

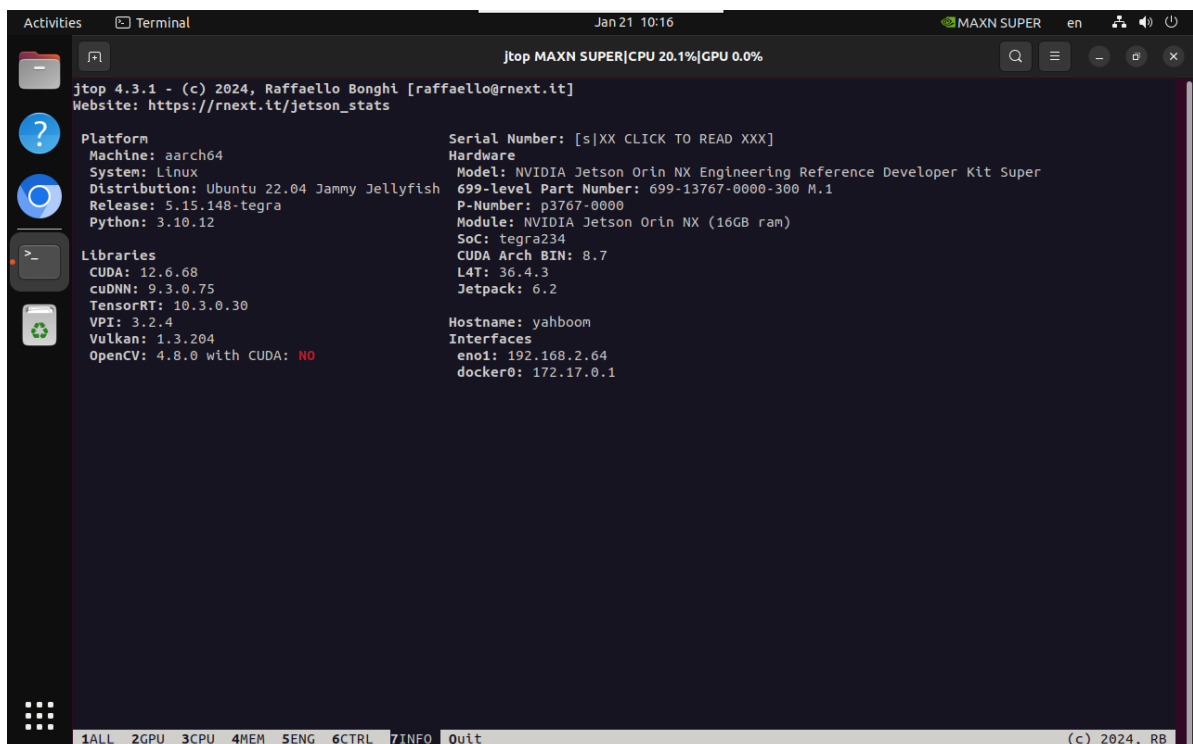
TensorFlow

TensorFlow

1. System information
 2. Install TensorFlow
 - 2.1. Offline installation
 - 2.2. Online installation
 - 2.3. Install Numpy
 3. Verify installation
- References

TensorFlow is an end-to-end machine learning and deep learning framework developed and open-sourced by Google, used to build and train various types of machine learning models.

