PyTorch GPU 安装指南

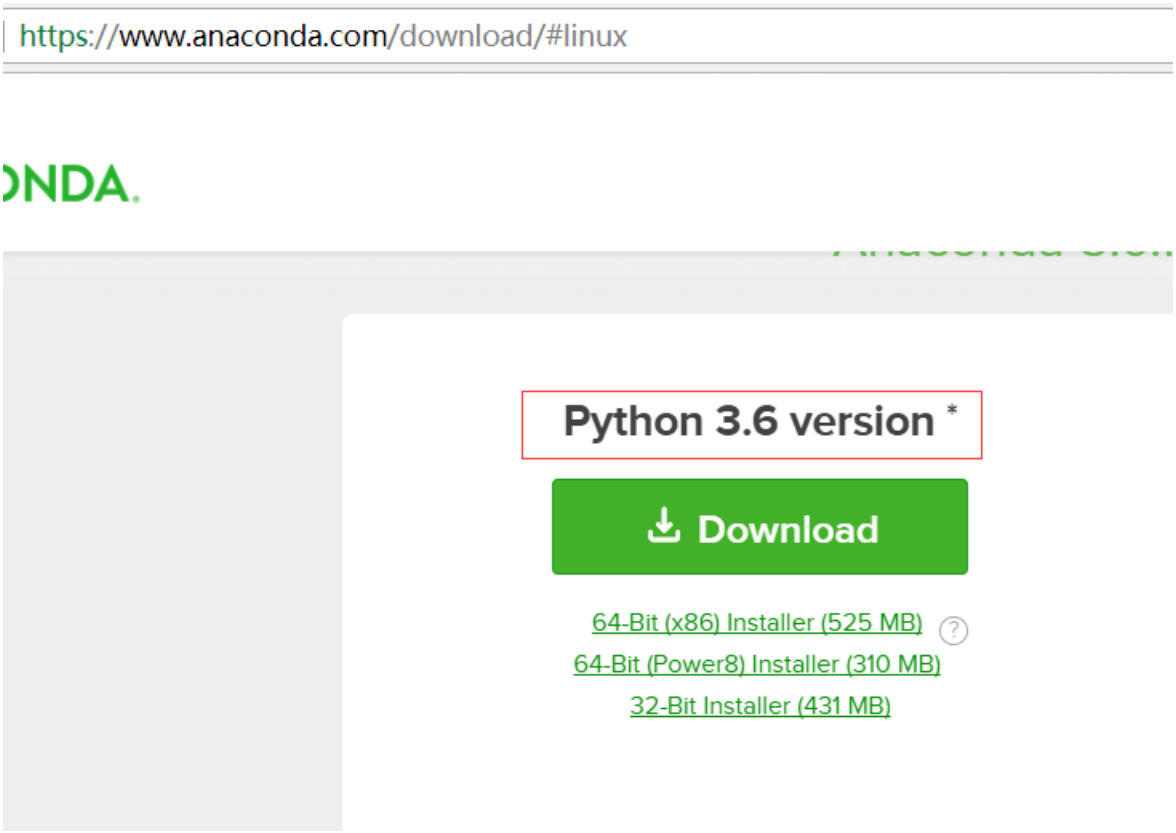
(Ubuntu 16.04 + GTX 1080 + anaconda + cuda8.0 + cuDNN7.0 + pytorch)

