

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

<https://www.anaconda.com/download/#linux>

ONDA.

Python 3.6 version *

↓ Download

[64-Bit \(x86\) Installer \(525 MB\)](#) ?

[64-Bit \(Power8\) Installer \(310 MB\)](#)

[32-Bit Installer \(431 MB\)](#)

```
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] >>>

```

```
chenhf@chenhf-ubuntu: /usr/local/src
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] >>> yes

Appending source /home/chenhf/anaconda3/bin/activate to /home/chenhf/.bashrc
A backup will be made to: /home/chenhf/.bashrc-anaconda3.bak

For this change to become active, you have to open a new terminal.

Thank you for installing Anaconda3!
chenhf@chenhf-ubuntu: /usr/local/src$

chenhf@chenhf-ubuntu: ~
chenhf@chenhf-ubuntu:~$ python --version
Python 3.6.3 :: Anaconda, Inc.
chenhf@chenhf-ubuntu:~$ python3 --version
Python 3.6.3 :: Anaconda, Inc.
chenhf@chenhf-ubuntu:~$
```

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

Select Target Platform ⓘ

Click on the green buttons that describe your target platform. Only supported platforms will be shown.

Operating System	Windows	Linux	Mac OSX	
Architecture ⓘ	x86_64	ppc64le		
Distribution	Fedora	OpenSUSE	RHEL	CentOS
	SLES	Ubuntu		
Version	16.04	14.04		
Installer Type ⓘ	runfile (local)	deb (local)	deb (network)	
	cluster (local)			

```
sudo sh cuda_8.0.61_375.26_linux.run
```

```
chenhf@chenhf-ubuntu: /usr/local/src
More information, including licensing information, about the
NVIDIA CUDA Toolkit and the NVIDIA CUDA Samples can be found
at: http://www.nvidia.com/getcuda

More information, including licensing information, about the
NVIDIA DirectX SDK can be found at:
http://developer.nvidia.com/object/sdk_home.html

6. NVIDIA CUDA General Terms
-----

The Software, on the Windows platform, may collect
non-personally identifiable information for the purposes of
customizing information delivered to you and improving future
versions of the Software. Such information, including IP
address and system configuration, will only be collected on an
anonymous basis and cannot be linked to any personally
identifiable information. Personally identifiable information
such as your username or hostname is not collected.

-----
Do you accept the previously read EULA?
accept/decline/quit: accept
```

```

chenhf@chenhf-ubuntu: /usr/local/src
The Software, on the Windows platform, may collect
non-personally identifiable information for the purposes of
customizing information delivered to you and improving future
versions of the Software. Such information, including IP
address and system configuration, will only be collected on an
anonymous basis and cannot be linked to any personally
identifiable information. Personally identifiable information
such as your username or hostname is not collected.

-----
Do you accept the previously read EULA?
accept/decline/quit: accept

Install NVIDIA Accelerated Graphics Driver for Linux-x86_64 375.26?
(y)es/(n)o/(q)uit: n

Install the CUDA 8.0 Toolkit?
(y)es/(n)o/(q)uit: y

Enter Toolkit Location
[ default is /usr/local/cuda-8.0 ]:

Do you want to install a symbolic link at /usr/local/cuda?
(y)es/(n)o/(q)uit: y

```

注意：这是选择不安装显卡驱动，因为前面已安装。

```

chenhf@chenhf-ubuntu: /usr/local/src
Driver:    Not Selected
Toolkit:   Installed in /usr/local/cuda-8.0
Samples:   Installed in /home/chenhf, but missing recommended libraries

Please make sure that
- PATH includes /usr/local/cuda-8.0/bin
- LD_LIBRARY_PATH includes /usr/local/cuda-8.0/lib64, or, add /usr/local/cuda-8.0/lib64 to /etc/ld.so.conf and run ldconfig as root

To uninstall the CUDA Toolkit, run the uninstall script in /usr/local/cuda-8.0/bin

Please see CUDA_Installation_Guide_Linux.pdf in /usr/local/cuda-8.0/doc/pdf for
detailed information on setting up CUDA.

***WARNING: Incomplete installation! This installation did not install the CUDA
Driver. A driver of version at least 361.00 is required for CUDA 8.0 functionali
ty to work.
To install the driver using this installer, run the following command, replacing
<CudaInstaller> with the name of this run file:
    sudo <CudaInstaller>.run -silent -driver

Logfile is /tmp/cuda_install_4871.log
chenhf@chenhf-ubuntu: /usr/local/src$

```

安装 cuda 8.0 patch

sudo sh cuda_8.0.61.2_linux.run

```
chenhf@chenhf-ubuntu: /usr/local/src

6. NVIDIA CUDA General Terms
-----

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address and system configuration, will only be collected on an
anonymous basis and cannot be linked to any personally
identifiable information. Personally identifiable information
such as your username or hostname is not collected.

-----

Do you accept the previously read EULA?
accept/decline/quit: accept

Enter CUDA Toolkit installation directory
[ default is /usr/local/cuda-8.0 ]:

Installation complete!
Installation directory: /usr/local/cuda-8.0

chenhf@chenhf-ubuntu: /usr/local/src$
```

