



# Python Environment Set-up

Shuyue Jia

# Python for Machine Learning Particularly Deep Learning

- 近几年**数据科学与大数据的发展**直接促使Python编程语言作为大众化的主力编程语言，
- 主要原因是Python：
  - 语法简单
  - 各领域的Package十分充足
  - 开发效率高
- 学习python基础：[廖雪峰Python](#)
- Python需要安装的软件：[Anaconda](#)与[PyCharm](#)
- **建议先安装Anaconda，再安装PyCharm**
- 注意：ML，DL，CV，NLP，ASR算法工程师主要用Python与C++，大数据工程师主要用Java，SQL，Python等。

# Anaconda : What and why ?

Anaconda是管理Python环境environment和包package的一个软件

**环境 ( Virtual Environment )** : Python的各种版本, 比如说Python 2.7或者3.5, 3.6等等

**包 ( Package )** : 各种开源的包, 咱们调用包中的函数来完成任务。

管理各种的Python环境与各种的包是一件非常麻烦的事情, 但是我们有了Anaconda这个软件, 让我们对python的各种操作变得更容易了!

# ANACONDA ENTERPRISE RECEIVES EDITORS' CHOICE AWARD

Anaconda has been recognized in the fourth annual *Datanami* Readers' and Editors' Choice Awards. We were honored to receive the Editors' Choice award for Best Big Data Product or Technology: Data Science Platform.

[Read More](#)



## Solutions for Data Science Practitioners and Enterprise Machine Learning

### Anaconda Distribution

*The industry standard for open-source data science*

Supported by a vibrant community of open-source contributors

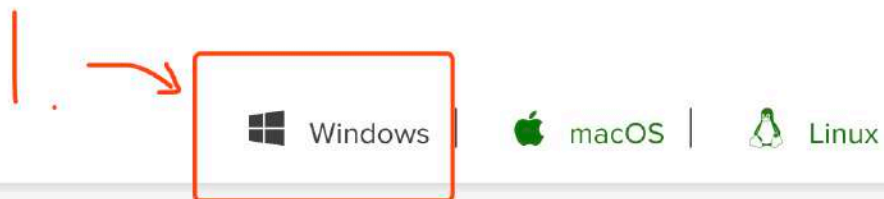
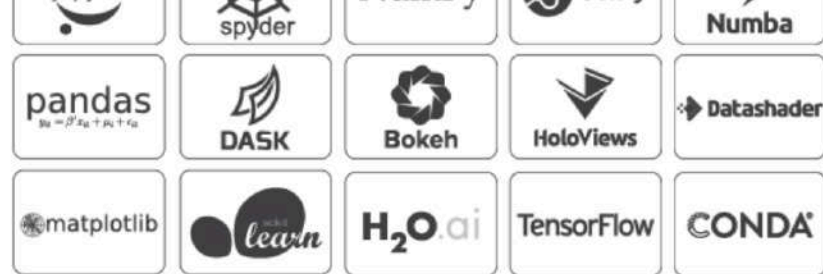
### Anaconda Enterprise

*A full-featured platform for the machine learning life cycle*

Doing data science is hard, but getting machine learning

over 15 million users worldwide, it is the industry standard for developing, testing, and training on a single machine, enabling *individual data scientists* to:

- Quickly download 1,500+ Python/R data science packages
- Manage libraries, dependencies, and environments with [Conda](#)
- Develop and train machine learning and deep learning models with [scikit-learn](#), [TensorFlow](#), and [Theano](#)
- Analyze data with scalability and performance with [Dask](#), [NumPy](#), [pandas](#), and [Numba](#)
- Visualize results with [Matplotlib](#), [Bokeh](#), [Datashader](#), and [Holoviews](#)



这里注意一点：刚打开后默认是Mac的安装，所以需要先点一下Windows，然后按64位的Anaconda软件。

## Anaconda 2019.10 for Windows Installer

### Python 3.7 version

[Download](#)

