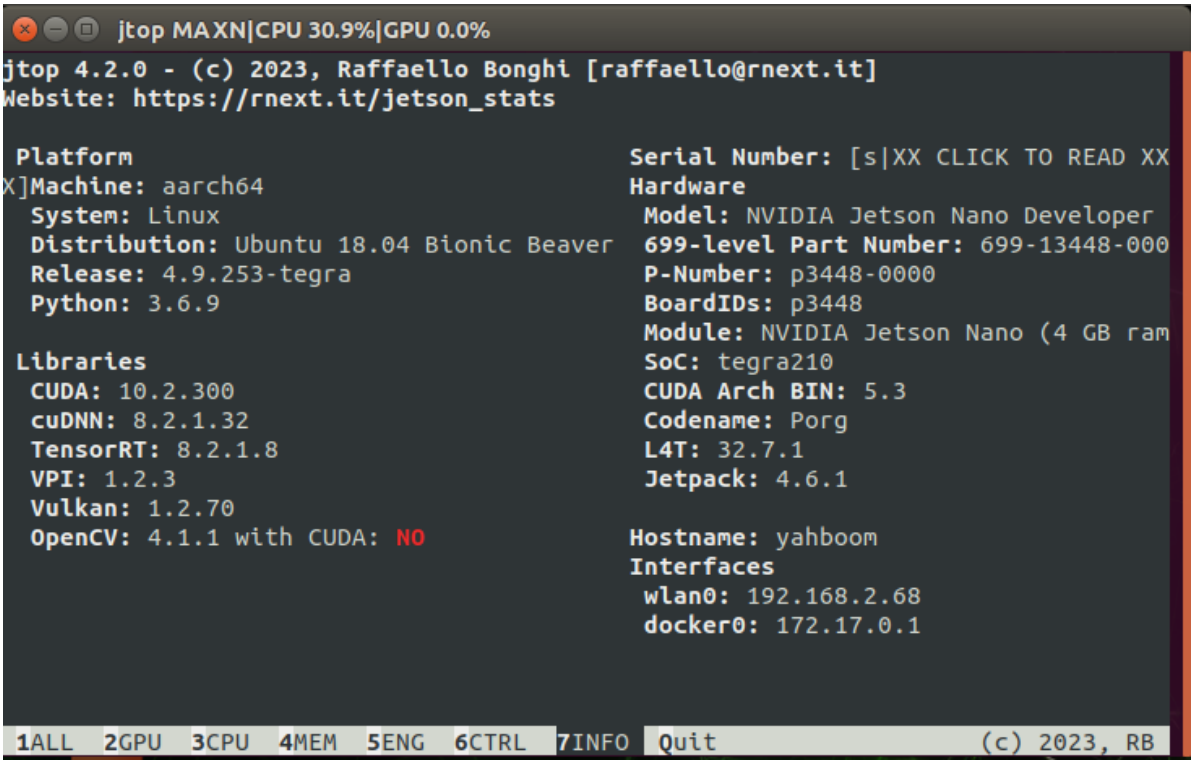
# Jetson reference environment construction

## 1.Instructions before use

This tutorial is suitable for independently building images of Jetson nano. Directly using the YAHBOOM version of the image can be ignored for the tutorial.

## 2.The environment version configuration for this tutorial is shown in the figure:




If you don't want to build it completely on your own, you can use the Jetson reference compressed package we provided, pass the compressed package into Jetson nano, decompress it, and start looking at the "installation module" directly

## 3.Start building

### 3.1 Dependencies required for download

```
sudo apt-get update
sudo apt-get install git cmake
```

### 3.2 Download relevant source code

```
git clone https://github.com/dusty-nv/jetson-inference
cd jetson-inference
git submodule update --init
```