1. System information



```
Activities Terminal Jan 21 10:16 MAXN SUPER en
jtop MAXN SUPER|CPU 20.1%|GPU 0.0%
jtop 4.3.1 - (c) 2024, Raffaello Bonghi [raffaello@rnext.it]
Website: https://rnext.it/jetson_stats

Platform
Machine: aarch64
System: Linux
Distribution: Ubuntu 22.04 Jammy Jellyfish
Release: 5.15.148-tegra
Python: 3.10.12

Serial Number: [s|XX CLICK TO READ XXX]
Hardware
Model: NVIDIA Jetson Orin NX Engineering Reference Developer Kit Super
699-Level Part Number: 699-13767-0000-300 M.1
P-Number: p3767-0000
Module: NVIDIA Jetson Orin NX (16GB ram)
SoC: tegra234
CUDA Arch BIN: 8.7
L4T: 36.4.3
Jetpack: 6.2

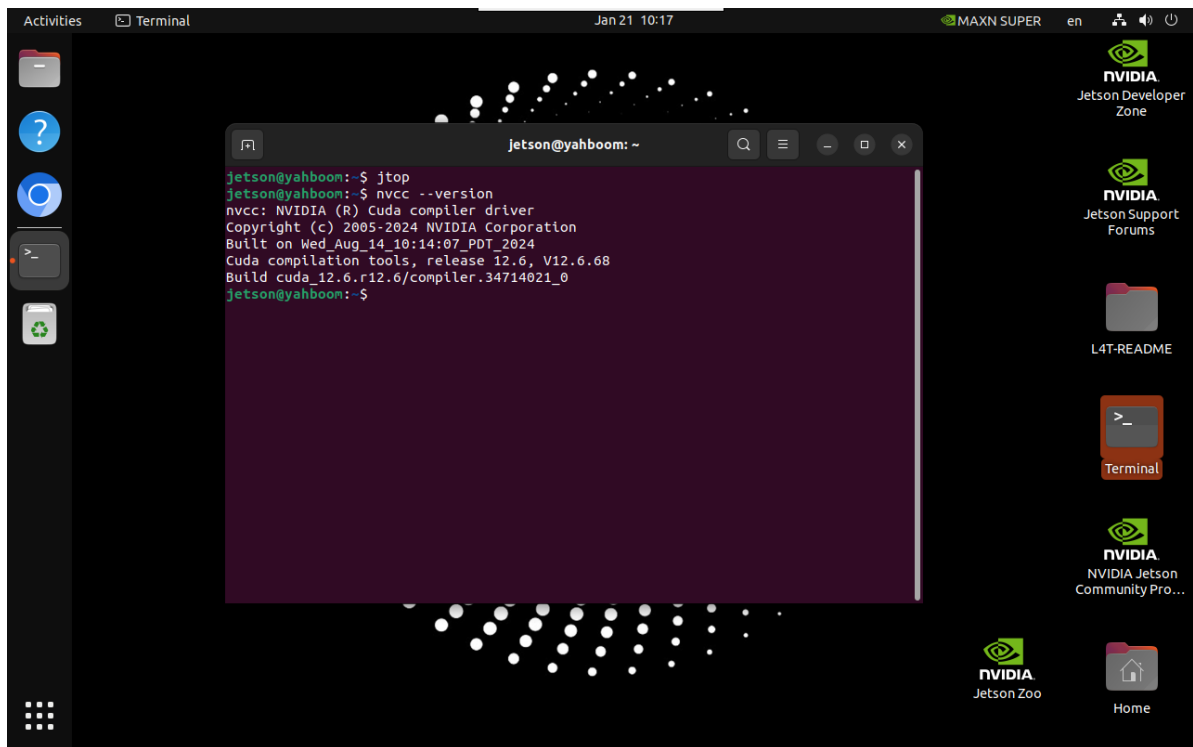
Libraries
CUDA: 12.6.68
cuDNN: 9.3.0.75
TensorRT: 10.3.0.30
VPI: 3.2.4
Vulkan: 1.3.204
OpenCV: 4.8.0 with CUDA: NO

Hostname: yahboom
Interfaces
eno1: 192.168.2.64
docker0: 172.17.0.1

1ALL 2GPU 3CPU 4MEM 5ENG 6CTRL 7INFO Quit (c) 2024, RB
```

Query CUDA version

```
nvcc --version
```



2. Install TensorFlow

To install TensorFlow, choose either offline or online!

2.1. Offline installation

Manually go to the download website to download the specified TensorFlow version.