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

<https://developer.nvidia.com/rdp/cudnn-download>

For more information, refer to the cuDNN Developer Guide, Install:

Download cuDNN v7.0.5 [Dec 11, 2017], for CUDA 9.1

Download cuDNN v7.0.5 [Dec 5, 2017], for CUDA 9.0

Download cuDNN v7.0.5 [Dec 5, 2017], for CUDA 8.0

Download cuDNN v7.0.4 [Nov 13, 2017], for CUDA 9.0

Download cuDNN v7.0.4 [Nov 13, 2017], for CUDA 8.0

Download cuDNN v6.0 [April 27, 2017], for CUDA 8.0

Download cuDNN v6.0 [April 27, 2017], for CUDA 7.5

Download cuDNN v5.1 [Jan 20, 2017], for CUDA 8.0

Download cuDNN v5.1 [Jan 20, 2017], for CUDA 7.5

Archived cuDNN Releases

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

Get Started.

Select your preferences, then run the PyTorch install command.

Please ensure that you are on the latest pip and numpy packages.
Anaconda is our recommended package manager

OS	<input checked="" type="radio"/> Linux	<input type="radio"/> OSX		
Package Manager	<input checked="" type="radio"/> conda	<input type="radio"/> pip	<input type="radio"/> Source	
Python	<input type="radio"/> 2.7	<input type="radio"/> 3.5	<input checked="" type="radio"/> 3.6	
CUDA	<input type="radio"/> 7.5	<input checked="" type="radio"/> 8	<input type="radio"/> 9	<input type="radio"/> None

Run this command: `conda install pytorch torchvision -c pytorch`

[Click here for previous versions of 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。

Download PyCharm

Windows

macOS

Linux

Professional

Full-featured IDE
for Python & Web
development

DOWNLOAD

Free trial

Community

Lightweight IDE
for Python & Scientific
development

DOWNLOAD

Free, open-source

在下载页面处点击 installation instruction

Thank you for downloading PyCharm!

Your download should start shortly. If it doesn't, please use [direct link](#).

Download and verify the file's [SHA-256 checksum](#).

Getting Started

Enter your email address to receive tips and tricks

☐ I agree to my email address being used by JetBrains to send me educational materials about the product I evaluate, including commercial communications, and to process my personal data for this purpose. I agree that JetBrains may send the data to [third-party services](#) for this purpose in accordance with the [JetBrains Privacy Policy](#). I can revoke my consent at any time in [my profile](#). In addition, an unsubscribe link is included in each email.

SUBSCRIBE

New to PyCharm?

[Installation Instructions](#)

[First steps](#)

[Meet PyCharm](#)

[Videos and Webinars](#)

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 xzf <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 xzf <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.

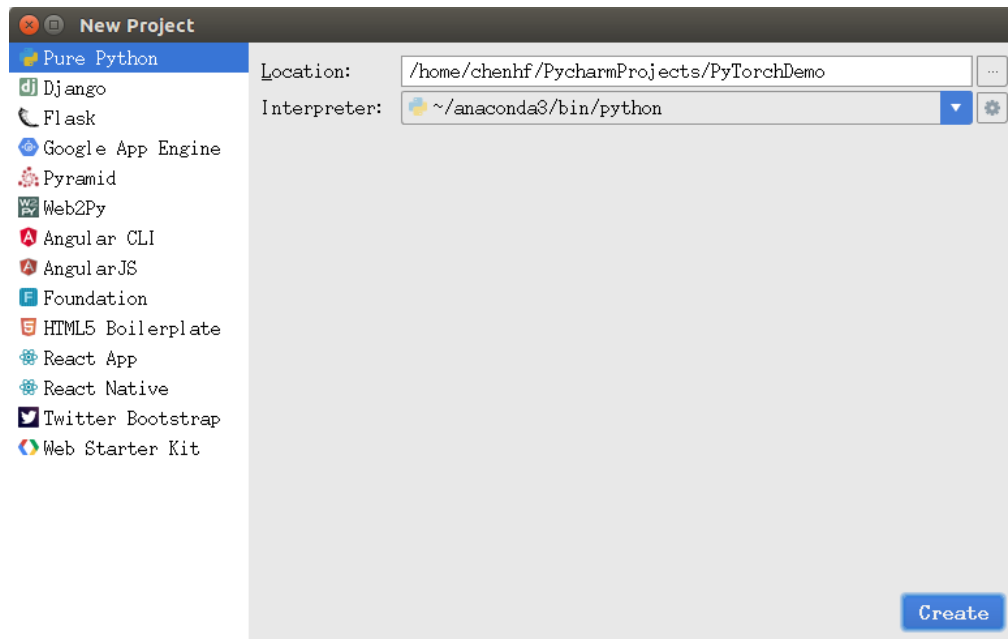
1. Run the following command:

```
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 interpreter 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))
```