参考 **https://blog.csdn.net/chenhaifeng2016/article/details/78874840** 的教程

1. 安装 python

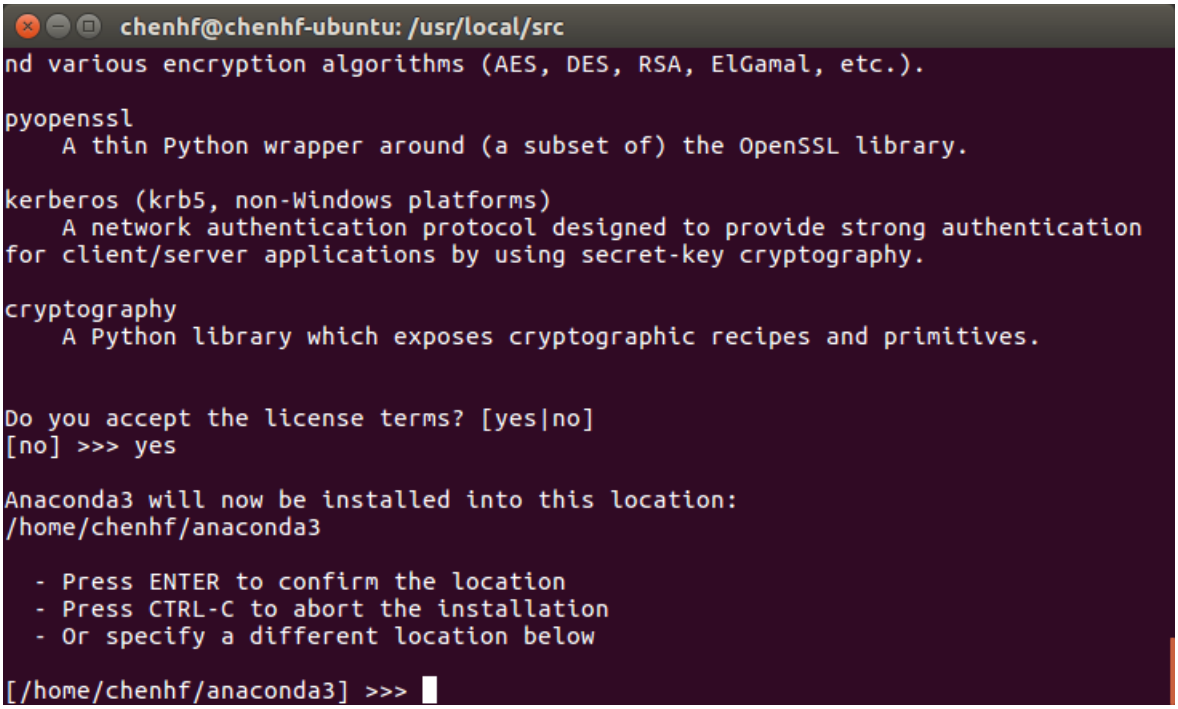
python 环境使用 anaconda 来安装

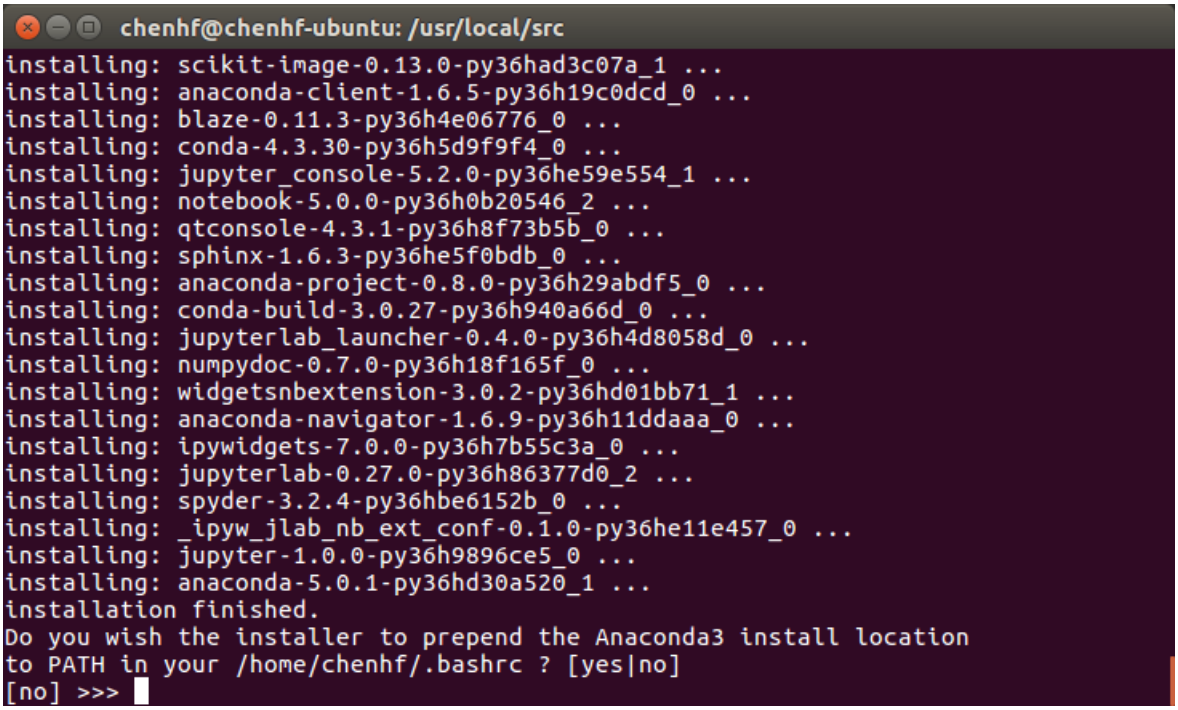
从官方网站下载操作系统对应的版本：python 3.6 x86_64 版本

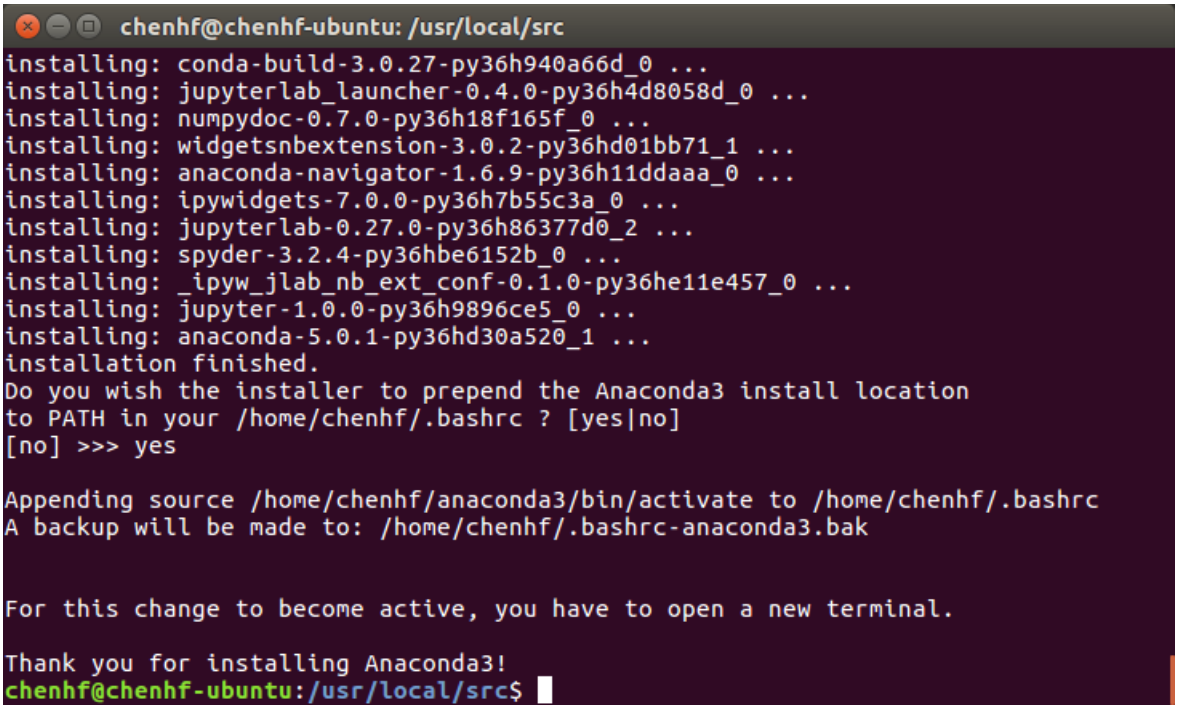


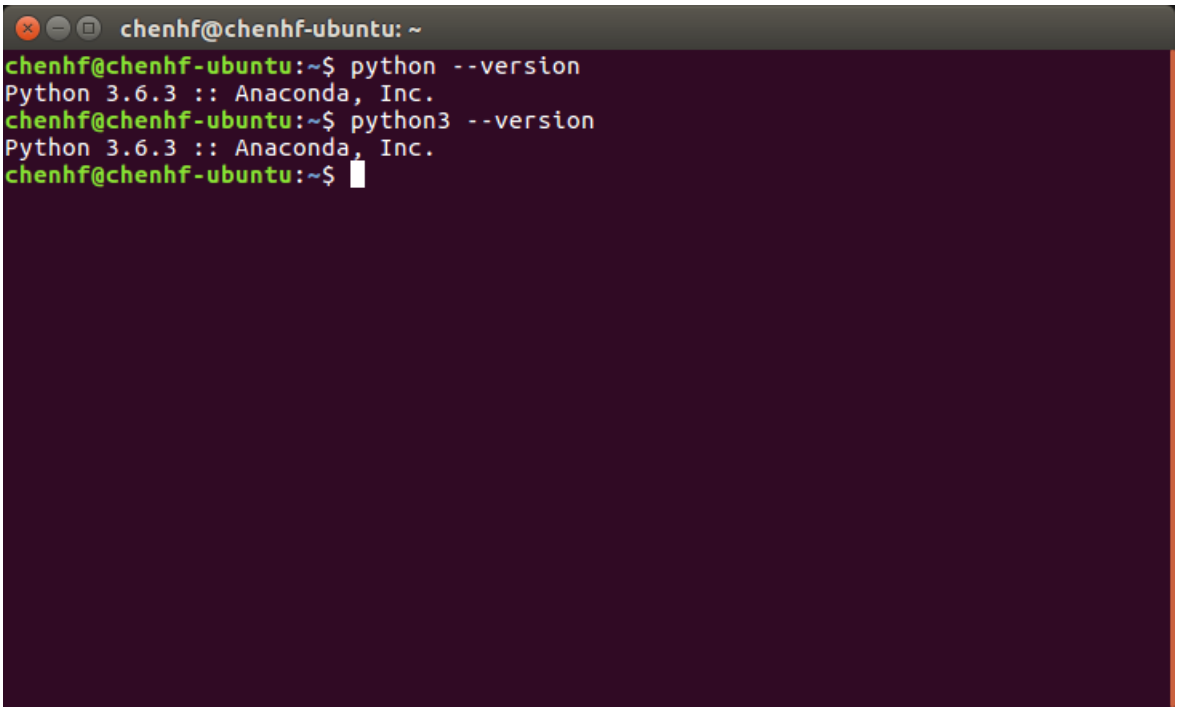
chmod +x Anaconda3-5.0.1-Linux-x86_64.sh

./Anaconda3-5.0.1-Linux-x86_64.sh


chenhf@chenhf-ubuntu: /usr/local/src
nd various encryption algorithms (AES, DES, RSA, ElGamal, etc.).
pyopenssl
A thin Python wrapper around (a subset of) the OpenSSL library.
kerberos (krb5, non-Windows platforms)
A network authentication protocol designed to provide strong authentication
for client/server applications by using secret-key cryptography.
cryptography
A Python library which exposes cryptographic recipes and primitives.
Do you accept the license terms? [yes|no]
[no] >>> yes
Anaconda3 will now be installed into this location:
/home/chenhf/anaconda3
- Press ENTER to confirm the location
- Press CTRL-C to abort the installation
- Or specify a different location below
[/home/chenhf/anaconda3] >>>


chenhf@chenhf-ubuntu: /usr/local/src
