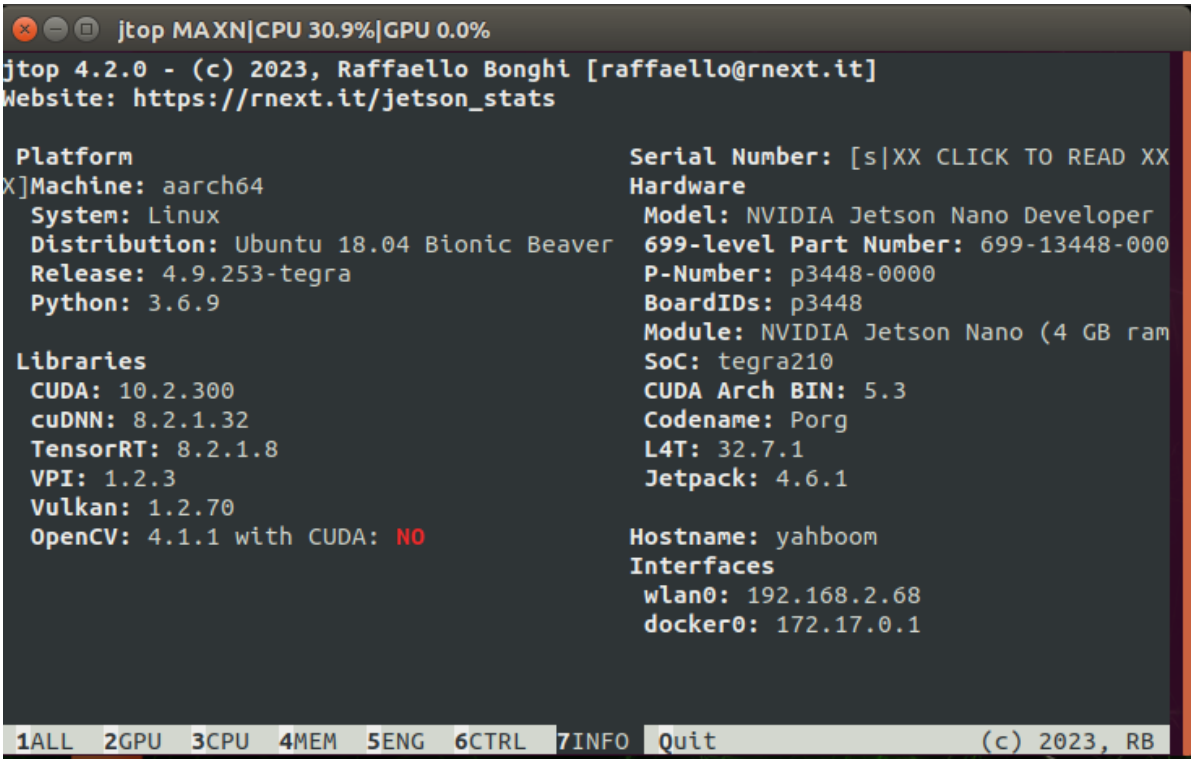
Jetson-inference environment setup

1. Pre-use instructions

This tutorial is suitable for building a JETSON NANO image by yourself. If you directly use the YAHBOOM version of the image, you can ignore the tutorial.

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



If you don't want to build it completely by yourself, you can use the jetson-inference compression package we provide, transfer the compression package to JETSON NANO, decompress it, and start directly from "Install Module"

3. Start building

3.1 Download the required dependencies

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

3.2 Download the relevant source code

```
git clone https://github.com/dusty-nv/jetson-inference
cd jetson-inference
git submodule update --init ##If a network error is reported in the middle, you need to access the Internet scientifically and run it several times, otherwise the download will be incomplete
```

3.3 Download related python modules

Find the torch-1.8.0-cp36-cp36m-linux_aarch64.whl file from the attachments of our environment and transfer it 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 Modify the file

Edit jetson-inference/CMakePrebuild.sh. Comment out ./download-models.sh (add a # comment in front) as shown in the figure)

```
echo "[Pre-build]  dependency installer script running..."
echo "[Pre-build]  build root directory: $BUILD_ROOT"
echo "[Pre-build]  build interactive:    $BUILD_INTERACTIVE"
echo "[Pre-build]  build container:      $BUILD_CONTAINER"
echo " "


# break on errors
#set -e


# docker doesn't use sudo
if [ $BUILD_CONTAINER = "YES" ]; then
        SUDO=""
else
        SUDO="sudo"
fi


# install packages
$SUDO apt-get update
$SUDO apt-get install -y dialog
$SUDO apt-get install -y libpython3-dev python3-numpy
$SUDO apt-get install -y libglew-dev glew-utils libgstreamer1.0-dev libgstrea
 libglib2.0-dev
$SUDO apt-get install -y qtbase5-dev
#$SUDO apt-get install -y libopencv-calib3d-dev libopencv-dev

$SUDO apt-get update


# download/install models and PyTorch
if [ $BUILD_CONTAINER = "NO" ]; then
#       ./download-models.sh $BUILD_INTERACTIVE
#       ./install-pytorch.sh $BUILD_INTERACTIVE
else
        # in container, the models are mounted and PyTorch is already install
        echo "Running in Docker container => skipping model downloads";
fi


echo "[Pre-build]  Finished CMakePreBuild script"
:wq
```

4. Install the model

Method 1: You can perform the following steps

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

After making the selection, the model will be automatically downloaded to the file path of data/network. You need to access the Internet to download it normally

Method 2: You can find the package required by jetson-inference in the attachment provided by us for environment construction, transfer the compressed package in it to jetson-inference/data/network of jetso nano, and then decompress it
Decompression command

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

Note:

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

5. Start compiling

```
cd jetson-inference
mkdir build #Use the package we provide, this sentence can be omitted
cd build
cmake ../
make (or make -j4) #（in the build directory）
sudo make install #（in the build directory）
```

If an error is reported during the process, it means that the source code is not fully downloaded. Please return to step 3.2 and execute the git submodule update --init command, or download it from the browser. The method can be found on Baidu

6. Verify whether the installation is successful

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

./imagenet-console ./images/bird_0.jpg output.jpg
# After waiting for a long time, the following appears (it takes a long time for
the first time, but it will be very fast later)
```

```
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 check output.jpg as follows. The recognition result 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