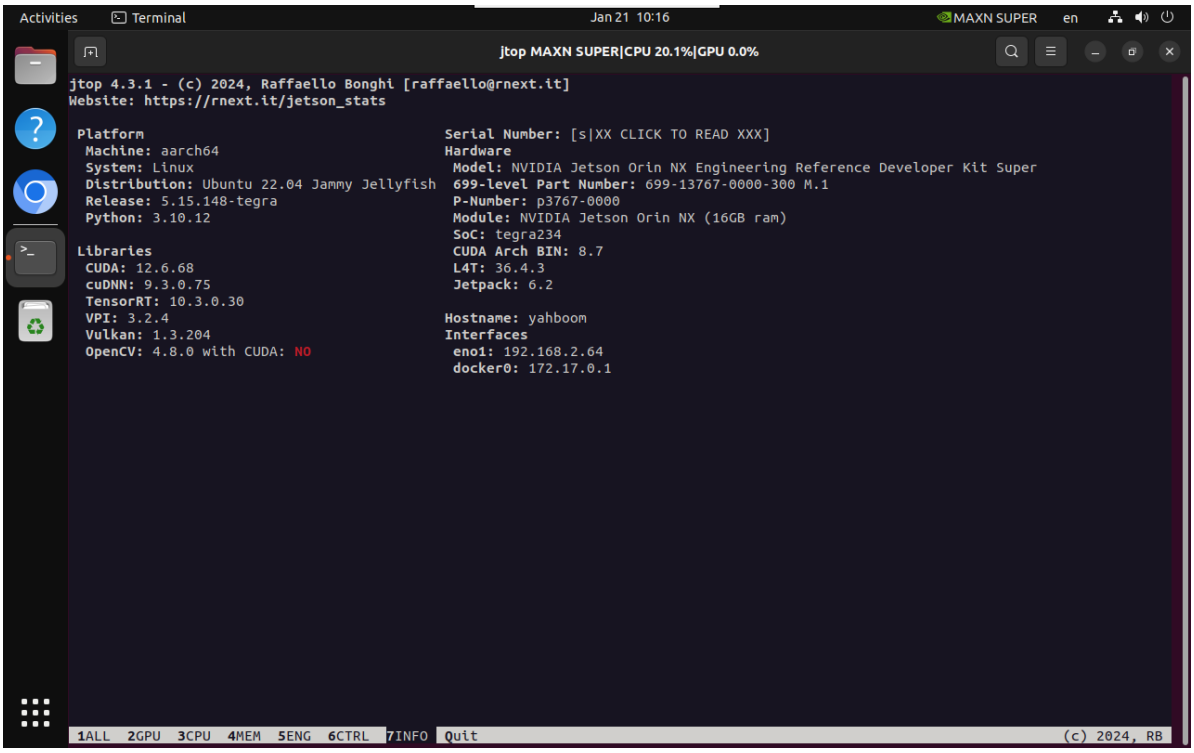
YOLO environment construction

1. System Information



2. Preliminary preparation

```
sudo apt update
sudo apt install python3-pip -y
sudo pip install -U pip
```

3. Install Ultralytics

```
sudo pip3 install ultralytics[export]
```

```
sudo reboot
```

4. Configure GPU acceleration

Since we have already installed torch 2.5.0 and torchvision 0.20 in the previous tutorial, there is no need to run the torch and torchvision installation commands here, only the other software packages need to be installed.

> **torch**

```
sudo pip3 install
https://github.com/ultralytics/assets/releases/download/v0.0.0/torch-
2.5.0a0+872d972e41.nv24.08-cp310-cp310-linux_aarch64.whl
```

> **torchvision**

```
sudo pip3 install
https://github.com/ultralytics/assets/releases/download/v0.0.0/torchvision-
0.20.0a0+afc54f7-cp310-cp310-linux_aarch64.whl
```

> **cuSPARSELt**

```
wget
https://developer.download.nvidia.com/compute/cuda/repos/ubuntu2204/arm64/cuda-
keyring_1.1-1_all.deb
sudo dpkg -i cuda-keyring_1.1-1_all.deb
sudo apt-get update
sudo apt-get -y install libcusparselt0 libcusparselt-dev
```