installing: scikit-image-0.13.0-py36had3c07a_1 ...
installing: anaconda-client-1.6.5-py36h19c0dcd_0 ...
installing: blaze-0.11.3-py36h4e06776_0 ...
installing: conda-4.3.30-py36h5d9f9f4_0 ...
installing: jupyter_console-5.2.0-py36he59e554_1 ...
installing: notebook-5.0.0-py36h0b20546_2 ...
installing: qtconsole-4.3.1-py36h8f73b5b_0 ...
installing: sphinx-1.6.3-py36he5f0bdb_0 ...
installing: anaconda-project-0.8.0-py36h29abdf5_0 ...
installing: conda-build-3.0.27-py36h940a66d_0 ...
installing: jupyterlab_launcher-0.4.0-py36h4d8058d_0 ...
installing: numpydoc-0.7.0-py36h18f165f_0 ...
installing: widgetsnbextension-3.0.2-py36hd01bb71_1 ...
installing: anaconda-navigator-1.6.9-py36h11ddaaa_0 ...
installing: ipywidgets-7.0.0-py36h7b55c3a_0 ...
installing: jupyterlab-0.27.0-py36h86377d0_2 ...
installing: spyder-3.2.4-py36hbe6152b_0 ...
installing: _ipyw_jlab_nb_ext_conf-0.1.0-py36he11e457_0 ...
installing: jupyter-1.0.0-py36h9896ce5_0 ...
installing: anaconda-5.0.1-py36hd30a520_1 ...
installation finished.
Do you wish the installer to prepend the Anaconda3 install location
to PATH in your /home/chenhf/.bashrc ? [yes|no]
[no] >>>