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

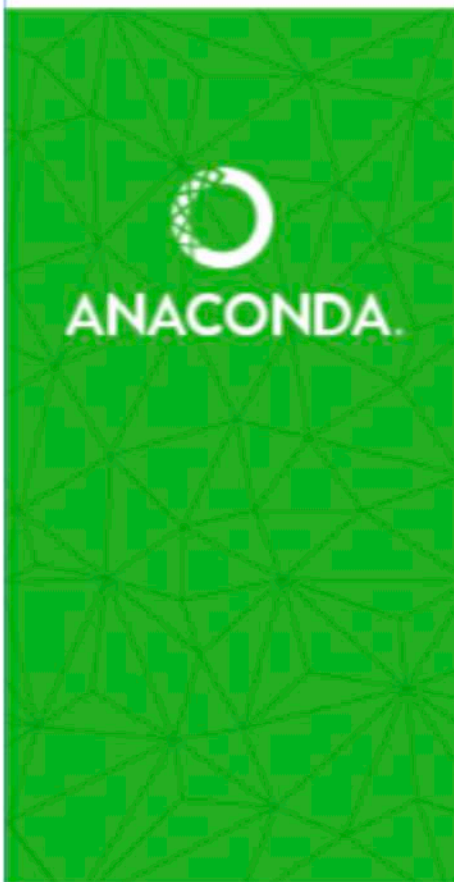
### Python 2.7 version

[Download](#)

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

Get Started with Anaconda Distribution

Anaconda2 5.2.0 (64-bit) Setup



## Welcome to Anaconda2 5.2.0 (64-bit) Setup

Setup will guide you through the installation of Anaconda2 5.2.0 (64-bit).

It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.

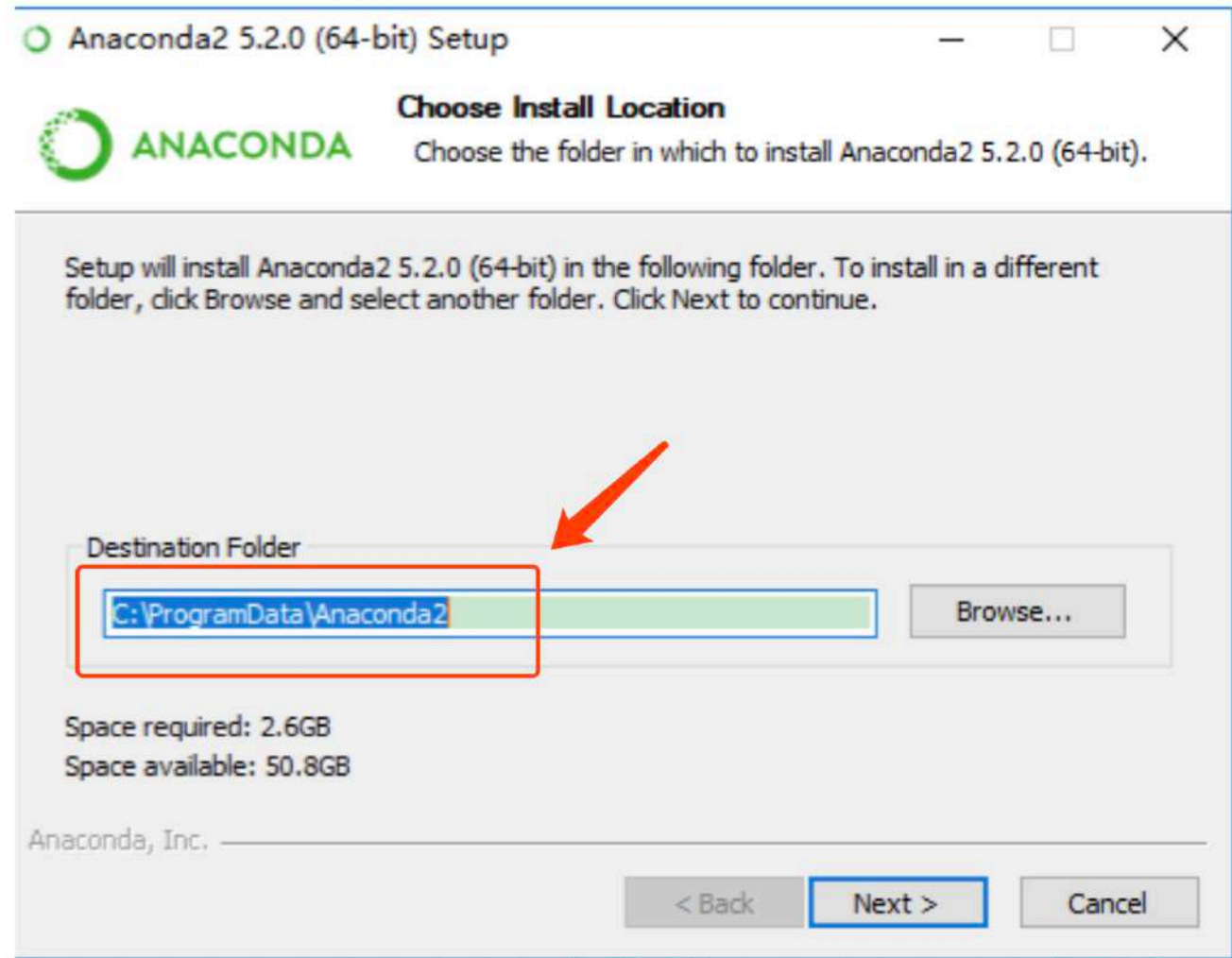
Click Next to continue.

