

Pytorch安装教程

说明:

- 安装前，先把教程从头到尾看一遍，急着安装容易出错。
- 需要首先确定的是，是否要安装有gpu加速的pytorch，取决于电脑是否有NVIDIA独立显卡，和您的使用需求，GPU加速对于大规模，大量数据的实验作用很大。
- 如果需要GPU加速版本，安装步骤必然较为复杂。
- 无论是tensorflow, keras, pytorch, 安装中最容易出现的bug就是版本不对应造成使用不了，所以安装过程中，先确定anaconda, cuda, pytorch需要的版本再开始安装。
- 请记住安装于您电脑中的软件的位置，方便安装错了卸载。

步骤:

- 1. 安装Anaconda
- 2. 检查是否有英伟达(NVIDIA)独立显卡
- *3. 升级cuda驱动
- 4. 安装cudnn
- 5. 安装pytorch
- *6. 旧版本Cuda的处理方式

1. 安装Anaconda

- 在机器学习，深度学习中，要用到大量的 package（就是各种工具包）。如果说，函数是一个工具，那么 package 就是一个工具包。一个个安装 package 很麻烦，而且容易出现疏漏。于是，就有了 Anaconda，这是一个集成了常用于科学分析（机器学习，深度学习）的大量 package。也就是说，你只要安装了 Anaconda，就安装了很多我们之后要用的许多 packages。
- <https://www.anaconda.com/products/individual>

1. 安装Anaconda

Anaconda Installers

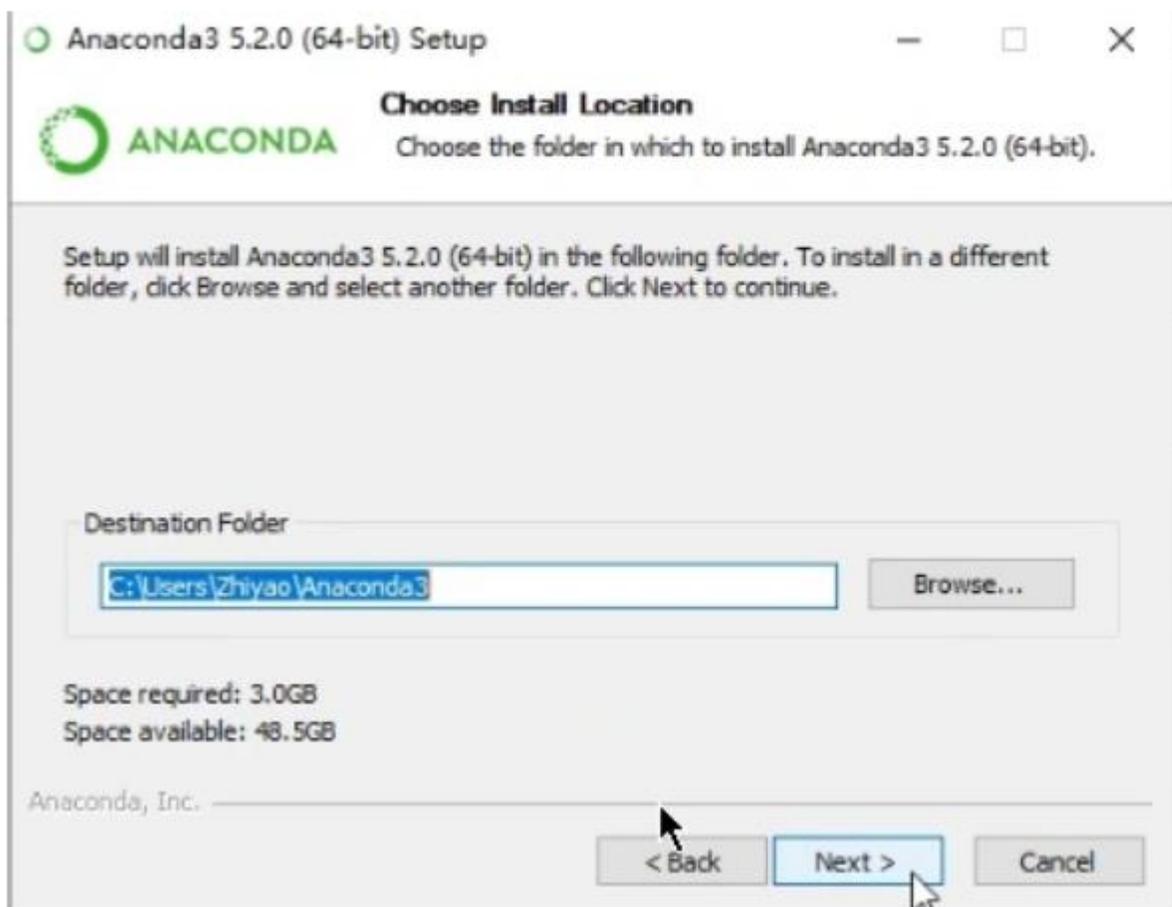
Windows 	MacOS 	Linux 
<p>Python 3.7</p> <p>64-Bit Graphical Installer (466 MB)</p> <p>32-Bit Graphical Installer (423 MB)</p>	<p>Python 3.7</p> <p>64-Bit Graphical Installer (442 MB)</p> <p>64-Bit Command Line Installer (430 MB)</p>	<p>Python 3.7</p> <p>64-Bit (x86) Installer (522 MB)</p> <p>64-Bit (Power8 and Power9) Installer (276 MB)</p>
<p>Pytorch不支持32位系统</p> <p>Python 2.7</p> <p>64-Bit Graphical Installer (413 MB)</p> <p>32-Bit Graphical Installer (356 MB)</p>	<p>Python 2.7</p> <p>64-Bit Graphical Installer (637 MB)</p> <p>64-Bit Command Line Installer (409 MB)</p>	<p>Python 2.7</p> <p>64-Bit (x86) Installer (477 MB)</p> <p>64-Bit (Power8 and Power9) Installer (295 MB)</p>