Anaconda 安装完要把~/.bashrc 里面的最后一行加入到~/.zshrc 里面，这样 terminator 才可以用 Python3.6.4

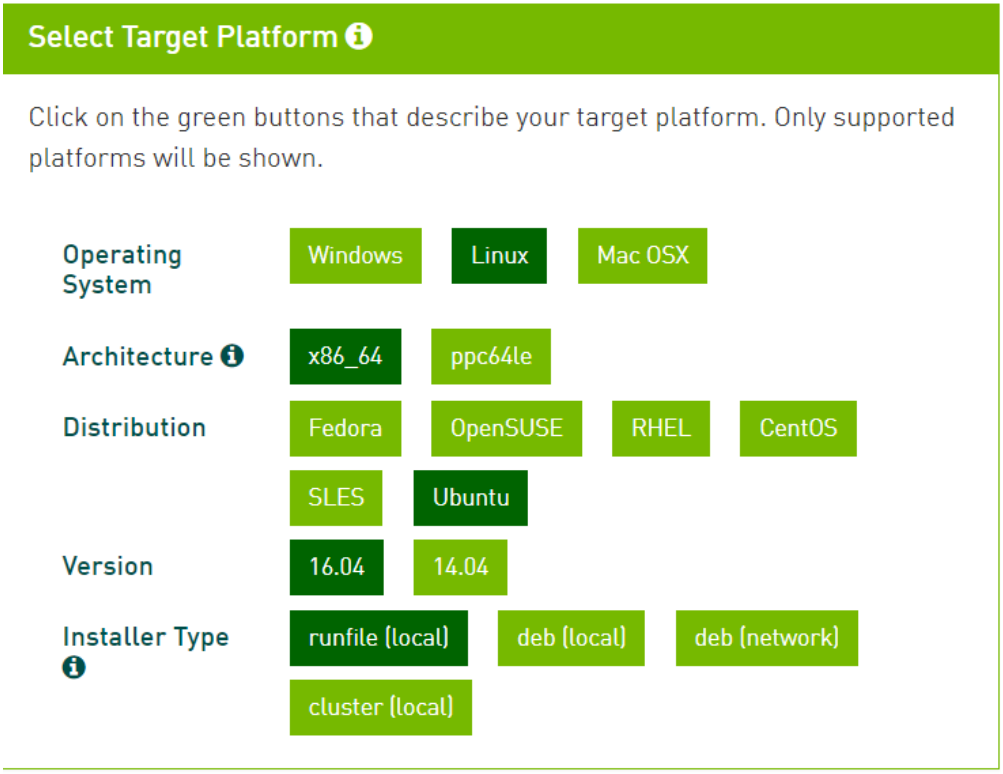
2. Nvidia 显卡驱动

nvidia 的驱动直接在 software and updates 里面，不要从官网上下载安装，更不要装第三方的。

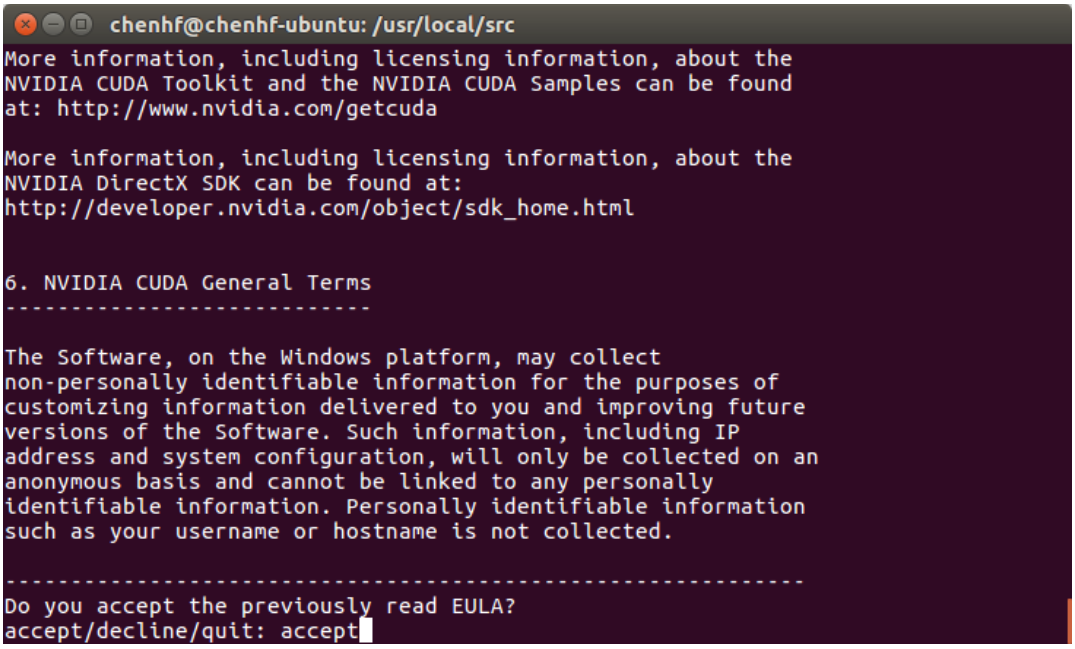
重启计算机

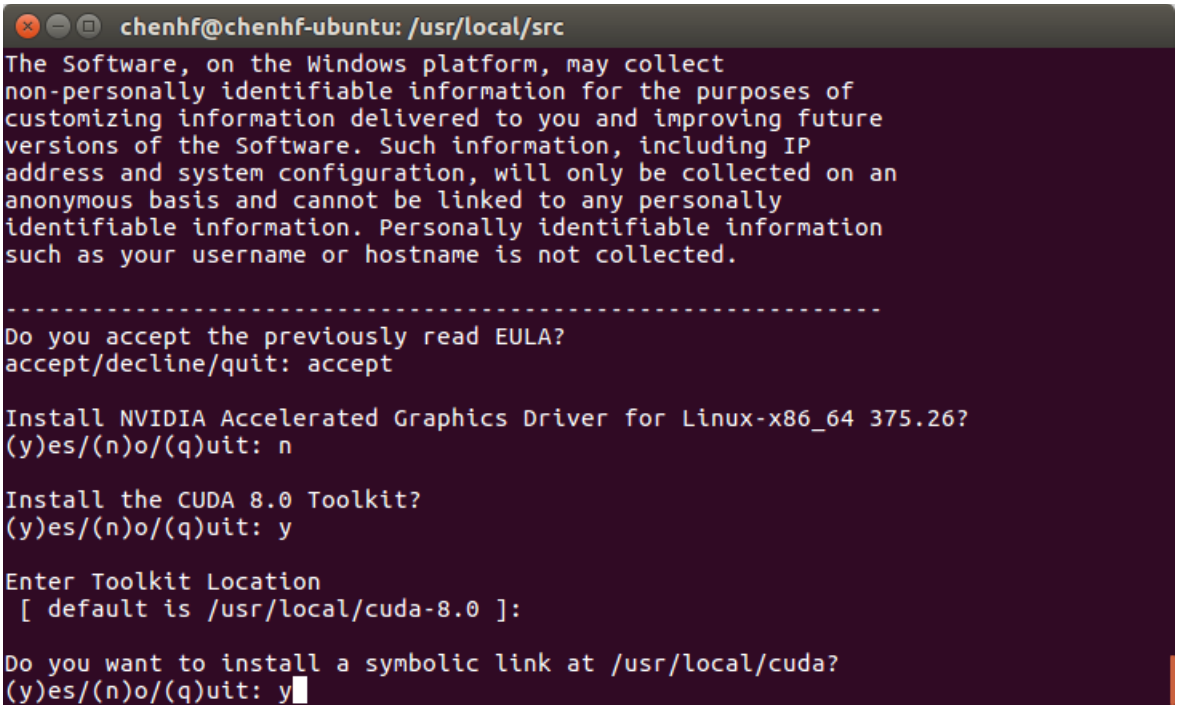
3. Nvidia CUDA 8.0

从官方网站下载对应的版本

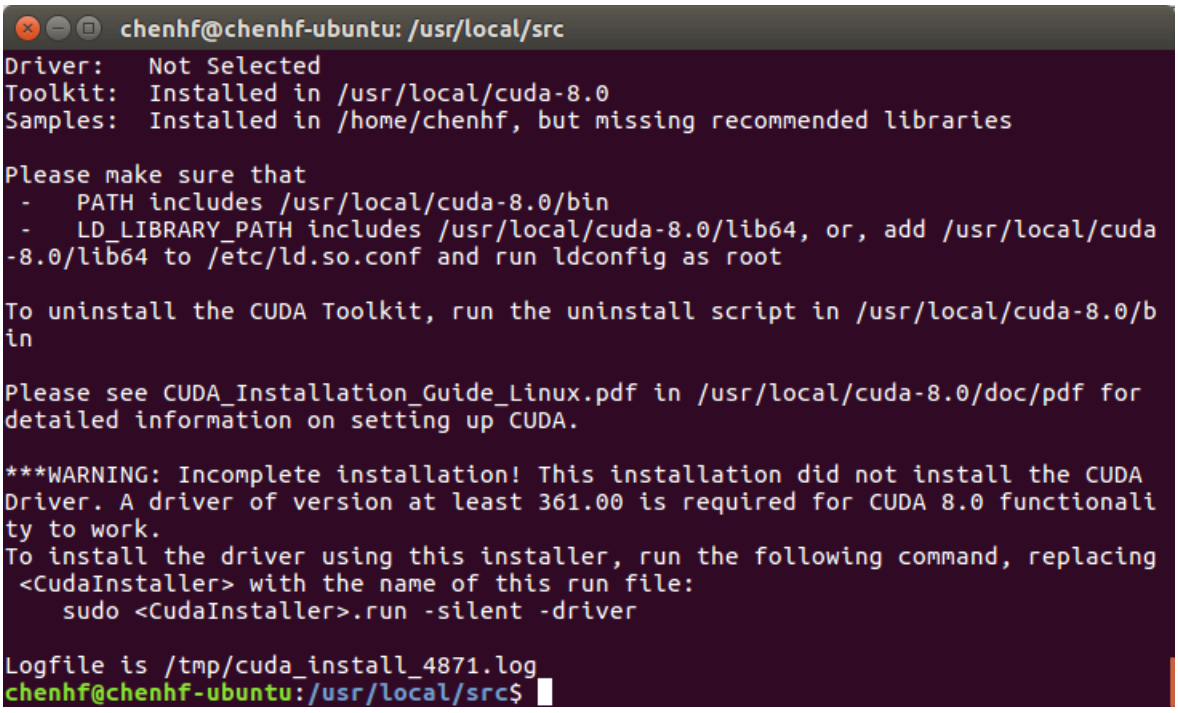


sudo sh cuda_8.0.61_375.26_linux.run



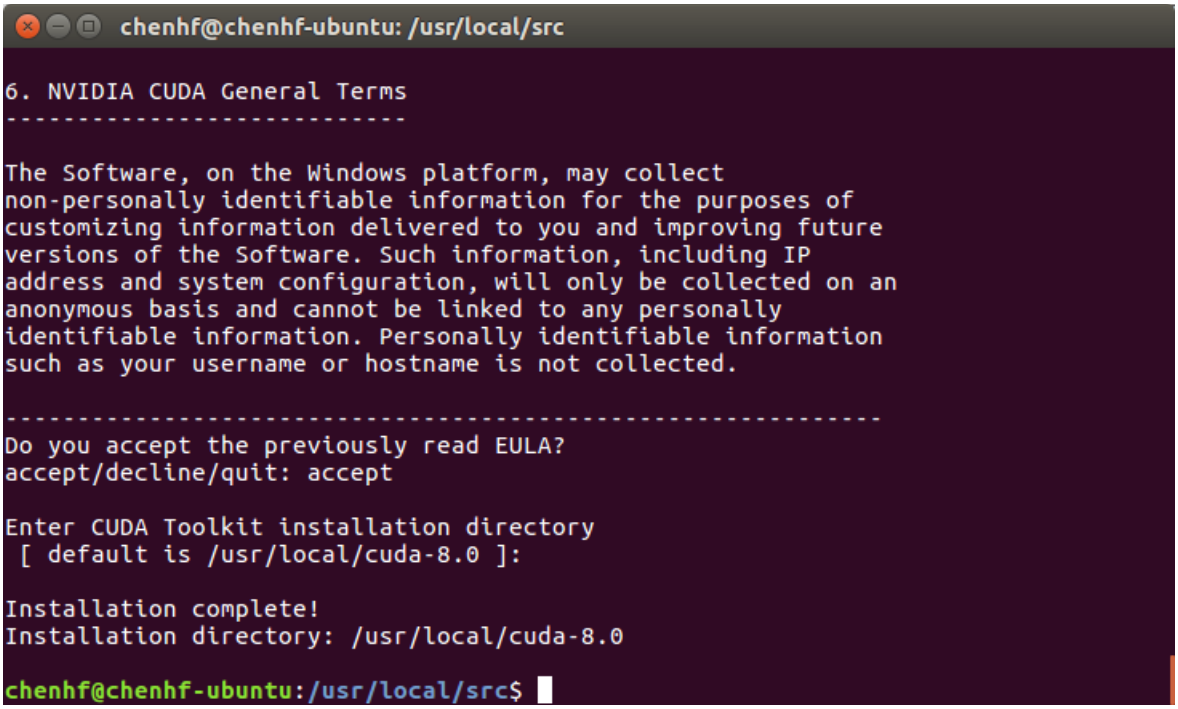


注意：这是选择不安装显卡驱动，因为前面已安装 。



安装 cuda 8.0 patch

sudo sh cuda_8.0.61.2_linux.run



参照界面提示配置环境变量/etc/profile

export PATH=/usr/local/cuda-8.0/bin:$PATH

export LD_LIBRARY_PATH=/usr/local/cuda-8.0/lib64:#LD_LIBRARY_PATH

