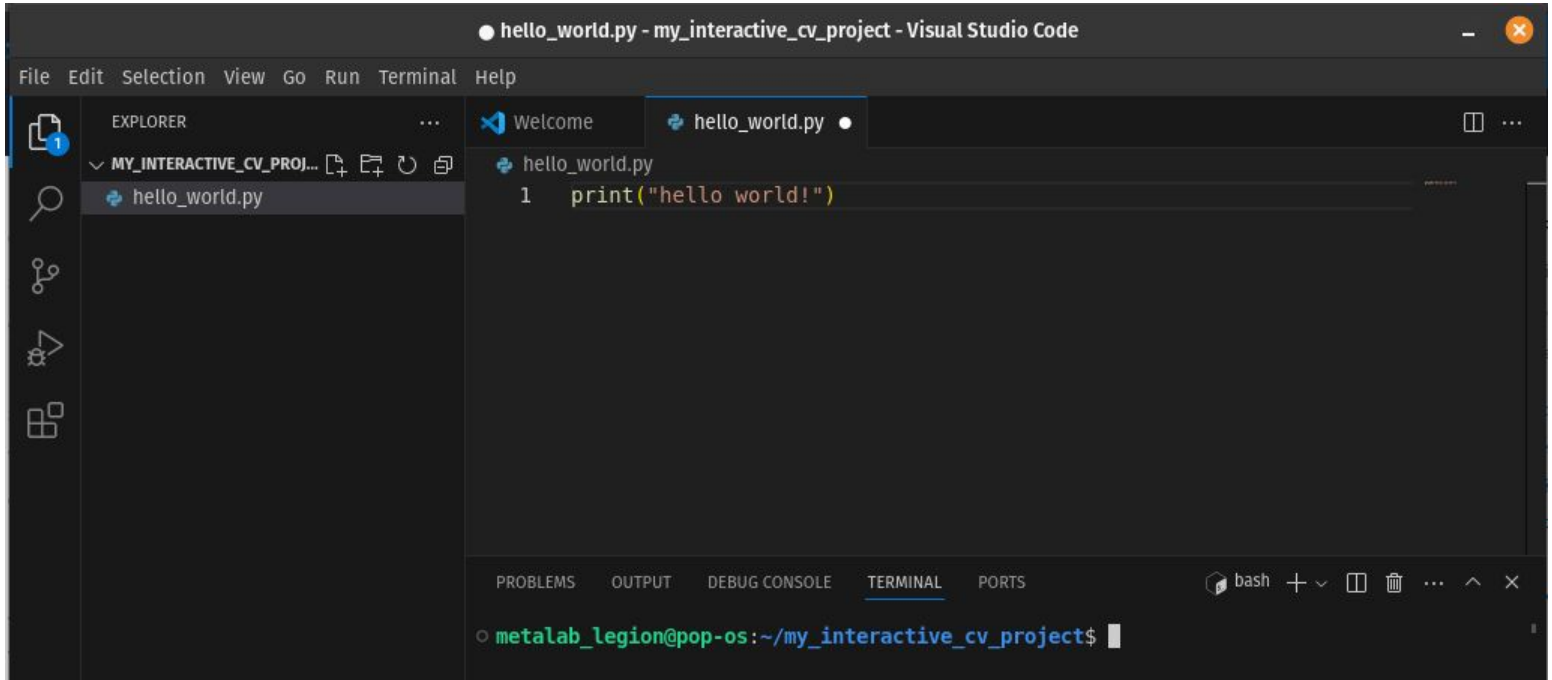
VS Code environment

Let’s install the python extension!