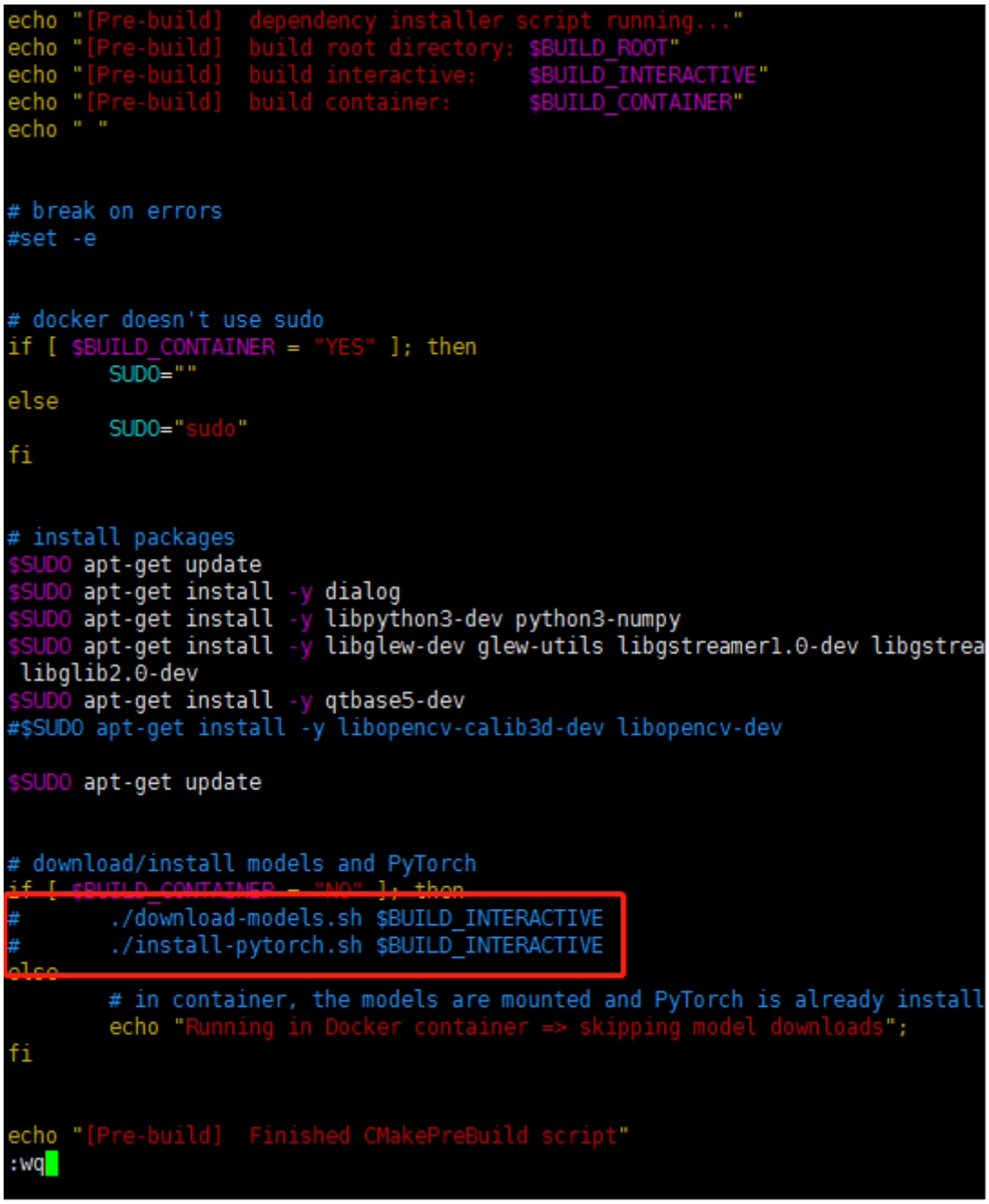
## 3.3 Download relevant Python modules

Find torch-1.8.0-cp36-cp36m-Linux from the attachment we built in our environment_ Aarch64.whl Transfer this file to Jetson nano

```
sudo apt-get install libpython3-dev python3-numpy
sudo apt-get install python3-scipy
sudo apt-get install python3-pandas
sudo apt-get install python3-matplotlib
sudo apt-get install python3-sklearn
pip3 install torch-1.8.0-cp36-cp36m-linux_aarch64.whl
```

