**Jetson Nano Installation**

**Download the SD card image from given link first for Jetpack 4.5 stable version –**

<https://developer.nvidia.com/jetpack-sdk-45-archive>

**Step 1 – Follow this step to put Image on SD card –**

[Getting Started with Jetson Nano 2GB Developer Kit | NVIDIA Developer](https://developer.nvidia.com/embedded/learn/get-started-jetson-nano-2gb-devkit#write)

**VNC server Installation steps:-**

**Use following link to install VNC server to access jetson remotely follow all instructions as they are given .**

<https://developer.nvidia.com/embedded/learn/tutorials/vnc-setup>

**Step 2 – Installing TensorFlow on jetson —**

Use following commands to setup environment first--

sudo jetson\_clocks

sudo apt update

mkdir ${HOME}/project

cd ${HOME}/project

git clone <https://github.com/jkjung-avt/jetson_nano.git>

cd jetson\_nano

./install\_basics.sh

source ${HOME}/.bashrc

**Installing tensorflow-2.4.0**

$ sudo apt install -y libhdf5-serial-dev hdf5-tools libhdf5-dev zlib1g-dev \

zip libjpeg8-dev liblapack-dev libblas-dev gfortran

$ sudo pip3 install -U future==0.18.2 mock==3.0.5 h5py==2.10.0 \

keras\_preprocessing==1.1.1 keras\_applications==1.0.8 \

gast==0.2.2 futures pybind11

$ sudo pip3 install --pre --extra-index-url \

https://developer.download.nvidia.com/compute/redist/jp/v45 \

tensorflow==2.4.0

**Step3 – To Install OpenCV and Compile it over CUDA.**

**Open Terminal** and Put following commands line by line à

OpenCV

**Install the dependencies(do not put $ while inserting commands in terminal its to show the next command copy all the command after $ till next $ signature paste it on terminal and press enter.)**

$ dependencies=(build-essential

cmake

pkg-config

libavcodec-dev

libavformat-dev

libswscale-dev

libv4l-dev

libxvidcore-dev

libavresample-dev

python3-dev

libtbb2

libtbb-dev

libtiff-dev

libjpeg-dev

libpng-dev

libtiff-dev

libdc1394-22-dev

libgtk-3-dev

libcanberra-gtk3-module

libatlas-base-dev

gfortran

wget

unzip)

$ sudo apt install -y ${dependencies[@]}

##### **Download the OpenCV source code**

$ wget [https://github.com/opencv/opencv/archive/4.5.2.zip -O opencv-4.5.2.zip](https://github.com/opencv/opencv/archive/4.5.2.zip%20-O%20opencv-4.5.2.zip)

$ wget [https://github.com/opencv/opencv\_contrib/archive/4.5.2.zip -O opencv\_contrib-4.5.2.zip](https://github.com/opencv/opencv_contrib/archive/4.5.2.zip%20-O%20opencv_contrib-4.5.2.zip)

$ unzip opencv-4.5.2.zip

$ unzip opencv\_contrib-4.5.2.zip

$ mkdir opencv-4.5.2/build

$ cd opencv-4.5.2/build

##### **Configure the build**

cmake -D CMAKE\_BUILD\_TYPE=RELEASE \

-D WITH\_CUDA=ON \

-D WITH\_CUDNN=ON \

-D CUDA\_ARCH\_PTX="5.3" \

-D CUDA\_ARCH\_BIN="5.3" \

-D WITH\_CUBLAS=ON \

-D WITH\_LIBV4L=ON \

-D BUILD\_opencv\_python3=ON \

-D BUILD\_opencv\_python2=OFF \

-D BUILD\_opencv\_java=OFF \

-D WITH\_GSTREAMER=ON \

-D WITH\_GTK=ON \

-D BUILD\_TESTS=OFF \

-D BUILD\_PERF\_TESTS=OFF \

-D BUILD\_EXAMPLES=OFF \

-D OPENCV\_EXTRA\_MODULES\_PATH=../../opencv\_contrib-4.5.2/modules \ ..

##### **Build the package**

$ make -j4

##### **Install the package**

$ sudo make install

These steps are needed after downloading all files from bit-bucket Put this next command after copying repositories into the jetson —

open terminal and do following installations-

* **pip3 install lxml**
* **pip3 install tqdm**

If these installations give error at any point, try using **sudo pip3** instead of pip3.

* **pip3 install absl-py**
* **pip3 install matplotlib**
* **pip3 install easydict**
* **pip 3 install pillow**

**To check OpenCV version:**

**Python3**

**>>Import cv2**

**>>cv2.\_\_version\_\_**

**To check TensorFlow is a GPU or CPU Version:**

Save following code in one file and name it as **file\_name.py** file and execute it using following command

**Python3 file\_name.py**

**import tensorflow as tf**

**print("You are using TensorFlow version", tf.\_\_version\_\_)**

**if len(tf.config.list\_physical\_devices('GPU')) > 0:**

**print("You have a GPU enabled.")**

**else:**

**print("Enable a GPU before running this notebook.")**

**To check Performance of GPU, CPU and other Info related to Jetson Installations –**

**sudo -H pip3 install -U jetson-stats**

**sudo jtop**