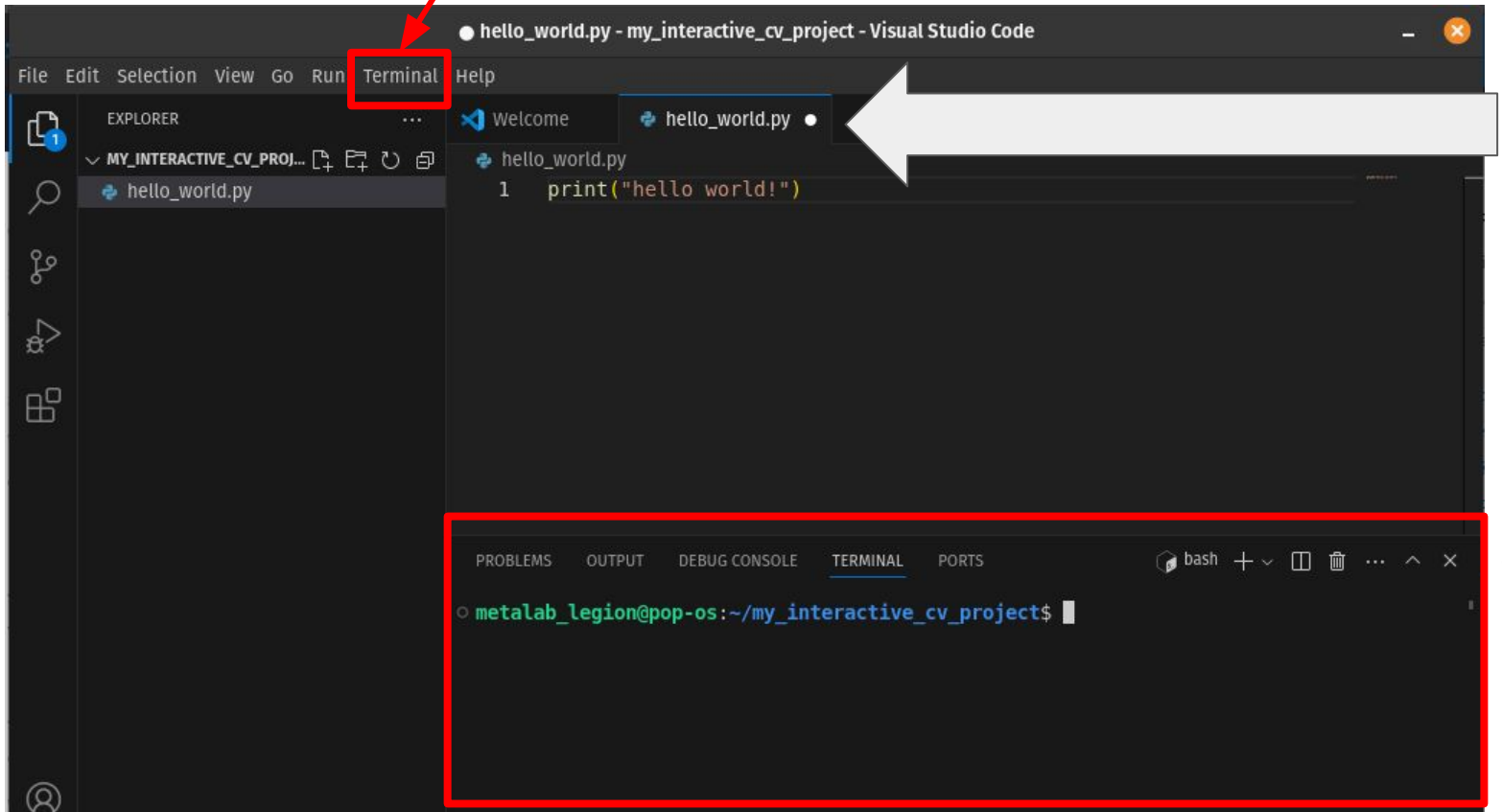


hello_world.py

1. Let’s create a folder called “my_interactive_cv_project”