4. Nvidia CuDNN 6.0（pytorch 已要求 CuDNN7.0 的安装，在安装 pytorch 的时候就要强制安装，所以不需要 CuDNN6.0 了）

从官方网站下载 cuDNN 6.0， 注意这一步需要注册账户

然后要下载 cuDNN v6.0 Library for Linux

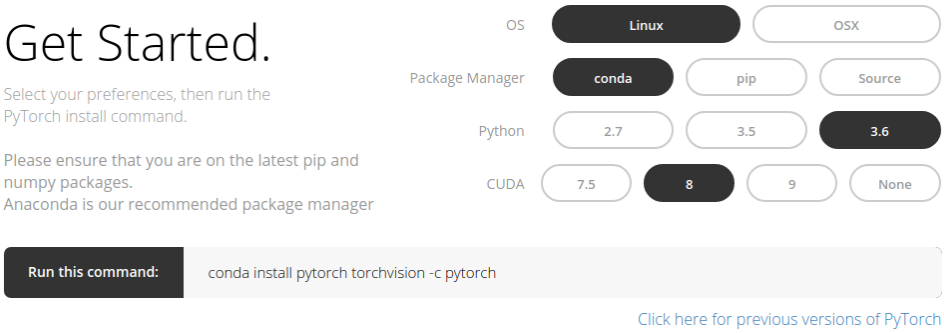
下载完成后解压缩。

tar zxvf cudnn-8.0-linux-x64-v6.0-tgz

cp cuda/include/* /usr/local/cuda-8.0/include/

cp cuda/lib64/* /usr/local/cuda-8.0/lib64/

5. 安装 PyTorch



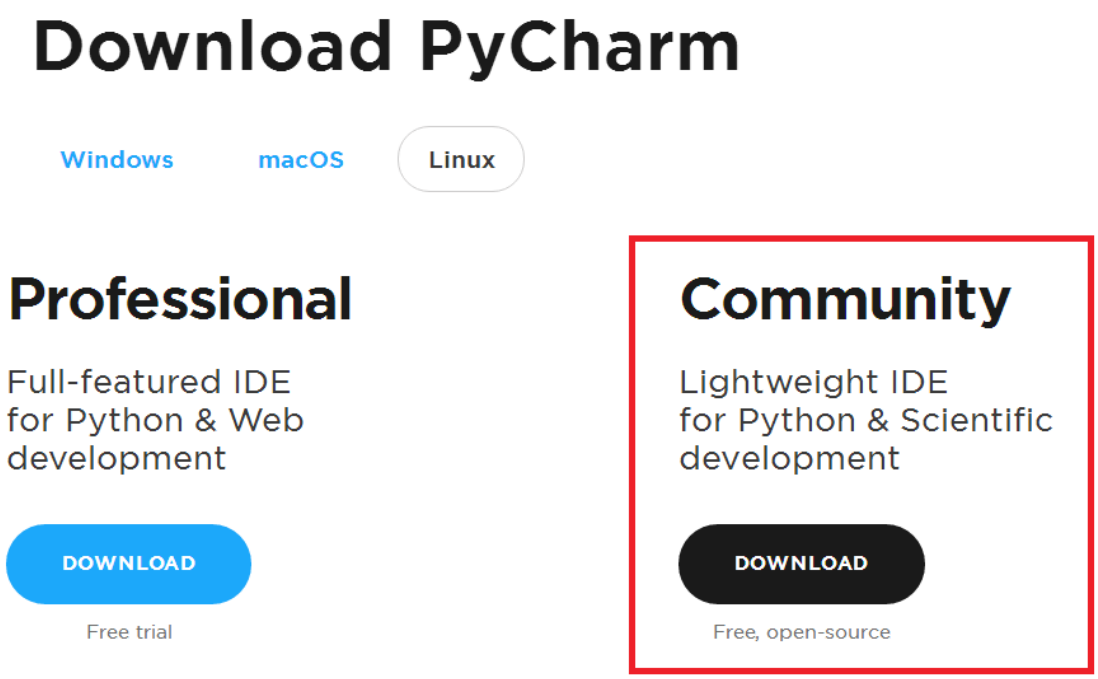

```
chenhf@chenhf-ubuntu: ~

chenhf@chenhf-ubuntu:~$ conda install pytorch torchvision cuda80 -c pytorch
Fetching package metadata .............
Solving package specifications: .

Package plan for installation in environment /home/chenhf/anaconda3:

The following NEW packages will be INSTALLED:

    cuda80:      1.0-h205658b_0                               pytorch
    cudatoolkit: 8.0-3
    pytorch:     0.3.0-py36_cuda8.0.61_cudnn7.0.3h37a80b5_4 pytorch
    torchvision: 0.2.0-py36h17b6947_1                         pytorch

The following packages will be UPDATED:

    anaconda:    5.0.1-py36hd30a520_1                                 --> custom-p
y36hbbc8b67_0
    conda:       4.3.30-py36h5d9f9f4_0                                --> 4.4.3-py
36_0
    pycosat:     0.6.2-py36h1a0ea17_1                                 --> 0.6.3-py
36h0a5515d_0

Proceed ([y]/n)?
```

