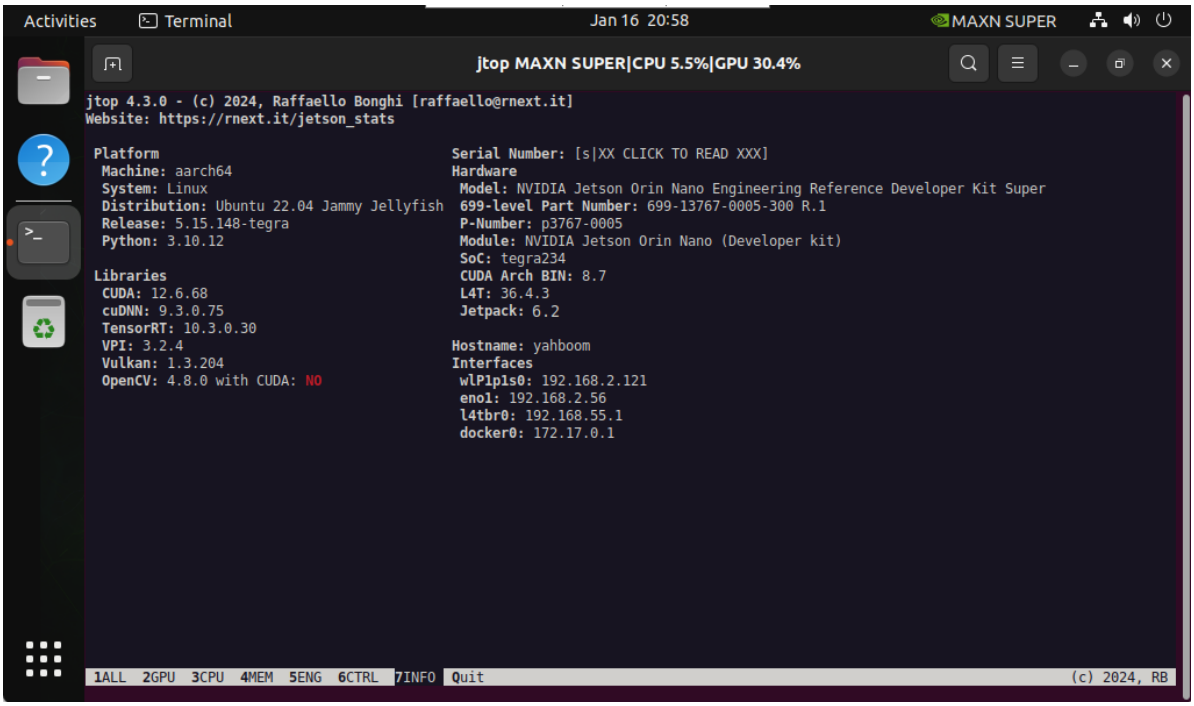
YOLO Environment Setup

1. System Information



2. Prerequisites

```
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

Install the following software packages including torch 2.5.0, torchvision 0.20, cuSPARSELt, and onnxruntime-gpu:

> **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's