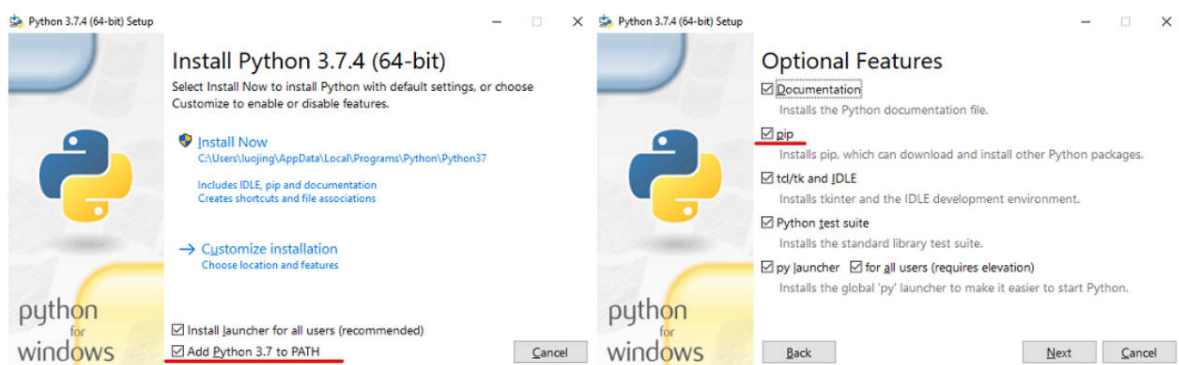


Setting Up the Programming Environment (Windows)

The Deep Learning course includes 3 programming assignments which you will need to finish to complete the course. We will use `Python` and `PyTorch` for the programming assignments. This instruction will help you set up the programming environment on your laptops. There are two ways. One is installation using `pip`, the other is installation using `conda` (the recommended way)

- **Installation using pip**

1. Please install Python . You can install `Python 3.8.1` or `Python 3.7.x` (recommended) from <https://www.python.org/downloads/>. Please select "**Add Python 3.7 to PATH**" and pip (Customize installation) and **select "install to all users"**.



2. Then please install `NumPy`, `matplotlib`, `scikit-learn`, `SciPy`, `jupyter` and other packages using `pip`. (You can enter `pip` commands in `cmd` or `Windows PowerShell`)

```
pip install numpy
pip install matplotlib
pip install scipy
pip install scikit-learn
pip install jupyter
```

If the net is not good, you can use tsinghua mirror source:

```
pip install -i https://pypi.tuna.tsinghua.edu.cn/simple package-name
```

3. For `PyTorch`, follow the instructions on <https://pytorch.org/> to install from pip repository corresponding to your system. CUDA is not necessary in this course.

PyTorch Build	Stable (1.4)		Preview (Nightly)	
Your OS	Linux	Mac	Windows	
Package	Conda	Pip	LibTorch	Source
Language	Python		C++ / Java	
CUDA	9.2	10.1	None	
Run this Command:	pip install torch==1.4.0+cpu torchvision==0.5.0+cpu -f https://download.pytorch.org/whl/torch_stable.html			

4. Run `jupyter notebook`.

```
jupyter notebook
```

```
C:\Users\wyf>jupyter notebook
[I 19:08:09.261 NotebookApp] Serving notebooks from local directory: C:\Users\wyf
[I 19:08:09.262 NotebookApp] The Jupyter Notebook is running at:
[I 19:08:09.262 NotebookApp] http://localhost:8888/?token=2448f872e7fe77ed46f2ff2b8fbcf9b
[I 19:08:09.262 NotebookApp] or http://127.0.0.1:8888/?token=2448f872e7fe77ed46f2ff2b8fb
[I 19:08:09.263 NotebookApp] Use Control-C to stop this server and shut down all kernels
[C 19:08:09.328 NotebookApp]

To access the notebook, open this file in a browser:
    file:///C:/Users/wyf/AppData/Roaming/jupyter/runtime/nbserver-5468-open.html
Or copy and paste one of these URLs:
    http://localhost:8888/?token=2448f872e7fe77ed46f2ff2b8fbcf9b08699a7866e580068
    or http://127.0.0.1:8888/?token=2448f872e7fe77ed46f2ff2b8fbcf9b08699a7866e580068
```

- **Installation using conda**

However, the recommended way of configuring your system is by using a conda environment. We recommend that you install the latest version of **Anaconda** from <https://www.anaconda.com/> or **Miniconda** from <https://docs.conda.io/en/latest/miniconda.html>. If you install Anaconda, `NumPy`, `matplotlib`, `scikit-learn`, `SciPy`, and `jupyter` will be installed automatically for the `base` environment.