> **onnxruntime-gpu**

```
sudo pip3 install
https://github.com/ultralytics/assets/releases/download/v0.0.0/onnxruntime_gpu-
1.20.0-cp310-cp310-linux_aarch64.whl
```

Note: Using onnxruntime-gpu requires installing a specific version of numpy. If it is not 1.23.5, you can run the following command to install the specified version

```
sudo pip3 install numpy==1.23.5
```

4. Verify the installation

> **Validating Ultralytics**

```
python3 -c "import ultralytics; print(ultralytics.__version__)"
```

> **Verifying Torch**

```
python3 -c "import torch; print(torch.__version__);
print(torch.cuda.is_available())"
```

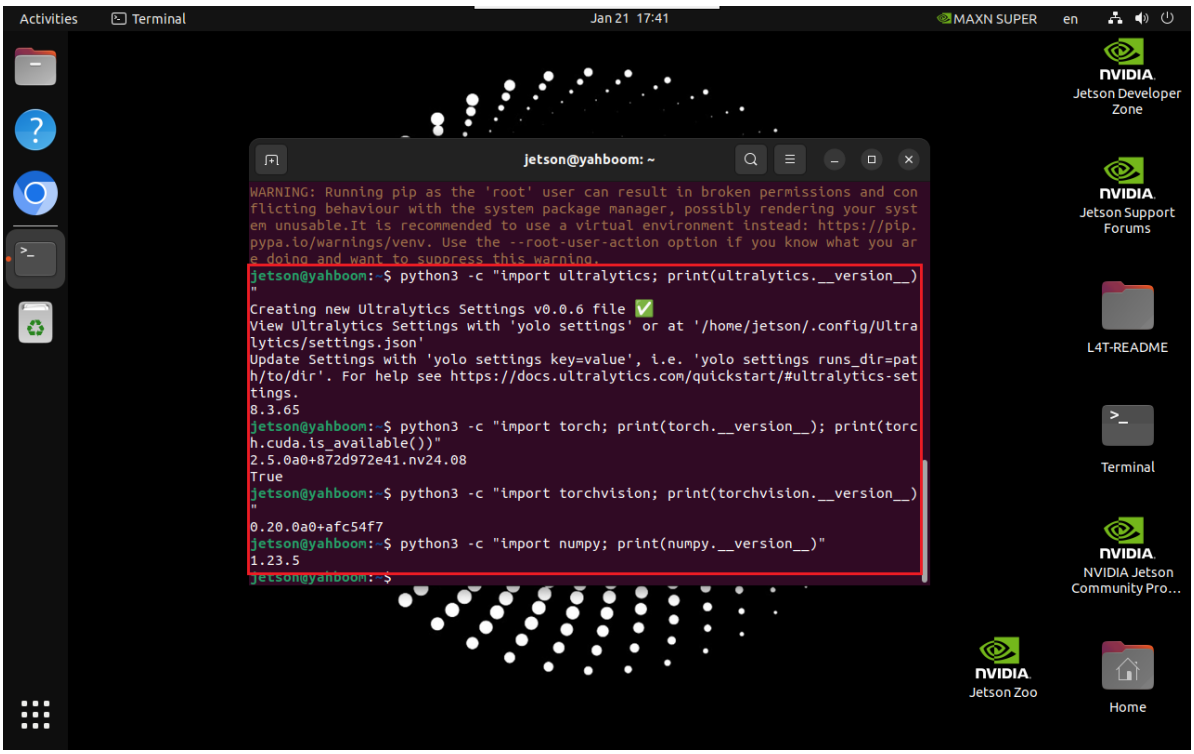
> **Verifying Torchvision**

```
python3 -c "import torchvision; print(torchvision.__version__)"
```

> Verify Numpy

```
python3 -c "import numpy; print(numpy.__version__)"
```

Note: The ultralytics version will be updated later, please refer to the version information queried in the system