2. We’ll create a file named “hello_world.py” in it



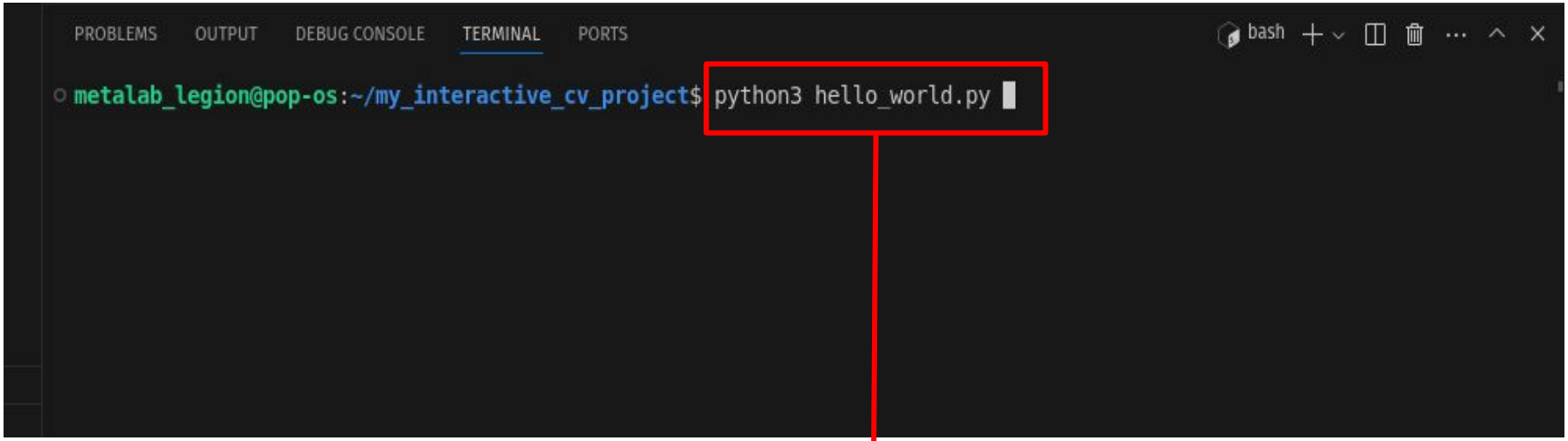
Click here to
open a terminal



Changes
must be
saved!