<https://repo.anaconda.com/archive/> 这是旧版本3.6等的地址

1. 安装Anaconda

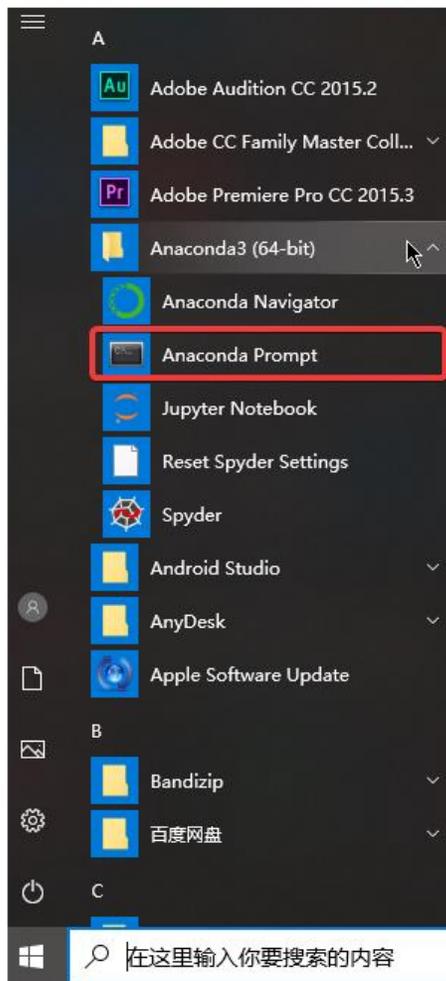
双击进行安装，需要注意以下几点：

(1) 记住安装路径，之后会用到