 Windows |  macOS |  Linux

Anaconda 2019.10 for Windows Installer

Python 3.7 version

Download

64-Bit Graphical Installer (462 MB)
32-Bit Graphical Installer (410 MB)

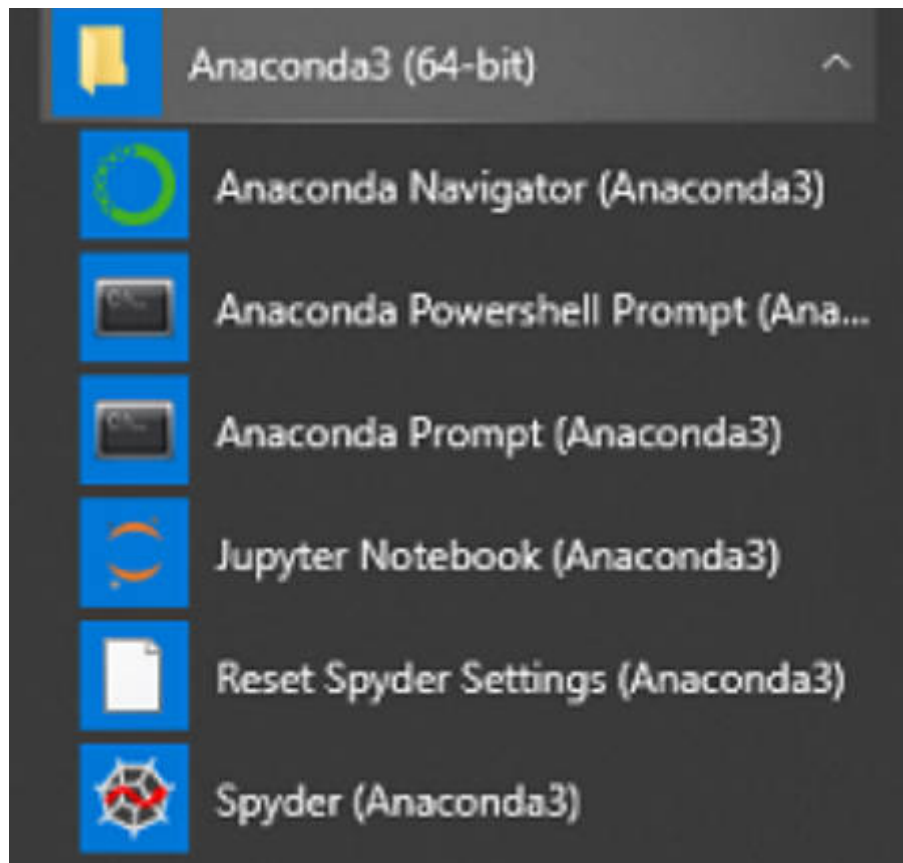
Python 2.7 version

Download

64-Bit Graphical Installer (413 MB)
32-Bit Graphical Installer (356 MB)

Here is the main procedure of installing Anaconda and `PyTorch` on Windows.

1. Please install Anaconda. When the installation is finished, you can find these files in `Start Menu`. You will use `Anaconda Powershell Prompt (Anaconda3)` or `Anaconda Prompt (Anaconda3)` to run commands.



2. Then you can create a conda environment for the course using (It is optional. You can also use the `base` environment.)

```
# Please run the command in Anaconda Powershell Prompt or Anaconda Prompt.  
conda create -n cs324 python=3.7  
# cs324 is the name of the conda environment. It can be modified
```

```
Anaconda Powershell Prompt (Anaconda3)  
(base) PS C:\Users\luojing> conda create -n cs324 python=3.7  
Collecting package metadata (current_repodata.json): done  
Solving environment: done  
  
==> WARNING: A newer version of conda exists. <==  
current version: 4.8.1  
latest version: 4.8.2  
  
Please update conda by running  
  
$ conda update -n base -c defaults conda
```

3. To activate this environment, use

```
# Please run the command in Anaconda Powershell Prompt or Anaconda Prompt.  
conda activate cs324
```

To deactivate this environment, use

```
# Please run the command in Anaconda Powershell Prompt or Anaconda Prompt.  
conda deactivate
```