Terminal is
opened

Using the terminal

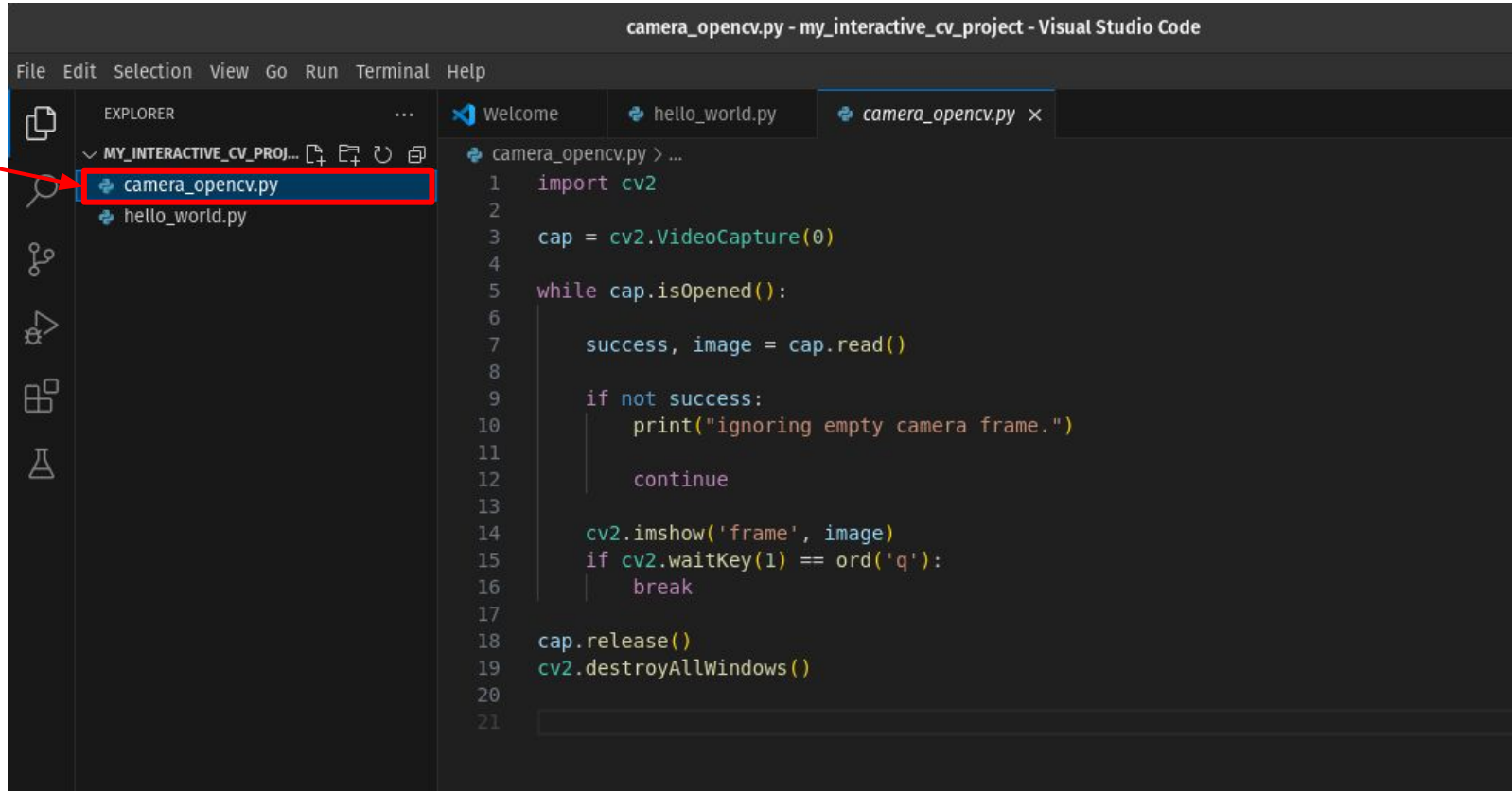


WARNING: Python command may differ based on your OS (try writing “python” rather than “python3”, for example)

Press enter on your keyboard after writing this down

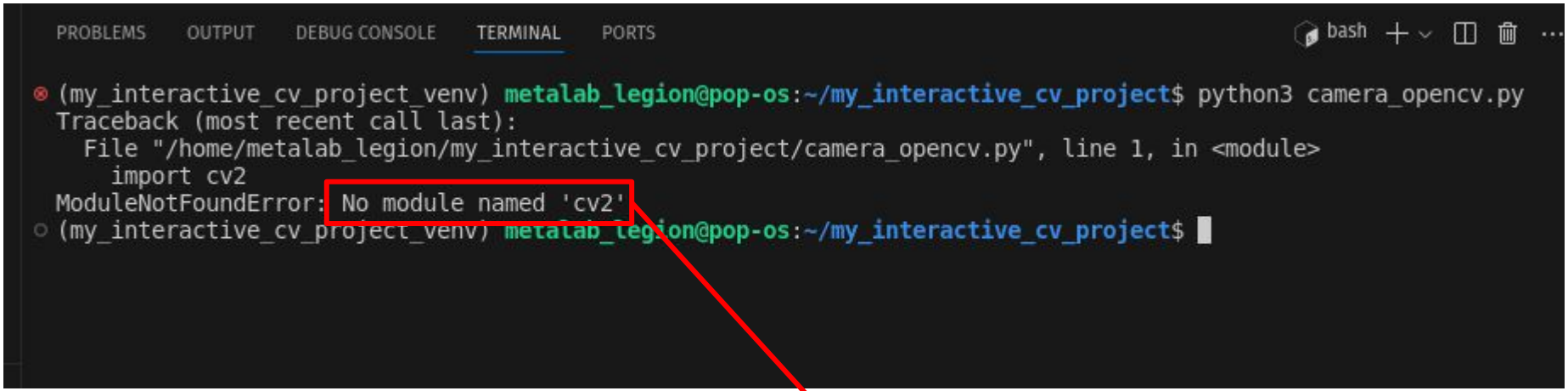
Let’s open a camera with python!