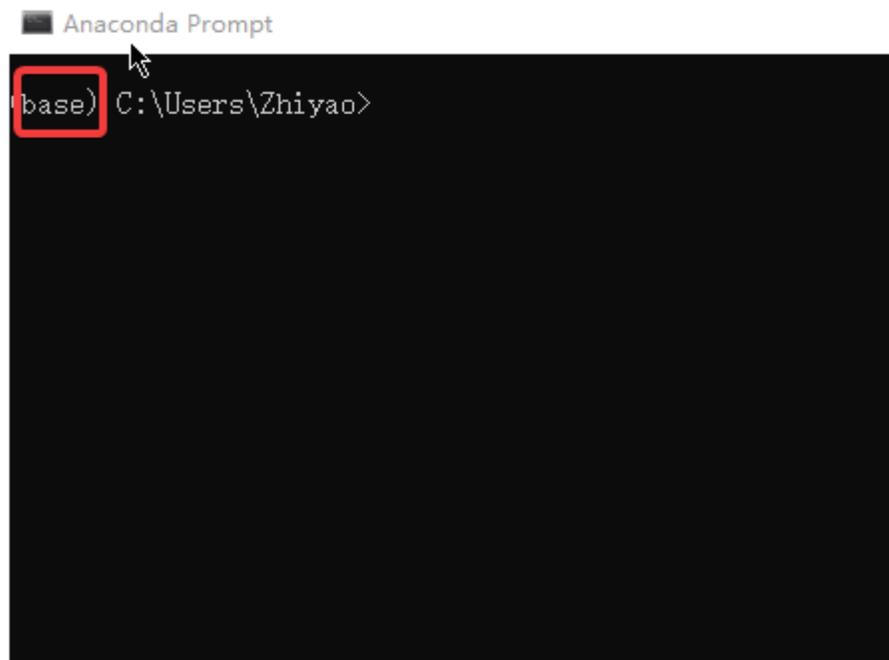


1. 安装Anaconda

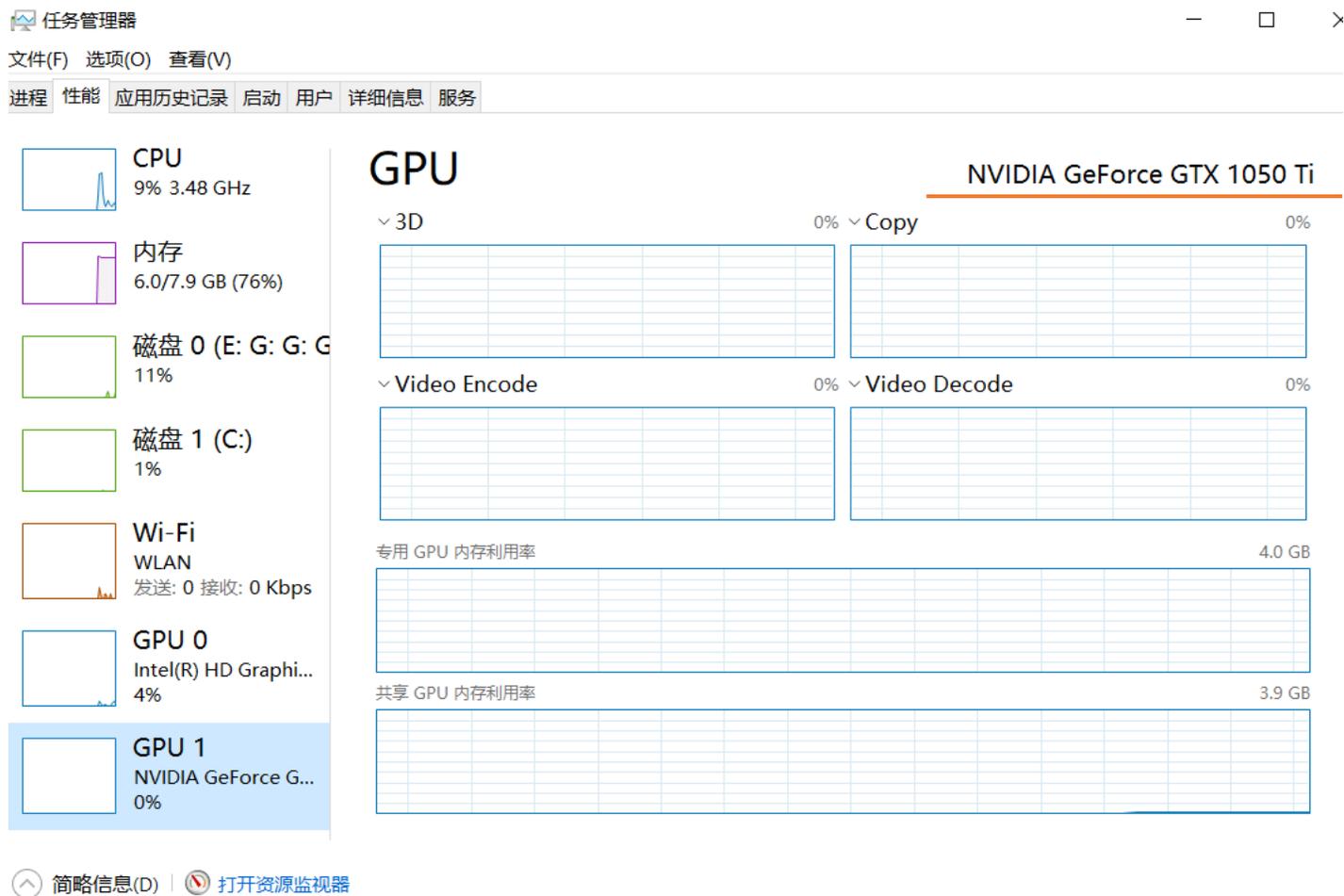
为了检验是否安装成功，在开始菜单出，左击 **Anaconda Prompt**