Next >

Cancel

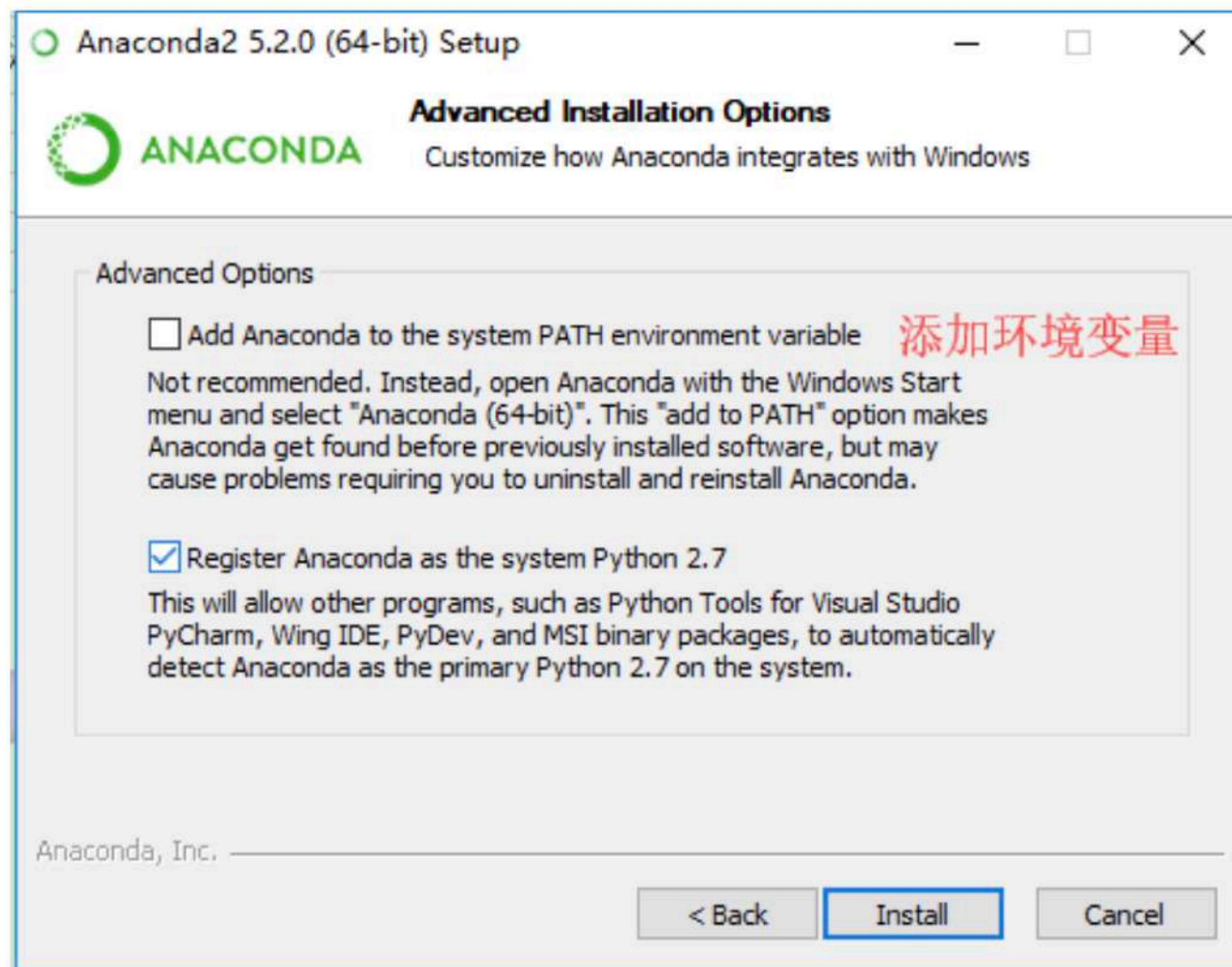
# 安装注意1

- 有些Windows的电脑默认安装是C盘的一个隐藏文件夹，这就导致有时候安装包没有权限，同时用PyCharm的时候无法读取Anaconda的虚拟环境