最新的 pytorch(截至 2018.3.28)是不需要先装 cudnn 6.0 的，因为默认强制安装 cudnn 7.0。

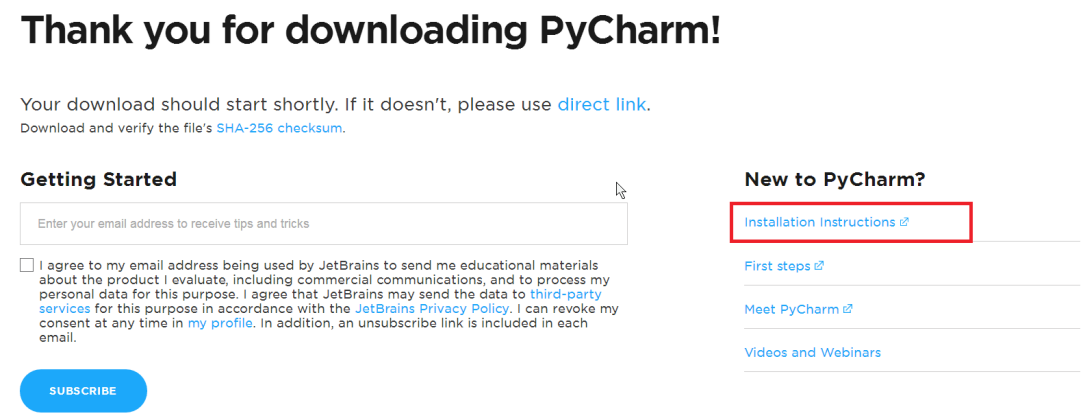
```
chenhf@chenhf-ubuntu: ~
    cuda80:      1.0-h205658b_0                               pytorch
    cudatoolkit: 8.0-3
    pytorch:     0.3.0-py36_cuda8.0.61_cudnn7.0.3h37a80b5_4 pytorch
    torchvision: 0.2.0-py36h17b6947_1                         pytorch

The following packages will be UPDATED:

    anaconda:    5.0.1-py36hd30a520_1                                 --> custom-p
y36hbbc8b67_0
    conda:       4.3.30-py36h5d9f9f4_0                                --> 4.4.3-py
36_0
    pycosat:     0.6.2-py36h1a0ea17_1                                 --> 0.6.3-py
36h0a5515d_0

Proceed ([y]/n)? y

cuda80-1.0-h20 100% |################################| Time: 0:00:00   3.50 MB/s
cudatoolkit-8. 100% |################################| Time: 0:00:35   9.63 MB/s
anaconda-custo 100% |################################| Time: 0:00:00   7.43 MB/s
pycosat-0.6.3- 100% |################################| Time: 0:00:00  14.64 MB/s
pytorch-0.3.0- 100% |################################| Time: 0:02:32   2.86 MB/s
torchvision-0. 100% |################################| Time: 0:00:00 167.49 kB/s
conda-4.4.3-py 100% |################################| Time: 0:00:00  11.54 MB/s
chenhf@chenhf-ubuntu:~$
```

6. 开发工具 PyCharm

下载 linux 下面的 Community 版本。



在下载页面处点击 installation instruction



Installing PyCharm on Linux

Unpack the `.tar.gz` archive that you've downloaded, into any desired installation location. The whole process is described below:

1.Unpack the `<pycharm-professional or pycharm-community>-*.tar.gz` file to a different folder, if your current `Download` folder doesn't support file execution:

```
tar xfz <pycharm-professional or pycharm-community>-*.tar.gz -C <new_archive_folder>
```

The recommended installation location according to the filesystem hierarchy standard (FHS) is `/opt`. To install PyCharm into this directory, enter the following command:

```
sudo tar xfz <pycharm-professional or pycharm-community>-*.tar.gz -C /opt/
```

2.Switch to the `bin` subdirectory:

```
cd <new archive folder>/<pycharm-professional or pycharm-community>-*/bin
```

For example,

```
cd /opt/<pycharm-professional or pycharm-community>-*/bin
```

3.Run `pycharm.sh` from the `bin` subdirectory。Run 的时候不能用 su 的模式，而是 local 用户的模式。

Installing PyCharm on Ubuntu

For Ubuntu **16.04** and higher, you can use snap packages to install PyCharm.