如果可以成功打开，且左边有 (base)，即安装成功。



2. 检查是否有英伟达(NVIDIA)独立显卡



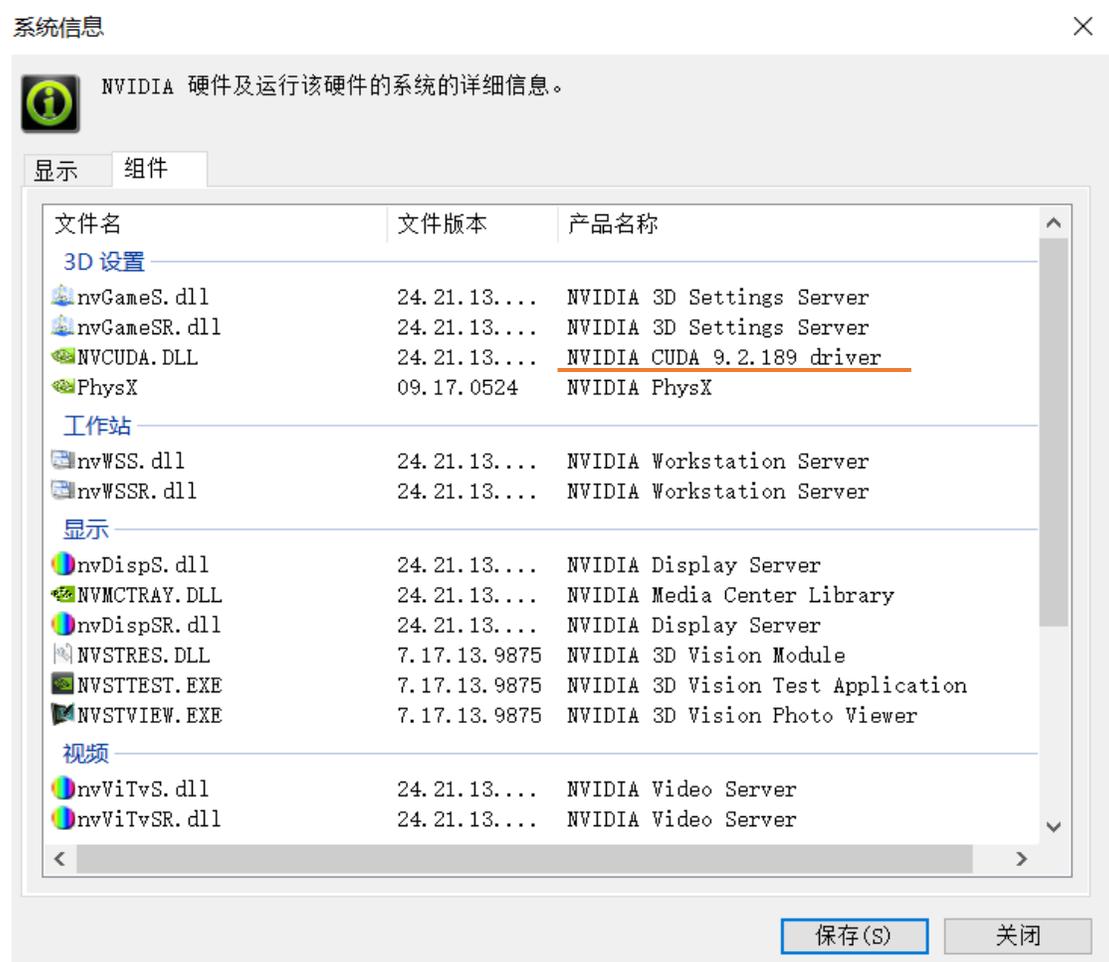
如果没有，或者不打算
使用gpu直接跳到5；
如果有，需要检查版本；

2. 检查是否有英伟达(NVIDIA)独立显卡



在控制面板中，找到英伟达独立显卡的控制面板。点击“帮助——系统信息”