Download URL: <https://developer.download.nvidia.com/compute/redist/jp/v61/tensorflow/>

```
cd Downloads/
```

```
sudo pip3 install tensorflow-2.16.1+nv24.08-cp310-cp310-linux_aarch64.whl
```

2.2, Online installation

```
sudo pip3 install --extra-index-url  
https://developer.download.nvidia.com/compute/redist/jp/v61  
tensorflow==2.16.1+nv24.08
```

2.3, Install Numpy

Install the specified version of Numpy: the later YOLO11 also requires this version of Numpy

```
sudo pip install numpy==1.23.5
```

3. Verify installation

```
python3 -c "import tensorflow as tf; print(f'TensorFlow: {tf.__version__}')" 
```

```
Activities Terminal Jan 21 10:24 MAXN SUPER en
jetson@yahboom: ~
(0.37.1)
Requirement already satisfied: rich in /usr/local/lib/python3.10/dist-packages (from keras>=3.0.0->tensorflow==2.16.1+nv24.08) (13.9.4)
Requirement already satisfied: namex in /usr/local/lib/python3.10/dist-packages (from keras>=3.0.0->tensorflow==2.16.1+nv24.08) (0.0.8)
Requirement already satisfied: optree in /usr/local/lib/python3.10/dist-packages (from keras>=3.0.0->tensorflow==2.16.1+nv24.08) (0.14.0)
Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.10/dist-packages (from requests<3,>=2.21.0->tensorflow==2.16.1+nv24.08) (3.4.1)
Requirement already satisfied: idna<4,>=2.5 in /usr/lib/python3/dist-packages (from requests<3,>=2.21.0->tensorflow==2.16.1+nv24.08) (3.3)
Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/lib/python3/dist-packages (from requests<3,>=2.21.0->tensorflow==2.16.1+nv24.08) (1.26.5)
Requirement already satisfied: certifi>=2017.4.17 in /usr/lib/python3/dist-packages (from requests<3,>=2.21.0->tensorflow==2.16.1+nv24.08) (2020.6.20)
Requirement already satisfied: markdown>=2.6.8 in /usr/local/lib/python3.10/dist-packages (from tensorboard<2.17,>=2.16->tensorflow==2.16.1+nv24.08) (3.7)
Requirement already satisfied: tensorboard-data-server<0.8.0,>=0.7.0 in /usr/local/lib/python3.10/dist-packages (from tensorboard<2.17,>=2.16->tensorflow==2.16.1+nv24.08) (0.7.2)
Requirement already satisfied: werkzeug>=1.0.1 in /usr/local/lib/python3.10/dist-packages (from tensorboard<2.17,>=2.16->tensorflow==2.16.1+nv24.08) (3.1.3)
Requirement already satisfied: MarkupSafe>=2.1.1 in /usr/local/lib/python3.10/dist-packages (from werkzeug>=1.0.1->tensorboard<2.17,>=2.16->tensorflow==2.16.1+nv24.08) (3.0.2)
Requirement already satisfied: markdown-it-py>=2.2.0 in /usr/local/lib/python3.10/dist-packages (from rich->keras>=3.0.0->tensorflow==2.16.1+nv24.08) (3.0.0)
Requirement already satisfied: pygments<3.0.0,>=2.13.0 in /usr/local/lib/python3.10/dist-packages (from rich->keras>=3.0.0->tensorflow==2.16.1+nv24.08) (2.19.1)
Requirement already satisfied: mdurl<=0.1 in /usr/local/lib/python3.10/dist-packages (from markdown-it-py>=2.2.0->rich->keras>=3.0.0->tensorflow==2.16.1+nv24.08) (0.1.2)
WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager, possibly rendering your system unusable.It is recommended to use a virtual environment instead: https://pip.pypa.io/warnings/venv. Use the --root-user-action option if you know what you are doing and want to suppress this warning.
jetson@yahboom: $ sudo pip install numpy==1.23.5
Requirement already satisfied: numpy==1.23.5 in /usr/local/lib/python3.10/dist-packages (1.23.5)
WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager, possibly rendering your system unusable.It is recommended to use a virtual environment instead: https://pip.pypa.io/warnings/venv. Use the --root-user-action option if you know what you are doing and want to suppress this warning.
jetson@yahboom: $ python3 -c "import tensorflow as tf; print(f'TensorFlow: {tf.__version__}')"
TensorFlow: 2.16.1
jetson@yahboom: $
```

References

<https://docs.nvidia.com/deeplearning/frameworks/install-tf-jetson-platform/index.html>

<https://pypi.jetson-ai-lab.dev/>