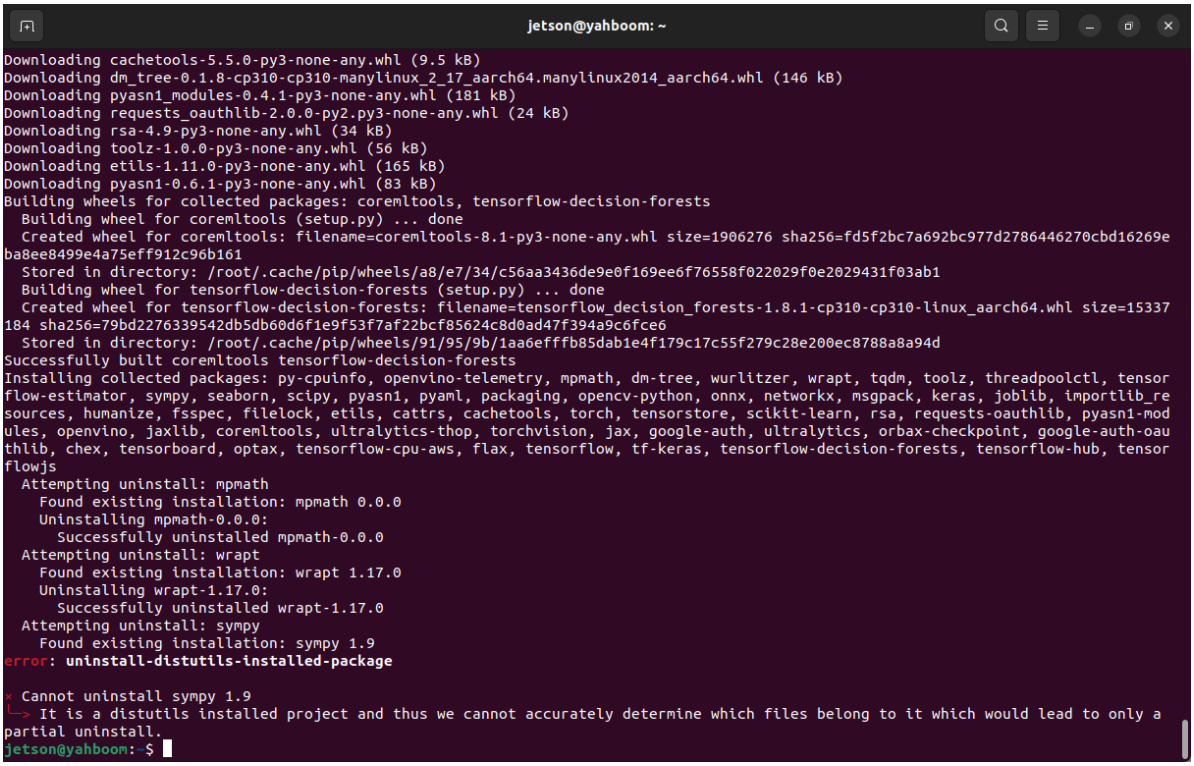


Common errors

Cannot uninstall sympy

Error phenomenon

Cannot uninstall sympy



Solution

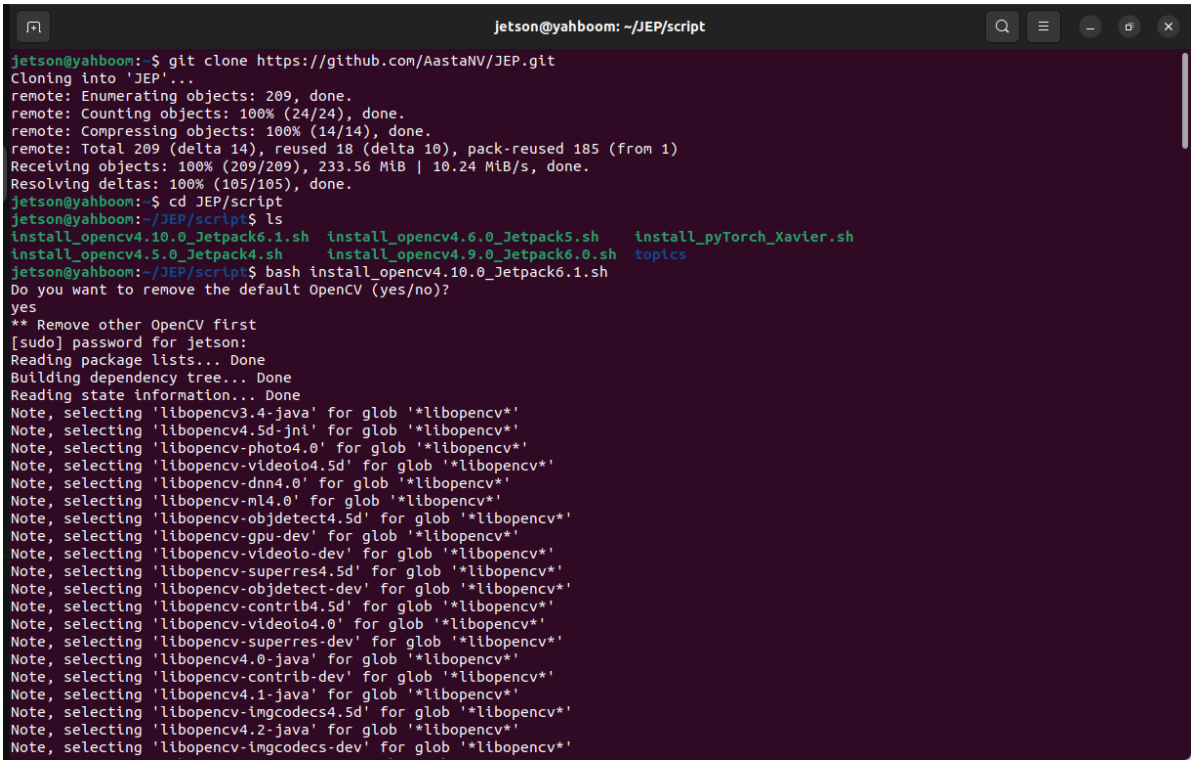