2. 检查是否有英伟达(NVIDIA)独立显卡



我的电脑是Cuda 9.2

2. 检查是否有英伟达(NVIDIA)独立显卡

Table 1. CUDA Toolkit and Compatible Driver Versions

CUDA Toolkit	Linux x86_64 Driver Version	Windows x86_64 Driver Version
CUDA 10.2.89	>= 440.33	>= 441.22
CUDA 10.1 (10.1.105 general release, and updates)	>= 418.39	>= 418.96
CUDA 10.0.130	>= 410.48	>= 411.31
CUDA 9.2 (9.2.148 Update 1)	>= 396.37	>= 398.26
CUDA 9.2 (9.2.88)	>= 396.26	>= 397.44
CUDA 9.1 (9.1.85)	>= 390.46	>= 391.29
CUDA 9.0 (9.0.76)	>= 384.81	>= 385.54
CUDA 8.0 (8.0.61 GA2)	>= 375.26	>= 376.51
CUDA 8.0 (8.0.44)	>= 367.48	>= 369.30
CUDA 7.5 (7.5.16)	>= 352.31	>= 353.66
CUDA 7.0 (7.0.28)	>= 346.46	>= 347.62

目前，最新版pytorch需要的cuda驱动只有9.2, 10.1, 10.2。因此，如果想要安装最新版的，但驱动不到9.2，可以进行升级，但需要注意的是，升级的必要条件是，显卡版本号本身有要求，升级前务必检查是否兼容。

Cuda9.2以下且不满足驱动更新要求的，看第六点6

*3. 升级cuda驱动

<https://developer.nvidia.com/cuda-10.1-download-archive-update2>

Archived Releases

CUDA Toolkit 10.2 (Nov 2019), [Versioned Online Documentation](#)

CUDA Toolkit 10.1 update2 (Aug 2019), [Versioned Online Documentation](#)

CUDA Toolkit 10.1 update1 (May 2019), [Versioned Online Documentation](#)

CUDA Toolkit 10.1 (Feb 2019), [Online Documentation](#)

CUDA Toolkit 10.0 (Sept 2018), [Online Documentation](#)

CUDA Toolkit 9.2 (May 2018), [Online Documentation](#)

CUDA Toolkit 9.1 (Dec 2017), [Online Documentation](#)

CUDA Toolkit 9.0 (Sept 2017), [Online Documentation](#)

CUDA Toolkit 8.0 GA2 (Feb 2017), [Online Documentation](#)

CUDA Toolkit 8.0 GA1 (Sept 2016), [Online Documentation](#)

CUDA Toolkit 7.5 (Sept 2015)

选择合适的版本打开

*3. 升级cuda驱动

CUDA TOOLKIT 9.2 DOWNLOAD

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

Version

10

8.1

7

Server 2016

Server 2012 R2

Installer Type ?

exe (network)

exe (local)

Download Installers for Windows 10 x86_64

The base installer is available for download below.

There is 1 patch available. This patch requires the base installer to be installed first.

> Base Installer

Download [1.5 GB] 

Installation Instructions:

1. Double click cuda_9.2.148_win10.exe
2. Follow on-screen prompts

> Patch 1 [Released Aug 16, 2018]

Download [58.7 MB] 

CUDA 9.2 Patch Update: This update includes performance improvements to cuBLAS GEMM APIs and bug fixes for CUPTI and cuda-gdb. See the CUDA 9.2 release notes for more details.

*3. 升级cuda驱动



直接安装，精简版即可，会自动卸载旧版本。

4. 安装cudnn

如果没有升级驱动或者没有指定升级路径，那么将在C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v9.2找到安装的文件。Cuda驱动安装后，还需要cudnn来支持卷积等运算，因此需要下载cudnn。cuDNN是NVIDIA提供的deep learning解决方案，理论上是一定要安装的，但有些Cuda可能自带了，可以在C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v9.2中查看：

C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v9.2\bin

C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v9.2\include

C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v9.2\lib\x64

三个路径下，查找cudnn，如果有对应文件，就不用下载了

4. 安装cudnn

下载路径:

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

下载cudnn需要注册一个NVIDIA账号, 然后选择对应版本下载

cuDNN Archive



NVIDIA cuDNN is a GPU-accelerated library of primitives for deep neural networks.