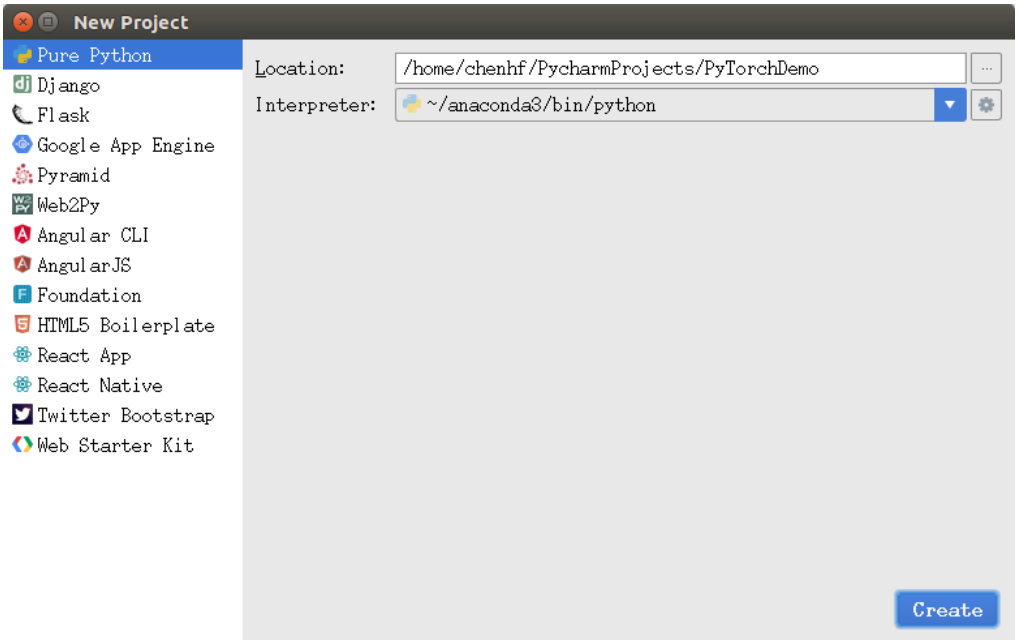
1. Run the following command:

```
sudo snap install <pycharm-professional·or·pycharm-community> --classic
```

2. Run `pycharm-professional` or `pycharm-community`。Run 的时候不能用 su 的模式，而是 local 用户的模式。

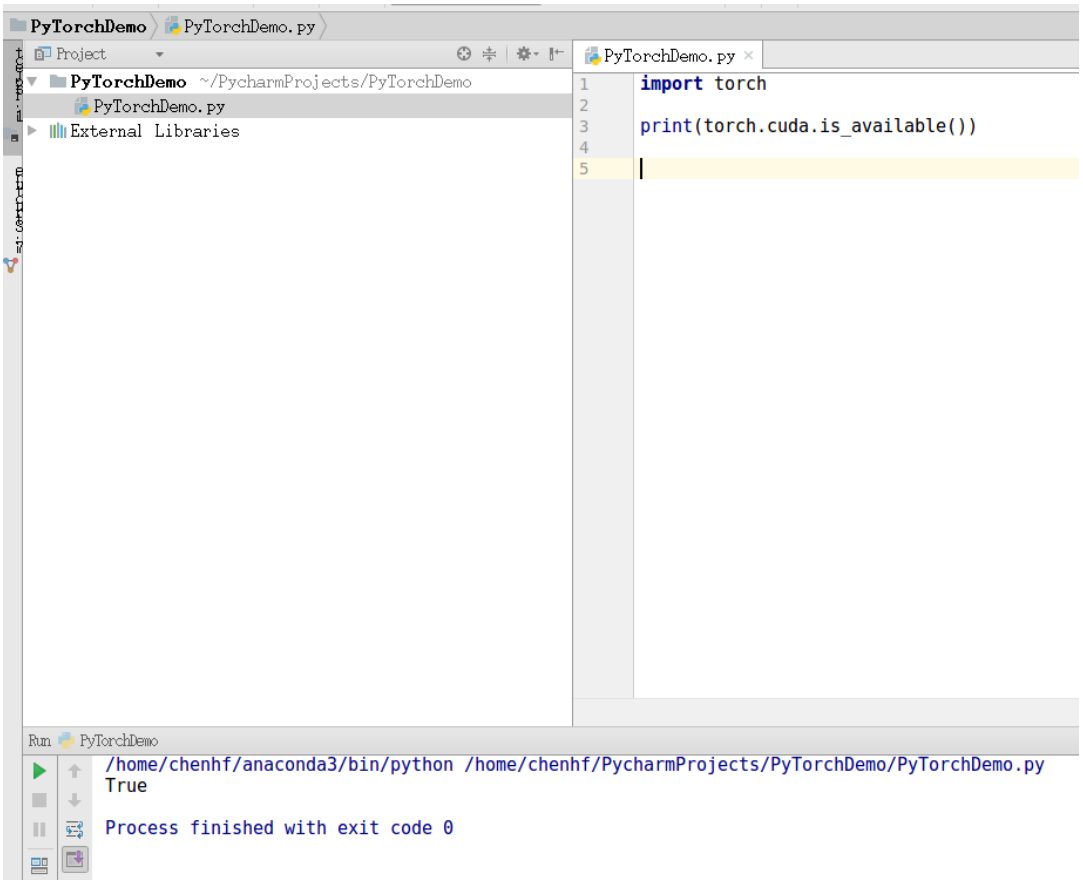
7.测试

pycharm 的 intepreter 必须是 anaconda3/bin/python，默认的 anaconda3 那个 envs 什么的不行，没有 torch 库



在 pycharm 里面输入：

```
# CUDA TEST

import torch

import torchvision 如果你要用这个且装了这个的话。没用没装就不用试了

x = torch.Tensor([1.0])

xx = x.cuda()

print(xx)

print(torch.cuda.is_available())

# cuDNN test

from torch.backends import cudnn

print(cudnn.is_acceptable(xx))
```


PyTorchDemo
PyTorchDemo.py
Project
PyTorchDemo ~/PycharmProjects/PyTorchDemo
PyTorchDemo.py
External Libraries
PyTorchDemo.py
1 import torch
2
3 print(torch.cuda.is_available())
4
5
Run PyTorchDemo
/home/chenhf/anaconda3/bin/python /home/chenhf/PycharmProjects/PyTorchDemo/PyTorchDemo.py
True
Process finished with exit code 0