not version 1.23.5, you can run the following command to install the specified version

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

5. Verify Installation

> **Verify Ultralytics**

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

> **Verify Torch**

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

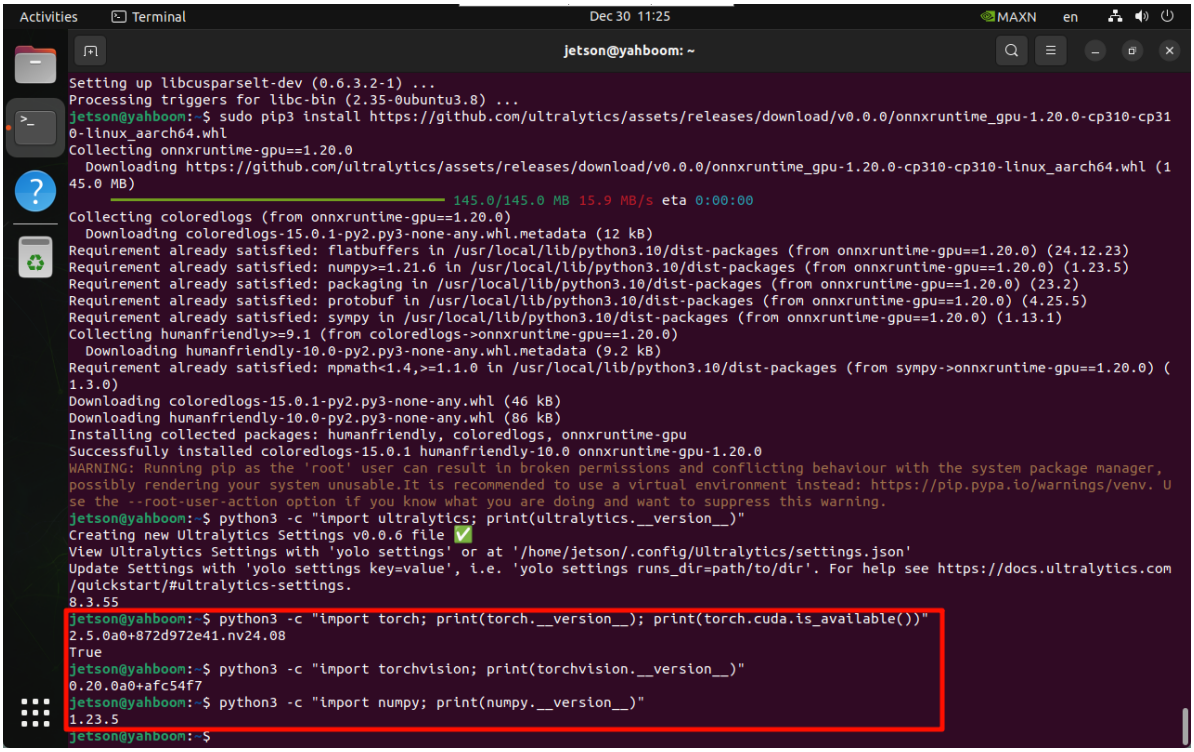
> **Verify Torchvision**

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

> Verify Numpy

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

Note: The ultralytics version will be updated later. Refer to the version information queried in the system for the actual version.