Create a file called camera_opencv.py



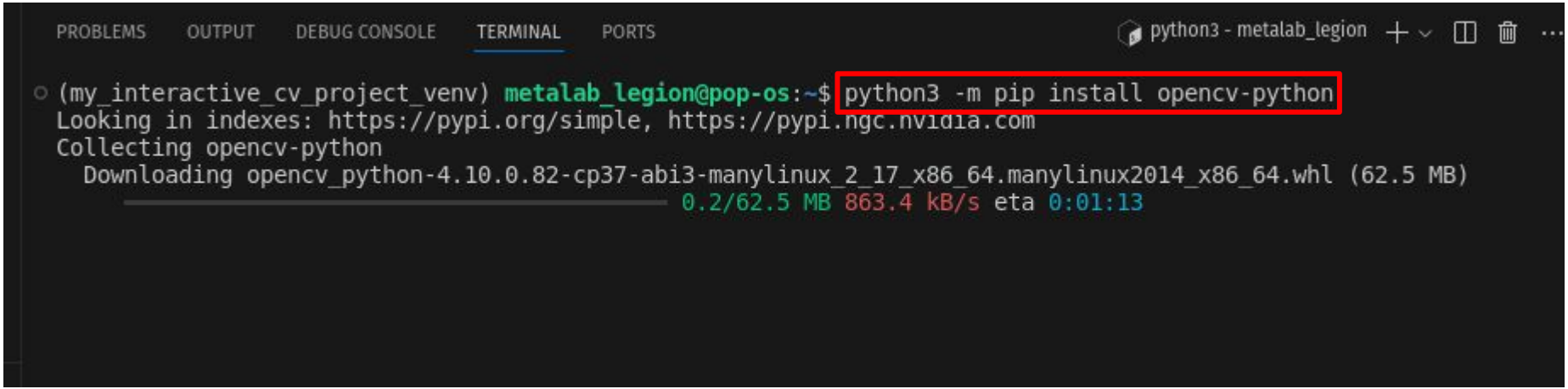
Let’s open a camera with python..??

If we try running the script camera_opencv.py, we’ll probably run into the following error:



We need to install the module cv2!

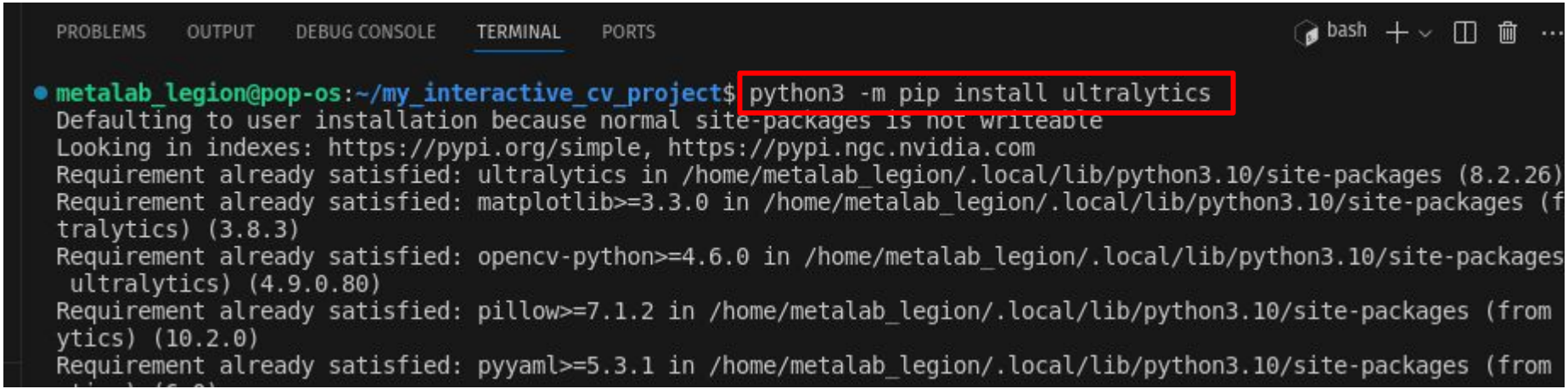
Installing opencv-python



Let’s try running camera_opencv.py again!