Download cuDNN v7.6.4 (September 27, 2019), for CUDA 10.1
Download cuDNN v7.6.4 (September 27, 2019), for CUDA 10.0
Download cuDNN v7.6.4 (September 27, 2019), for CUDA 9.2
Download cuDNN v7.6.4 (September 27, 2019), for CUDA 9.0
Download cuDNN v7.6.3 (August 23, 2019), for CUDA 10.1
Download cuDNN v7.6.3 (August 23, 2019), for CUDA 10.0
Download cuDNN v7.6.3 (August 23, 2019), for CUDA 9.2
Download cuDNN v7.6.3 (August 23, 2019), for CUDA 9.0
Download cuDNN v7.6.2 (July 22, 2019), for CUDA 10.1
Download cuDNN v7.6.2 (July 22, 2019), for CUDA 10.0
Download cuDNN v7.6.2 (July 22, 2019), for CUDA 9.2
Download cuDNN v7.6.2 (July 22, 2019), for CUDA 9.0

4. 安装cudnn

bin	2020/7/12 19:29	文件夹	
include	2020/7/12 19:29	文件夹	
lib	2020/7/12 19:34	文件夹	
NVIDIA_SLA_cuDNN_Support.txt	2019/10/27 21:00	文本文档	39 KB

下载完的三个文件夹，把它们中的cudnn文件复制到下面对应的目录即可（我这里是9.2版本）

C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v9.2\bin

C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v9.2\include

C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v9.2\lib\x64

5. 安装pytorch

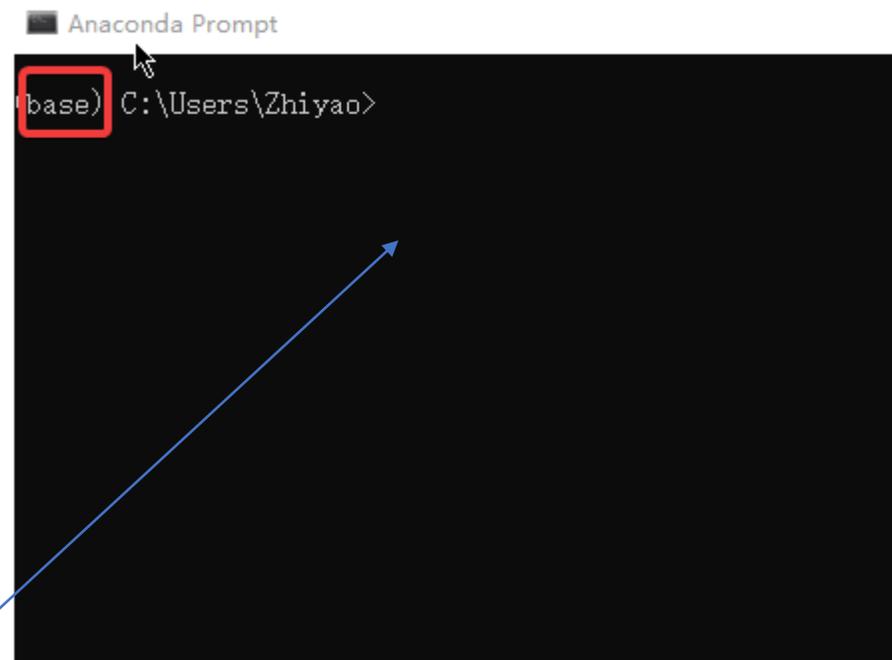
<https://pytorch.org/get-started/locally/>

START LOCALLY

Select your preferences and run the install command. Stable represents the most currently tested and supported version of PyTorch. This should be suitable for many users. Preview is available if you want the latest, not fully tested and supported, 1.5 builds that are generated nightly. Please ensure that you have **met the prerequisites below (e.g., numpy)**, depending on your package manager. Anaconda is our recommended package manager since it installs all dependencies. You can also [install previous versions of PyTorch](#). Note that LibTorch is only available for C++.