Uninstall python3-sympy: Reinstall PyTorch after uninstallation

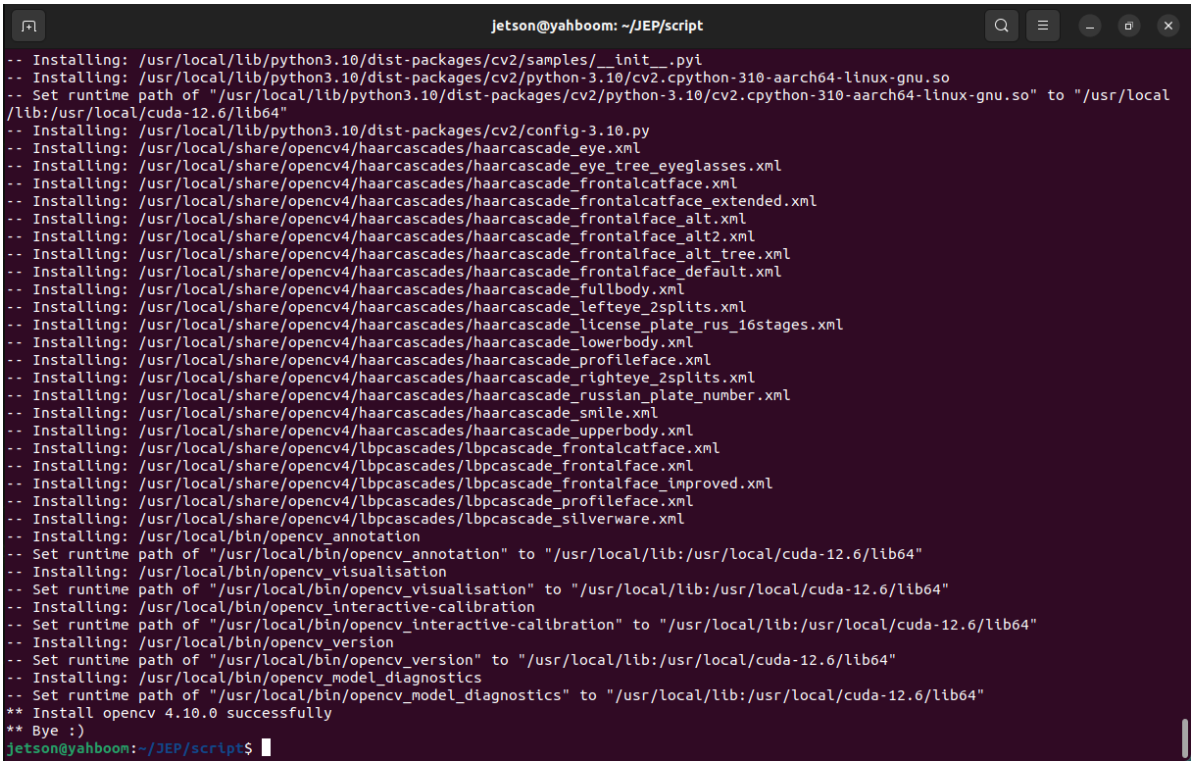
```
sudo apt remove python3-sympy -y
```