- Anaconda与后期的各种Python环境，包会占用非常大的空间
- 所以，建议将Anaconda安装到系统盘之外！



# 安装注意2

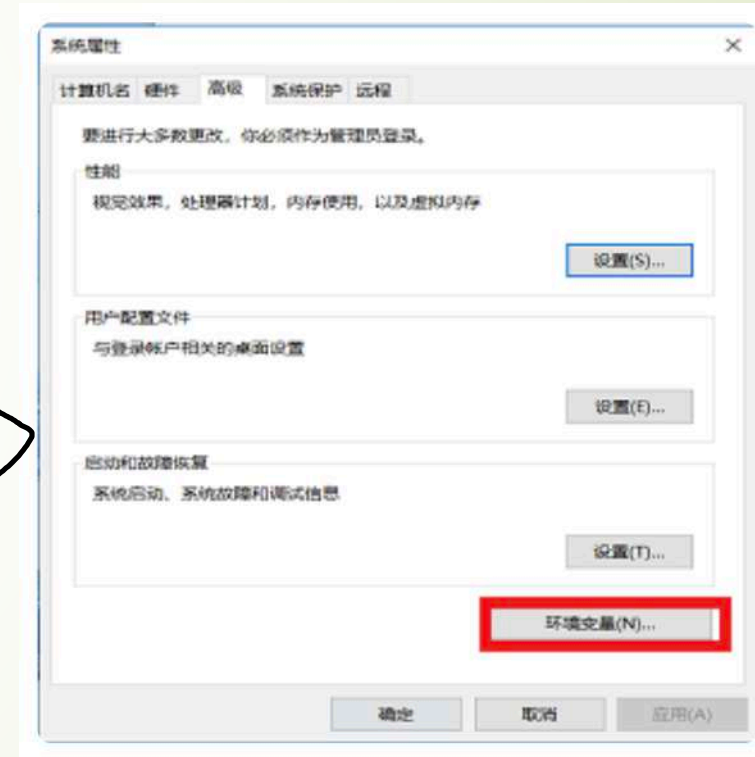
- 不建议勾选第一个选项，咱们手动把环境变量加入电脑的path。
- 按照安装的流程继续往下执行就行了，不建议改动