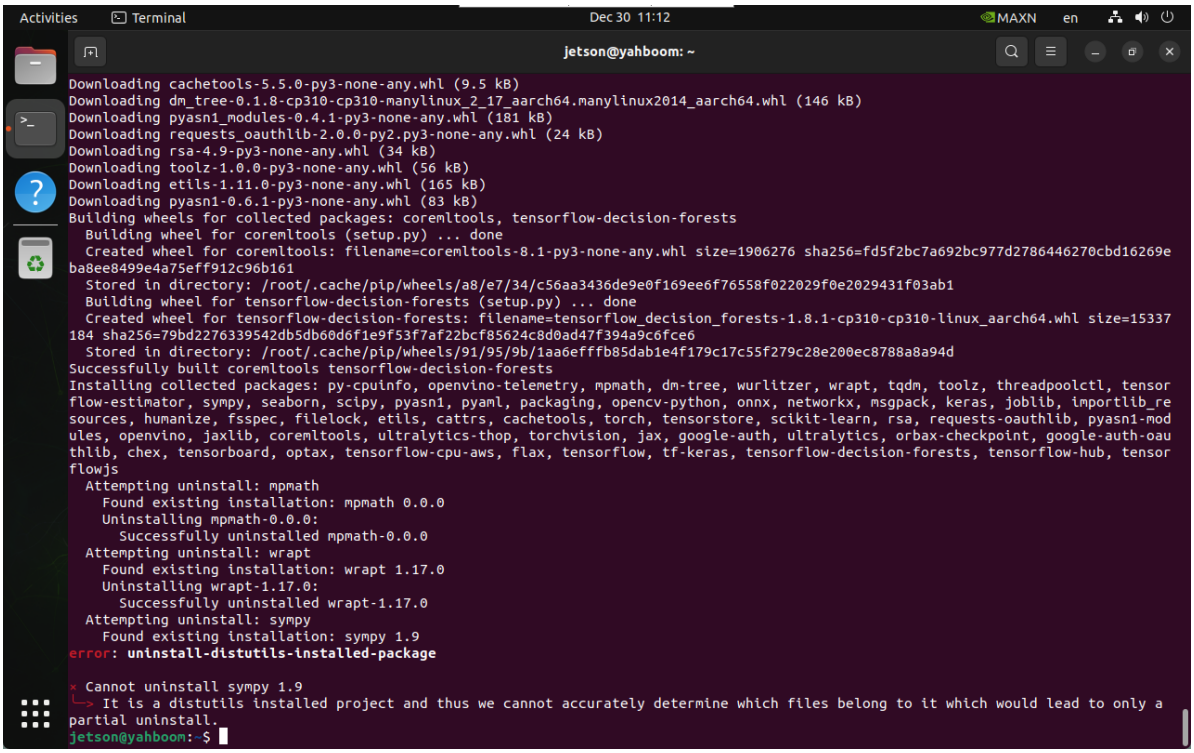


Common Errors

Cannot uninstall sympy

Error Phenomenon

Unable to uninstall sympy



Solution

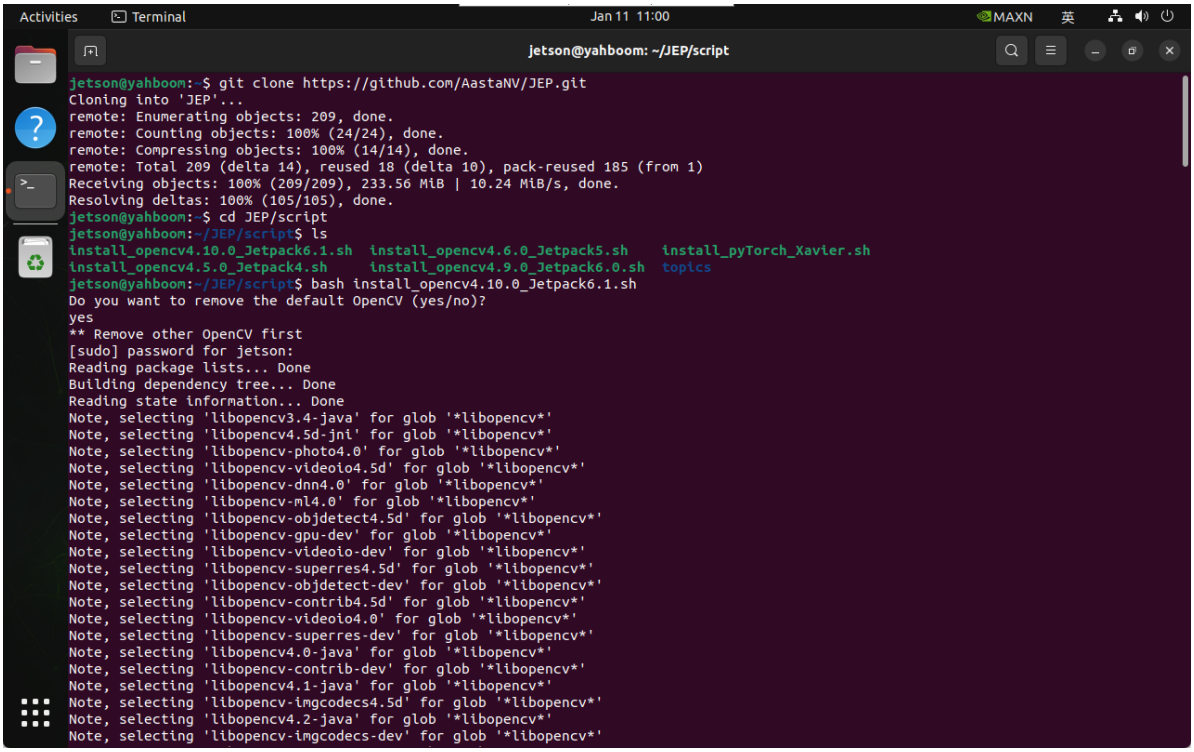
Uninstall python3-sympy: After uninstallation is complete, reinstall PyTorch

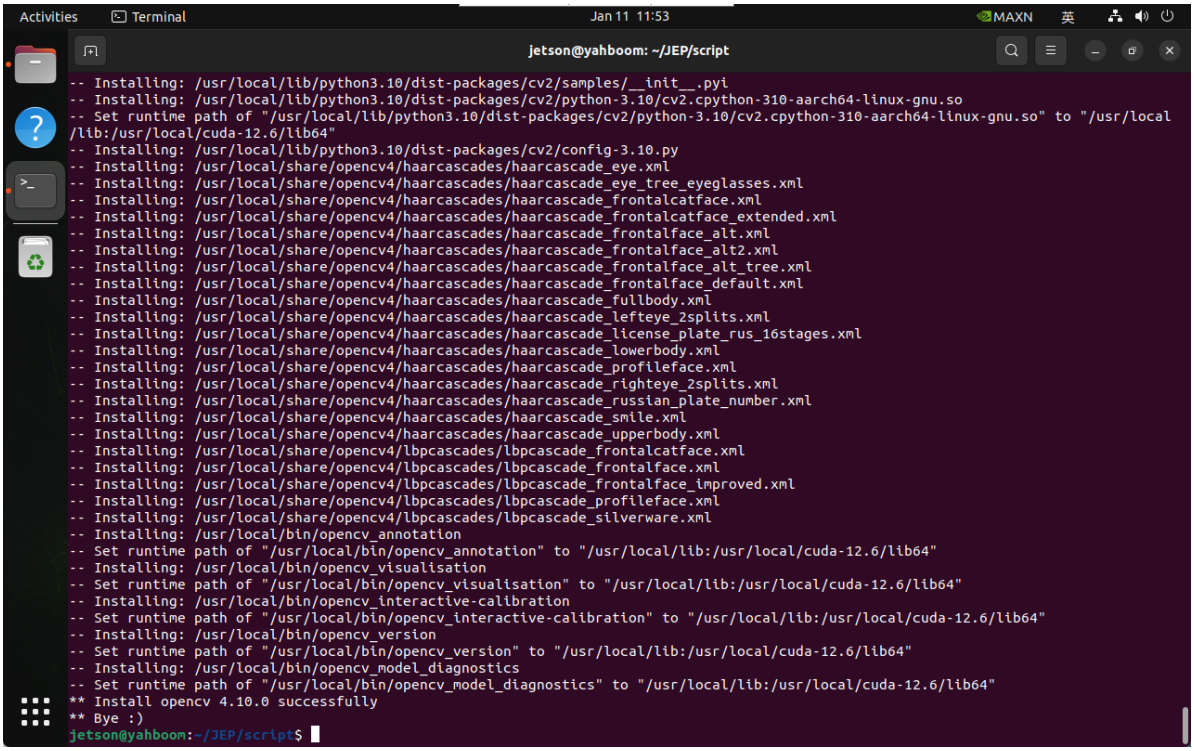
```
sudo apt remove python3-sympy -y
```

CSI Camera Cannot Be Called