PyTorch Build	Stable (1.5.1)		Preview (Nightly)	
Your OS	Linux	Mac	Windows	
Package	Conda	Pip	LibTorch	Source
Language	Python		C++ / Java	
CUDA	9.2	10.1	10.2	None
Run this Command:	<pre>pip install torch==1.5.1+cu92 torchvision==0.6.1+cu92 -f https://download.pytorch.org/whl/torch_stable.html</pre>			

如果可以成功打开，且左边有 (base)，即安装成功。



```
Anaconda Prompt
(base) C:\Users\Zhiyao>
```

选择合适的版本，这行代码复制到Anaconda Prompt即可，能翻墙的话conda快一点，否则pip快一点，复制完直接enter

5. 安装pytorch

```
Collecting package metadata (repodata.json): done
Solving environment: done

## Package Plan ##

  environment location: C:\Users\duiyao\Anaconda3\envs\pytorch

added / updated specs:
- cudatoolkit=9.2
- pytorch
- torchvision

The following packages will be downloaded:

package                        build                                size  channel
-----
cffi-1.13.1                    py36h7a1dbc1_0                      226 KB  defaults
cudatoolkit-9.2                0                                    349.0 MB  numba/label/dev
pytorch-1.3.0                  py3.6_cuda92_cudnn7_0              396.5 MB  pytorch
-----
Total:                          745.7 MB

The following NEW packages will be INSTALLED:

blas                          pkgs/main/win-64::blas-1.0-mkl
cffi                           pkgs/main/win-64::cffi-1.13.1-py36h7a1dbc1_0
cudatoolkit                    numba/label/dev/win-64::cudatoolkit-9.2-0
freetype                       pkgs/main/win-64::freetype-2.9.1-ha9979f8_1
icc_rt                         pkgs/main/win-64::icc_rt-2019.0.0-h0cc432a_1
intel-openmp                   pkgs/main/win-64::intel-openmp-2019.4-245
jpeg                            pkgs/main/win-64::jpeg-9b-hb83a4c4_2
libpng                         pkgs/main/win-64::libpng-1.6.37-h2a3f88b_0
libtiff                        pkgs/main/win-64::libtiff-4.0.10-hb898794_2
mkl                            pkgs/main/win-64::mkl-2019.4-245
mkl-service                    pkgs/main/win-64::mkl-service-2.3.0-py36hb782905_0
mkl_fft                        pkgs/main/win-64::mkl_fft-1.0.14-py36h14936fe_0
mkl_random                     pkgs/main/win-64::mkl_random-1.1.0-py36h675688f_0
ninja                          pkgs/main/win-64::ninja-1.9.0-py36h74a9793_0
numpy                          pkgs/main/win-64::numpy-1.16.5-py36h19fbc0_0
numpy-base                    pkgs/main/win-64::numpy-base-1.16.5-py36hc3f5095_0
olefile                        pkgs/main/win-64::olefile-0.46-py36_0
pillow                         pkgs/main/win-64::pillow-6.2.0-py36hdc69c19_0
pyparser                       pkgs/main/win-64::pyparser-2.19-py36_0
pytorch                        pytorch/win-64::pytorch-1.3.0-py3.6_cuda92_cudnn7_0
six                             pkgs/main/win-64::six-1.12.0-py36_0
tk                              pkgs/main/win-64::tk-8.6.8-hfa6e2cd_0
torchvision                    pytorch/win-64::torchvision-0.4.1-py36_cu92
xz                              pkgs/main/win-64::xz-5.2.4-h2fal3f4_4
zlib                           pkgs/main/win-64::zlib-1.2.11-h62dc97_3
zstd                           pkgs/main/win-64::zstd-1.3.7-h508b16e_0

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

选择y, 如果没有报错, 就说明安装好了, 一般不会报错, 别断网就可以

5. 安装pytorch

进入anaconda prompt, python进入python程序, import torch即加载模块, 没有报错说明torch安装好了, 再输入torch.cuda.is_available(), 输出True说明gpu可用, 就可以了。

```
(base) C:\Users\Vincent>python
Python 3.7.6 (default, Jan 8 2020, 20:23:39) [MSC v.1916 64 bit (AMD64)] :: Anaconda, Inc. on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> import torch
>>> torch.cuda.is_available()
True
>>>
```

*6. 旧版本Cuda的处理方式

- 如果你的Cuda版本是7.5,8.0等无法更新驱动到9.2的，并且仍然想用gpu加速，那只能下载旧版本的pytorch
- <https://pytorch.org/get-started/locally/> previous pytorch version 中找到cuda版本对应的pytorch，按照官网教程下载。
- 在线下载：按照官网提供的conda或者pip命令行，放进anaconda prompt即可。如：

Linux and Windows