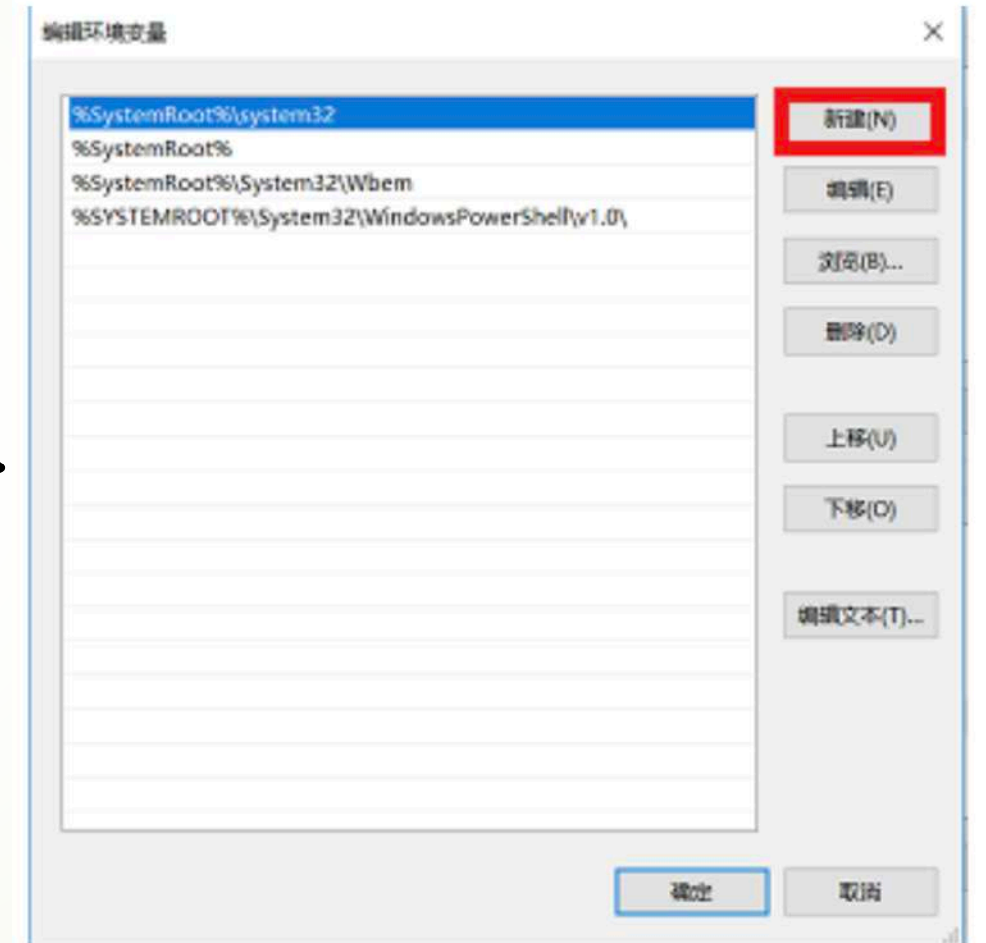
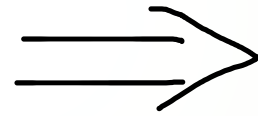
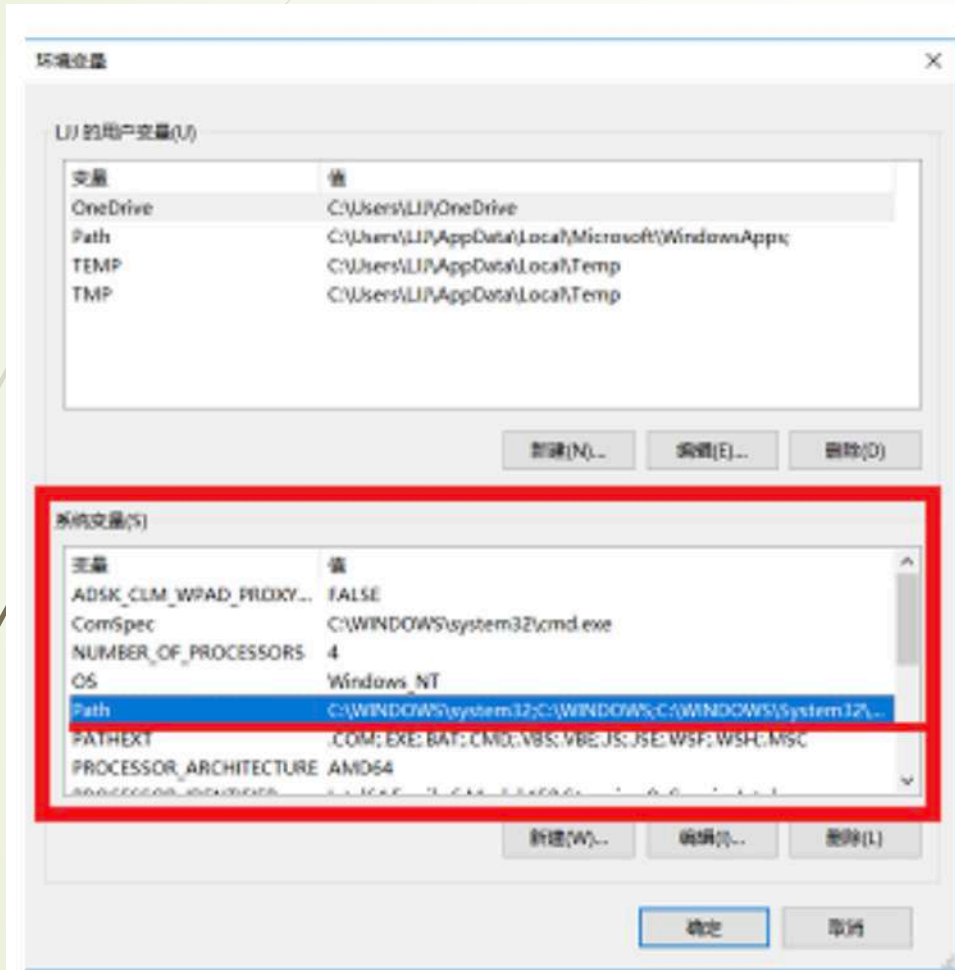