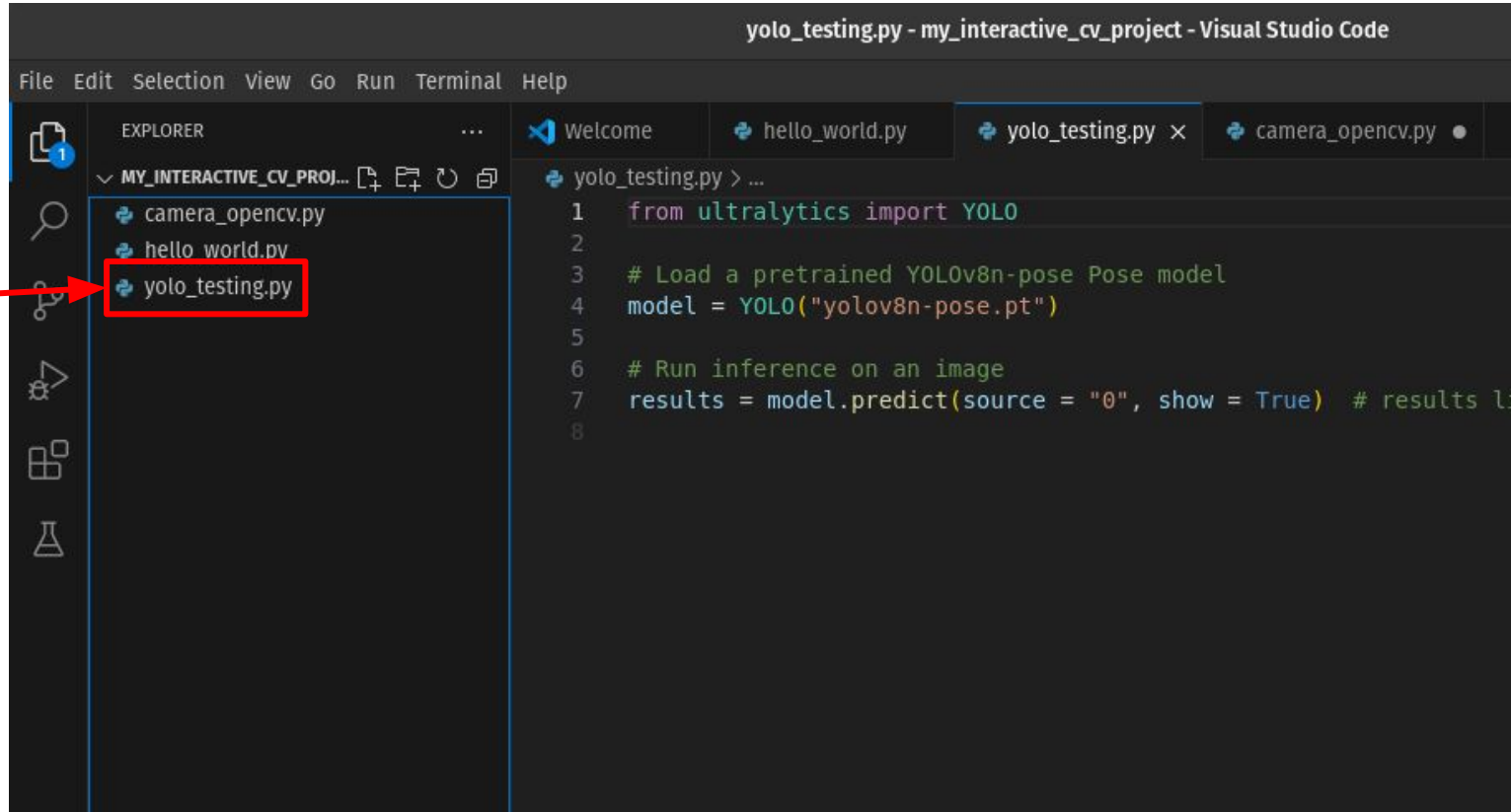
Let’s run a human pose estimation model on our computer!