CSI camera cannot be called

Compile OpenCV from source code and enable GStreamer support: basically the entire process is automatically installed. It is recommended to uninstall the old version and install the new version (the script automatically enables CUDA and GStreamer functions)

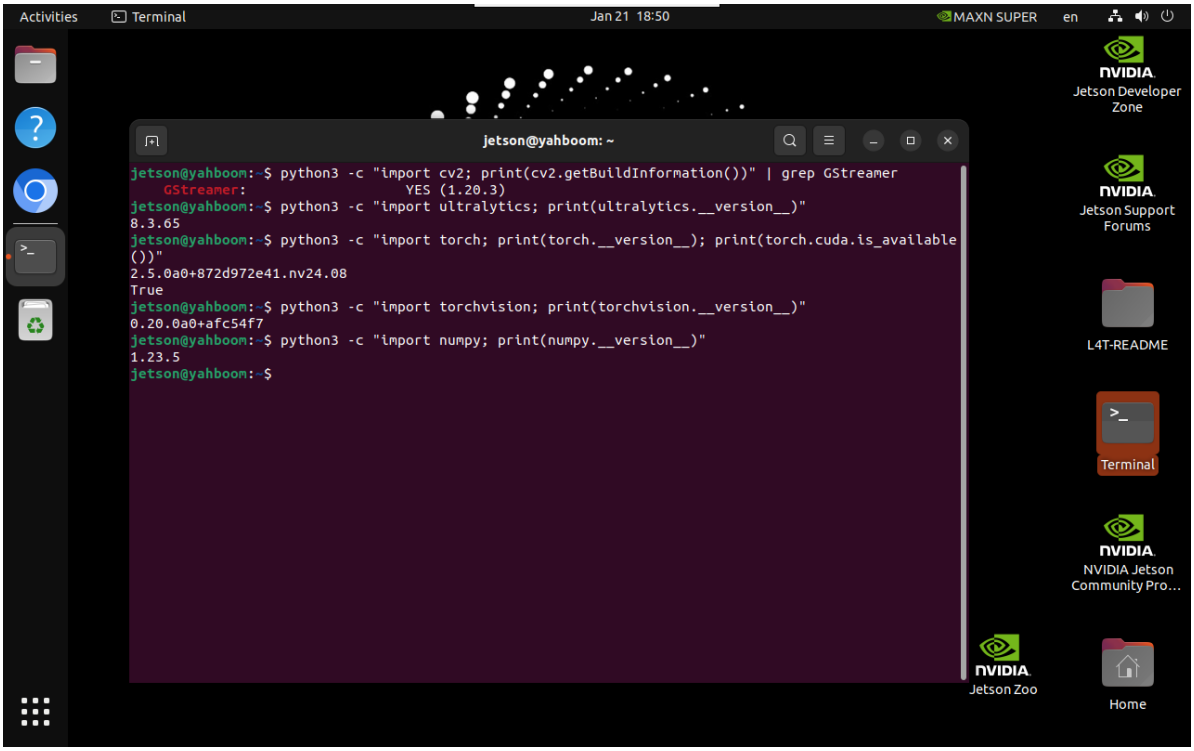
```
git clone https://github.com/AastaNV/JEP.git
cd JEP/script
bash install_opencv4.10.0_Jetpack6.1.sh
```