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

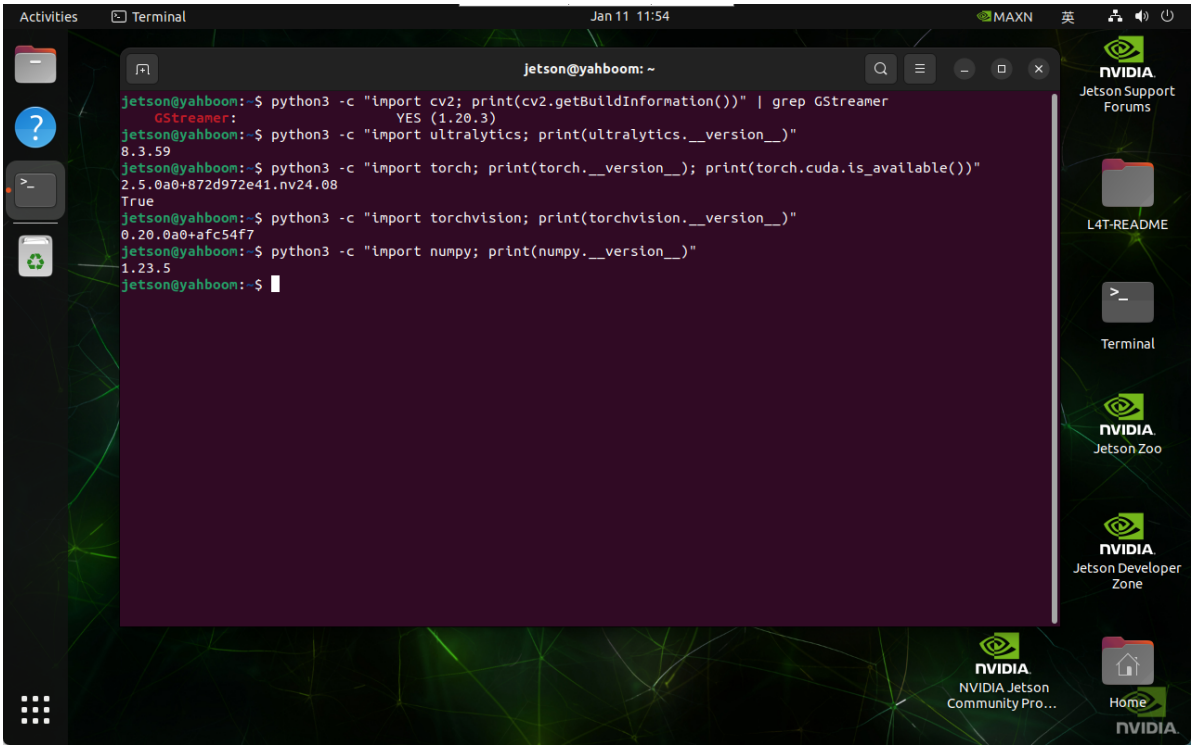
```
git clone https://github.com/AastaNV/JEP.git
cd JEP/script
bash install_opencv4.10.0_Jetpack6.1.sh
```

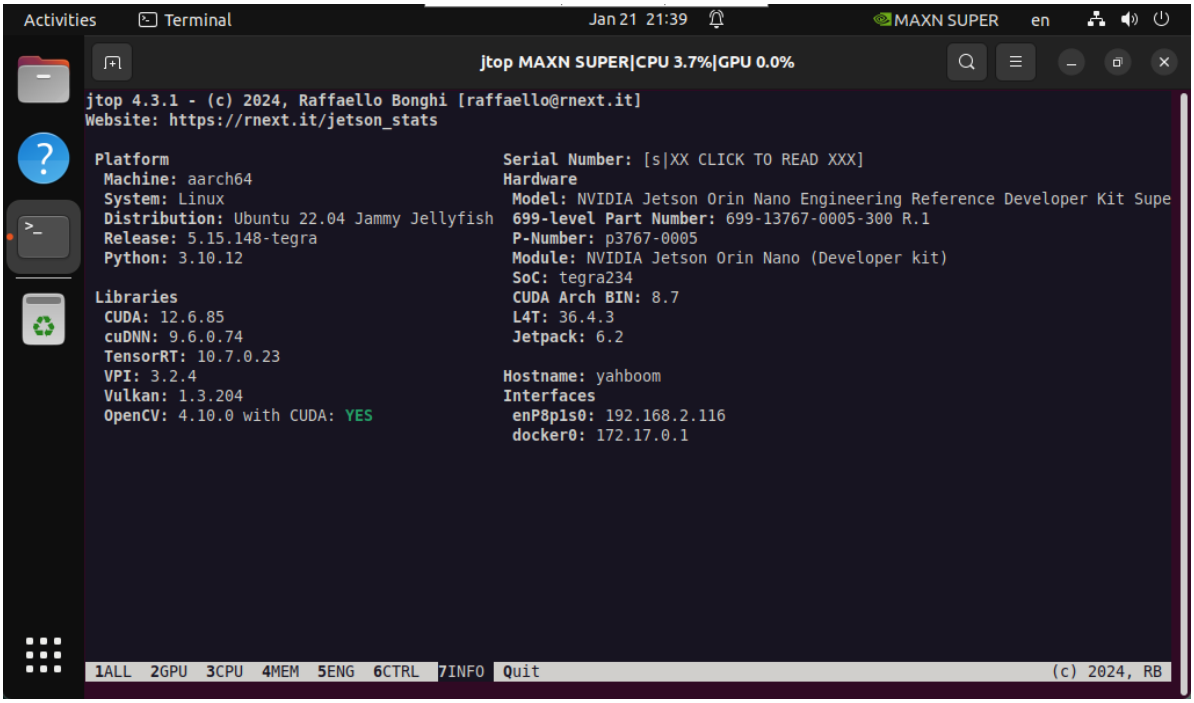




Verify Environment

```
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