You can use `conda list` to list the installed packages in the environment.

```
(base) PS C:\Users\luojing> conda activate cs324  
(cs324) PS C:\Users\luojing> conda list  
# packages in environment at C:\Softwares\DevEnvs\Anaconda3\envs\cs324:  
#  
# Name                                Version                                Build      Channel  
ca-certificates                       2020.1.1                              0  
certifi                               2019.11.28                            py37_0  
cryptography                          1.1.1d                                he774522_4  
pip                                    20.0.2                                py37_1  
python                                3.7.6                                  h60c2a47_2  
setuptools                             45.2.0                                py37_0  
sqlite                                 3.31.1                                he774522_0  
vc                                       14.1                                  h0510ff6_4  
vs2015_runtime                        14.16.27012                           hf0eaf9b_1  
wheel                                  0.34.2                                py37_0  
wincertstore                          0.2                                    py37_0  
(cs324) PS C:\Users\luojing> conda deactivate  
(base) PS C:\Users\luojing>
```

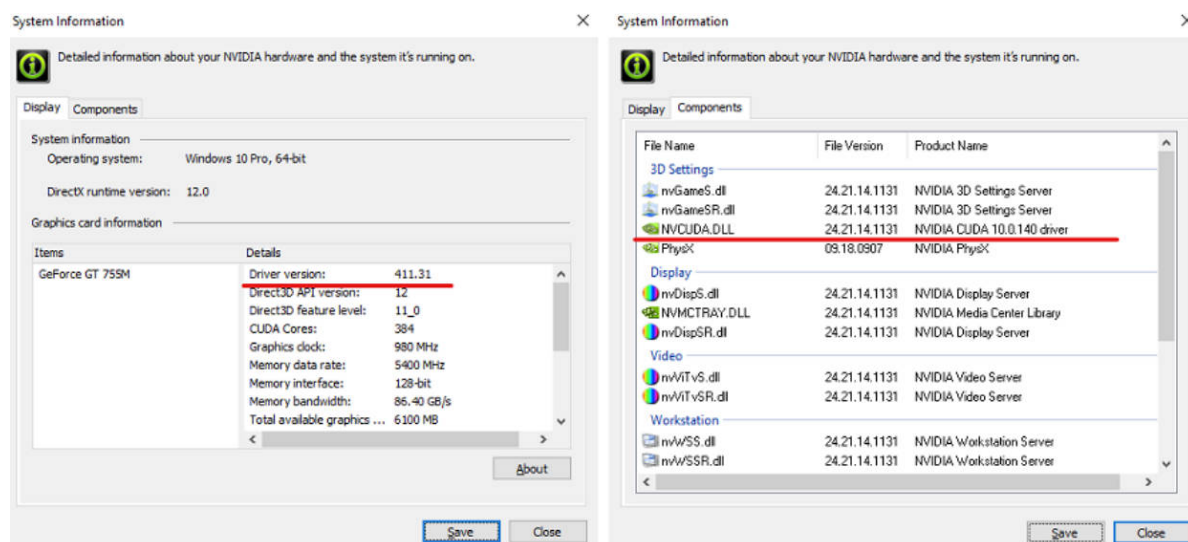
4. Finally, install the required packages in the `cs324` environment:

```
# Please run the command in Anaconda Powershell Prompt or Anaconda Prompt.  
conda activate cs324  
# cpu only  
conda install pytorch torchvision cpuonly -c pytorch  
# gpu cuda 10.1  
conda install pytorch torchvision cudatoolkit=10.1 -c pytorch  
# when you install PyTorch, numpy will be installed automatically.  
# Now you only need to install other packages.  
conda install matplotlib  
conda install scipy  
conda install scikit-learn  
conda install jupyter
```

5. Run `jupyter notebook`.

```
# Please run the command in Anaconda Powershell Prompt or Anaconda Prompt.  
conda activate cs324  
jupyter notebook
```

Please note that if you want to use GPU, you need to make sure that the GPU driver has been installed correctly and then install `PyTorch` with `cuda`. You can check the version of GPU driver at `Control Panel` → `Hardware and Sound` → `NVIDIA Control Panel` → `System Information`



When you choose the version of `cuda` , you need to check the version of GPU driver.

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

Finally, if you have any trouble, please send e-mail to all the TAs, you can find them on Blackboard.

Thanks for the contribution of previous TAs.