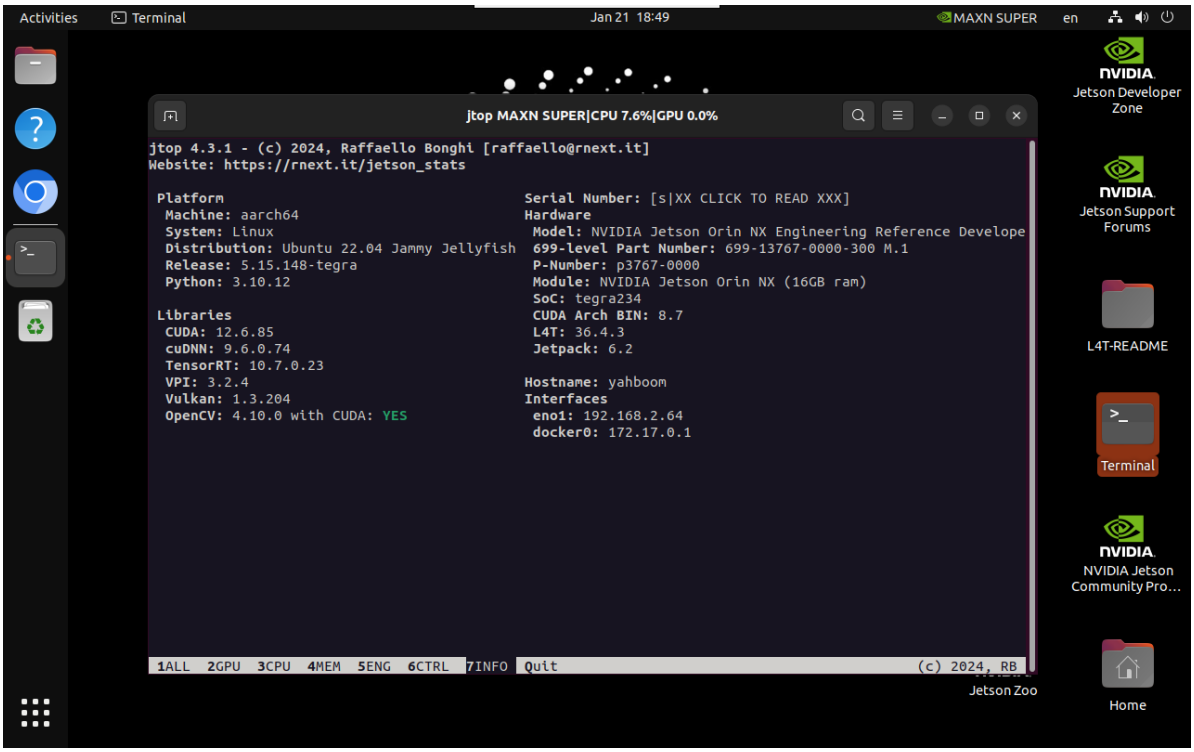




Verify the environment

```
python3 -c "import cv2; print(cv2.getBuildInformation())" | grep GStreamer
python3 -c "import ultralytics; print(ultralytics.__version__)"
python3 -c "import torch; print(torch.__version__);
print(torch.cuda.is_available())"
python3 -c "import torchvision; print(torchvision.__version__)"
python3 -c "import numpy; print(numpy.__version__)"
jtop
```





References

https://docs.ultralytics.com/guides/nvidia-jetson/

https://github.com/AastaNV/JEP