First, we’ll install the Ultralytics python package



Let’s run a human pose estimation model on our computer!

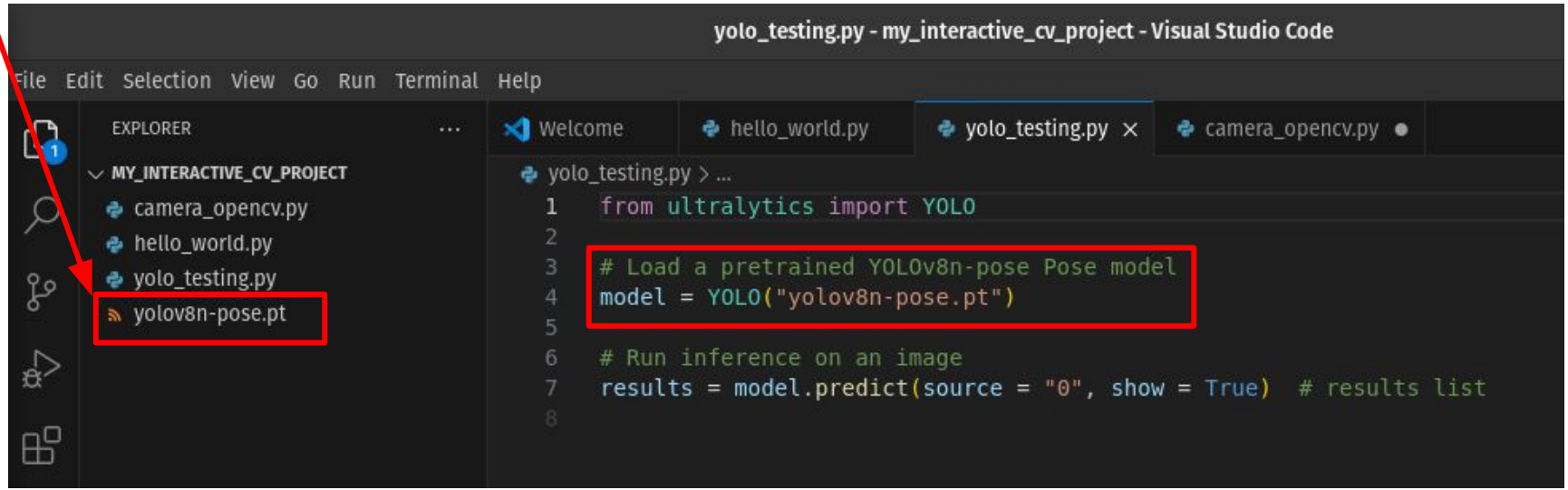
Create a file named “yolo_testing.py”



PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS bash

```
metalab_legion@pop-os:~/my_interactive_cv_project$ python3 yolo_testing.py
/home/metalab_legion/.local/lib/python3.10/site-packages/matplotlib/projections/__init__.py:63: UserWarning: Unable t
o import Axes3D. This may be due to multiple versions of Matplotlib being installed (e.g. as a system package and as
a pip package). As a result, the 3D projection is not available.
  warnings.warn("Unable to import Axes3D. This may be due to multiple versions of "
Downloading https://github.com/ultralytics/assets/releases/download/v8.2.0/yolov8n-pose.pt to 'yolov8n-pose.pt'...
100%|                                                                                | 6.51M/6.51M [00:05<00:00, 1.25MB/s
/home/metalab_legion/.local/lib/python3.10/site-packages/pandas/core/arrays/masked.py:60: UserWarning: Pandas require
s version '1.3.6' or newer of 'bottleneck' (version '1.3.2' currently installed).
  from pandas.core import (

1/1: 0... Success ✅ (inf frames of shape 640x480 at 30.00 FPS)
```



What just happened!?!