# 添加Anaconda的路径到系统Path

“属性”-----“高级系统设置”-----“环境变量”



# 选择下面“系统变量”中的“Path”





添加以下的路径

注意，我的电脑是D盘，有个Anaconda文件夹，里面是我的Anaconda安装的文件，所以我的路径是D盘Anaconda文件夹下的那些文件

D:\Anaconda\



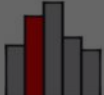

D:\Anaconda\Scripts

D:\Anaconda\Library\bin

D:\Anaconda\Library\mingw-w64\bin

- Home
- Environments
- Learning
- Community

Applications on base (root) Channels Refresh

 <p><b>JupyterLab</b> 1.0.2</p> <p>An extensible environment for interactive and reproducible computing, based on the Jupyter Notebook and Architecture.</p> <p>Launch</p>	 <p><b>Notebook</b> 6.0.0</p> <p>Web-based, interactive computing notebook environment. Edit and run human-readable docs while describing the data analysis.</p> <p>Launch</p>	 <p><b>Spyder</b> 3.3.6</p> <p>Scientific PYTHON Development EnviRonment. Powerful Python IDE with advanced editing, interactive testing, debugging and introspection features</p> <p>Launch</p>	 <p><b>Glueviz</b> 0.15.2</p> <p>Multidimensional data visualization across files. Explore relationships within and among related datasets.</p> <p>Install</p>	 <p><b>Orange 3</b> 3.23.1</p> <p>Component based data mining framework. Data visualization and data analysis for novice and expert. Interactive workflows with large toolb</p> <p>Install</p>
 <p><b>RStudio</b> 1.1.456</p> <p>A set of integrated tools designed to help you be more productive with R. Includes R essentials and notebooks.</p> <p>Install</p>	 <p><b>VS Code</b> 1.40.2</p> <p>Streamlined code editor with support for development operations like debugging, task running and version control.</p> <p>Install</p>			

至此，我们就安装完成了Anaconda，安装了很多小软件，我们一一介绍一下

Anaconda Navigator，  
Spyder，  
Jupyter Notebook



# Anaconda Navigator

- 打开这个软件，就可以看到所有的Anaconda安装的小软件
- 可以看到python的环境与安装的各种的包
- 由于打开这个软件比较耗时，个人不建议使用这款软件！



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JupyterLab

1.0.2

An extensible environment for interactive and reproducible computing, based on the Jupyter Notebook and Architecture.

Launch



Notebook

6.0.0

Web-based, interactive computing notebook environment. Edit and run human-readable docs while describing the data analysis.

Launch

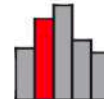


Spyder

3.3.6

Scientific PYTHON Development EnviRonment. Powerful Python IDE with advanced editing, interactive testing, debugging and introspection features

Launch



Glueviz

0.15.2

Multidimensional data visualization across files. Explore relationships within and among related datasets.

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RStudio

1.1.456

A set of integrated tools designed to help you be more productive with R. Includes R essentials and notebooks.

Install



VS Code

1.40.2

Streamlined code editor with support for development operations like debugging, task running and version control.

Install

这两款软件相对来说在高校用得比较多



```
temp.py
1 # -*- coding: utf-8 -*-
2 """
3 Spyder Editor
4
5 This is a temporary script file.
6 """
7
8 a = 'hello'
```

Source Console Object Help

### Usage

Here you can get help of any object by pressing **Cmd+I** in front of it, either on the Editor or the Console.

Help can also be shown automatically after writing a left parenthesis next to an object. You can activate this behavior in *Preferences > Help*.

New to Spyder? Read our [tutorial](#)

Variable explorer File explorer Help

IPython console

Console 1/A

```
Python 3.7.0 (default, Jun 28 2018, 07:39:16)
Type "copyright", "credits" or "license" for more information.

IPython 7.6.1 -- An enhanced Interactive Python.

In [1]:
```

Spyder就是个编辑器，后台的解释器是Python的console ( python.exe )

高校的老师比较喜欢这款软件，但是在工业界，这款软件用得较少

由于Spyder对写代码提示功能做得不是很好，所以，不建议使用这款软件

Select items to perform actions on them.