## 3.4 Modifying Files

Edit Jetson reference/CMakePrebuild.sh. Put/ Download models. sh comment out (with a # comment added in front), as shown in the figure




# 4.Install the model

Method 1: You can perform the following steps

```
cd jetson-inference/tools
./download-models.sh
```

After making a selection, the model will be automatically downloaded to the file path of data/network, and scientific internet access is required to download it normally

Method 2: You can find the package required for Jetson reference in the attachment we provided for environment setup, transfer the compressed package to Jetso nano's Jetson reference/data/network, and then decompress itDecompression command

```
for tar in *.tar.gz; do tar xvf $tar; done
```

notes:

1. For decompressing multiple. gz files, use this command:for gz in *.gz;  do gunzip $gz;  done
2. For extracting multiple. tar.gz files, use the following command:for tar in *.tar.gz;  do tar xvf $tar;  done

# 5.Start Compilation

```
cd jetson-inference
mkdir build
cd build
cmake ../
make (或者make -j4)    #（build）
sudo make install      #（build）
```

If an error is reported midway, it indicates that the source code download is incomplete. Please go back to step 3.2 and execute the command git submiodule update - init again, or download from a browser using Baidu

# 6.Verify if the installation was successful

```
cd jetson-inference/build/aarch64/bin

./imagenet-console ./images/bird_0.jpg output.jpg
```

```
yahboom@yahboom-desktop: ~/yahboom/jetson-inference/build/aarch64/bin
                -- dim #0  3 (CHANNEL)
                -- dim #1  224 (SPATIAL)
                -- dim #2  224 (SPATIAL)
[TRT]   binding -- index   1
                -- name    'prob'
                -- type    FP32
                -- in/out  OUTPUT
                -- # dims  3
                -- dim #0  1000 (CHANNEL)
                -- dim #1  1 (SPATIAL)
                -- dim #2  1 (SPATIAL)
[TRT]   binding to input 0 data  binding index:  0
[TRT]   binding to input 0 data  dims (b=1 c=3 h=224 w=224) size=602112
[TRT]   binding to output 0 prob  binding index:  1
[TRT]   binding to output 0 prob  dims (b=1 c=1000 h=1 w=1) size=4000
device GPU, networks/bvlc_googlenet.caffemodel initialized.
[TRT]   networks/bvlc_googlenet.caffemodel loaded
imageNet -- loaded 1000 class info entries
networks/bvlc_googlenet.caffemodel initialized.
[image] loaded './images/bird_0.jpg'  (368 x 500, 3 channels)
class 0015 - 0.998702  (robin, American robin, Turdus migratorius)
imagenet-console:  './images/bird_0.jpg' -> 99.87018% class #15 (robin, American robin, Turdus migrator
ius)

[TRT]   ------------------------------------------------
[TRT]   Timing Report networks/bvlc_googlenet.caffemodel
[TRT]   ------------------------------------------------
[TRT]   Pre-Process   CPU   0.08995ms  CUDA   0.64693ms
[TRT]   Network       CPU  72.14478ms  CUDA  71.47083ms
[TRT]   Post-Process  CPU   0.97890ms  CUDA   1.06088ms
[TRT]   Total         CPU  73.21364ms  CUDA  73.17864ms
[TRT]   ------------------------------------------------

[TRT]   note -- when processing a single image, run 'sudo jetson_clocks' before
                to disable DVFS for more accurate profiling/timing measurements

imagenet-console:  attempting to save output image to 'output.jpg'
imagenet-console:  completed saving 'output.jpg'
imagenet-console:  shutting down...
imagenet-console:  shutdown complete
```

Find the corresponding directory and view output.jpg as follows. The recognition results will be displayed at the top of the image.


**appendix**

Other reference tutorials:

1. https://blog.csdn.net/aal779/article/details/122055432
2. .https://github.com/dusty-nv/jetson-inference/blob/master/docs/building-repo-2.md