```
# CUDA 10.0
conda install pytorch==1.0.0 torchvision==0.2.1 cuda100 -c pytorch

# CUDA 9.0
conda install pytorch==1.0.0 torchvision==0.2.1 cuda90 -c pytorch

# CUDA 8.0
conda install pytorch==1.0.0 torchvision==0.2.1 cuda80 -c pytorch

# CPU Only
conda install pytorch-cpu==1.0.0 torchvision-cpu==0.2.1 cpuonly -c pytorch
```

如果没有torchvision，也要安装一个，见后

*6. 旧版本Cuda的处理方式

- 手动下载：按照官网提供whl网址，如：

```
# CUDA 10.0
Download and install wheel from https://download.pytorch.org/whl/cu100/torch_stable.html

# CUDA 9.0
Download and install wheel from https://download.pytorch.org/whl/cu90/torch_stable.html

# CPU only
Download and install wheel from https://download.pytorch.org/whl/cpu/torch_stable.html
```

- 选择合适的手动下载，下载完之后，anaconda prompt 用cd命令进入文件所在的文件夹输入pip install 完整文件名
- 注意下载完torch后，还需要对应版本的torchvision（下一页）

Cp是python版本

[torch-0.3.0-cp27-cp27m-linux_x86_64.whl](#)
[torch-0.3.0-cp27-cp27mu-linux_x86_64.whl](#)
[torch-0.3.0-cp35-cp35m-linux_x86_64.whl](#)
[torch-0.3.0-cp36-cp36m-linux_x86_64.whl](#)
[torch-0.3.0.post2-cp27-cp27m-linux_x86_64.whl](#)
[torch-0.3.0.post2-cp27-cp27mu-linux_x86_64.whl](#)
[torch-0.3.0.post2-cp35-cp35m-linux_x86_64.whl](#)
[torch-0.3.0.post2-cp36-cp36m-linux_x86_64.whl](#)
[torch-0.3.0.post3-cp27-cp27m-linux_x86_64.whl](#)
[torch-0.3.0.post3-cp27-cp27mu-linux_x86_64.whl](#)
[torch-0.3.0.post3-cp35-cp35m-linux_x86_64.whl](#)
[torch-0.3.0.post3-cp36-cp36m-linux_x86_64.whl](#)
[torch-0.3.0.post4-cp27-cp27m-linux_x86_64.whl](#)
[torch-0.3.0.post4-cp27-cp27mu-linux_x86_64.whl](#)
[torch-0.3.0.post4-cp35-cp35m-linux_x86_64.whl](#)
[torch-0.3.0.post4-cp36-cp36m-linux_x86_64.whl](#)
[torch-0.3.1-cp27-cp27m-linux_x86_64.whl](#)
[torch-0.3.1-cp27-cp27mu-linux_x86_64.whl](#)
[torch-0.3.1-cp35-cp35m-linux_x86_64.whl](#)
[torch-0.3.1-cp36-cp36m-linux_x86_64.whl](#)
[torch-0.4.0-cp27-cp27m-linux_x86_64.whl](#)
[torch-0.4.0-cp27-cp27mu-linux_x86_64.whl](#)
[torch-0.4.0-cp35-cp35m-linux_x86_64.whl](#)
[torch-0.4.0-cp35-cp35m-win_amd64.whl](#)
[torch-0.4.0-cp36-cp36m-linux_x86_64.whl](#)
[torch-0.4.0-cp36-cp36m-win_amd64.whl](#)

*6. 旧版本Cuda的处理方式

输入anaconda prompt指令为 如 pip install torchvision==0.2.2

torch	torchvision	python
master / nightly	master / nightly	>=3.6
1.5.0	0.6.0	>=3.5
1.4.0	0.5.0	==2.7 , >=3.5 , <=3.8
1.3.1	0.4.2	==2.7 , >=3.5 , <=3.7
1.3.0	0.4.1	==2.7 , >=3.5 , <=3.7
1.2.0	0.4.0	==2.7 , >=3.5 , <=3.7
1.1.0	0.3.0	==2.7 , >=3.5 , <=3.7
<=1.0.1	0.2.2	==2.7 , >=3.5 , <=3.7

<https://pypi.org/project/torchvision/>

*6.旧版本Cuda的处理方式

- 旧版本cuda也检查一下有没有cudnn，没有就下载一个
- 测试方式如5所示，经过测试就说明可以了