Upload New ↕ ↻

0 /		Name ↓	Last Modified	File size
<input type="checkbox"/>	anaconda3		9 days ago	
<input type="checkbox"/>	Applications		5 months ago	
<input type="checkbox"/>	Brainstorm-Folder		2 months ago	
<input type="checkbox"/>	Creative Cloud Files		2 days ago	
<input type="checkbox"/>	Desktop		seconds ago	
<input type="checkbox"/>	Documents		2 hours ago	
<input type="checkbox"/>	Downloads		42 minutes ago	
<input type="checkbox"/>	eclipse		12 days ago	
<input type="checkbox"/>	git		12 days ago	
<input type="checkbox"/>	Music		12 days ago	
<input type="checkbox"/>	my_cool_app		3 days ago	
<input type="checkbox"/>	node_modules		2 days ago	
<input type="checkbox"/>	OpenSource		3 months ago	
<input type="checkbox"/>	Pictures		20 hours ago	
<input type="checkbox"/>	Public		12 days ago	
<input type="checkbox"/>	package-lock.json		2 days ago	304 B

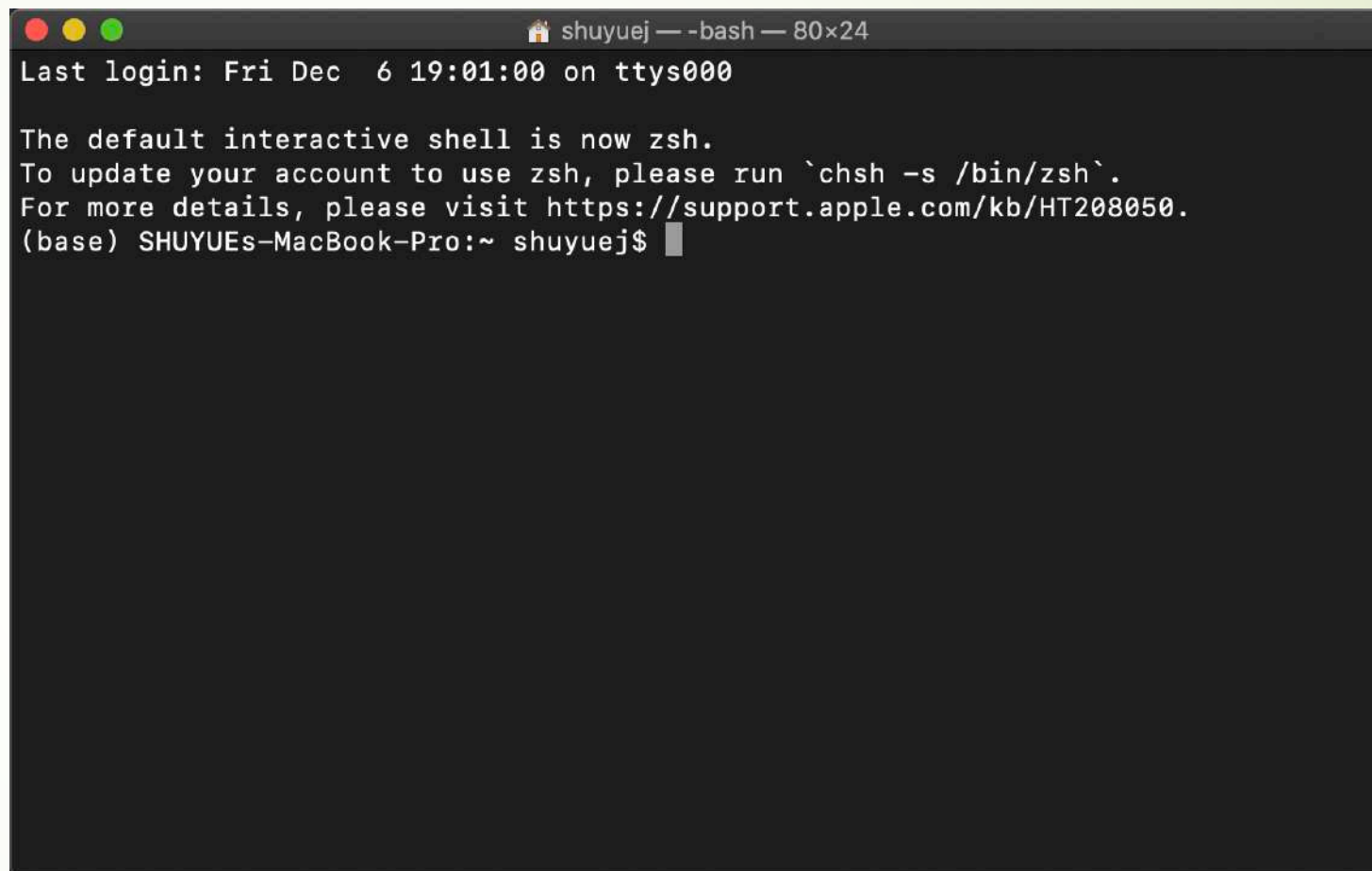
点开Jupyter Notebook后是这个样子





# 非常常用的一个“东西”是“终端terminal” Anaconda Prompt

- Windows下去🔍搜索“Anaconda Prompt”，叫做终端，是Shell的一种，有兴趣可以百度下Shell。
- 这个终端和Windows自带的CMD操作是相同的，如果Anaconda按照咱们之前的操作加入到了系统路径，那时候咱们也可以在CMD中进行操作，不过Anaconda Prompt操作是完全没有问题的！
- 注意：Shell的操作搞IT的话再公司里非常非常常用，有兴趣可以学学基本的操作指令



```
shuyuej — -bash — 80x24
Last login: Fri Dec 6 19:01:00 on ttys000

The default interactive shell is now zsh.
To update your account to use zsh, please run `chsh -s /bin/zsh`.
For more details, please visit https://support.apple.com/kb/HT208050.
(base) SHUYUEs-MacBook-Pro:~ shuyuej$
```

```
to update your account to use zsh, please run 'chsh -s /bin/zsh'.
For more details, please visit https://support.apple.com/kb/HT208050.
(base) SHUYUEs-MacBook-Pro:~ shuyuej$ conda list
# packages in environment at /Users/shuyuej/anaconda3:
#
```

# Name	Version	Build	Channel
_ipyw_jlab_nb_ext_conf	0.1.0	py37_0	
alabaster	0.7.12	py37_0	
anaconda	2019.07	py37_0	
anaconda-client	1.7.2	py37_0	
anaconda-navigator	1.9.7	py37_0	
anaconda-project	0.8.3	py_0	
appnope	0.1.0	py37_0	
appscript	1.1.0	py37_0	
asn1crypto	0.24.0	py37_0	
astroid	2.2.5	py37_0	
astropy	3.2.1	py37h1de35cc_0	
atomicwrites	1.3.0	py37_1	
attrs	19.1.0	py37_1	
babel	2.7.0	py_0	
backcall	0.1.0	py37_0	

通过指令“conda list” 或者“pip list” 将会把目前环境中全部的包给加载出来

```
zlib          1.2.11          h1de35cc_3
zstd          1.3.7           h5bba6e5_0
(base) SHUYUEs-MacBook-Pro:~ shuyuej$ conda info tensorflow
```

```
tensorflow 1.10.0 eigen_py27hf93ee88_0
```

```
-----
file name      : tensorflow-1.10.0-eigen_py27hf93ee88_0.conda
name           : tensorflow
version        : 1.10.0
build string   : eigen_py27hf93ee88_0
build number   : 0
channel        : https://repo.anaconda.com/pkgs/main/osx-64
size           : 4 KB
arch           : None
constrains     : ()
```

```
legacy_bz2_md5: 00d6b16496b6d169fcb0b983ce59ec94
```

```
legacy_bz2_size: 4356
```

```
license
```

```
license_fa
```

```
md5
```

```
platform
```

```
sha256
```

```
subdir
```

```
timestamp
```

```
url
```

通过“conda info 包的名称”，会把环境中这个包的详细信息给显示出来，我这里显示的是一个叫做“tensorflow”的包的信息

```
2ff5c74234667eaf2eb8930e93f6fc469320d50648cb4403b01c609d724e46ea
```

```
osx-64
```

```
1535138693663
```

```
https://repo.anaconda.com/pkgs/main/osx-64/tensorflow-1.10.0-eigen_py27hf93ee88_0.conda
```

```
dependencies:
```

```
_tfflow_select ==2.2.0 eigen
```

```
python 2.7.*
```

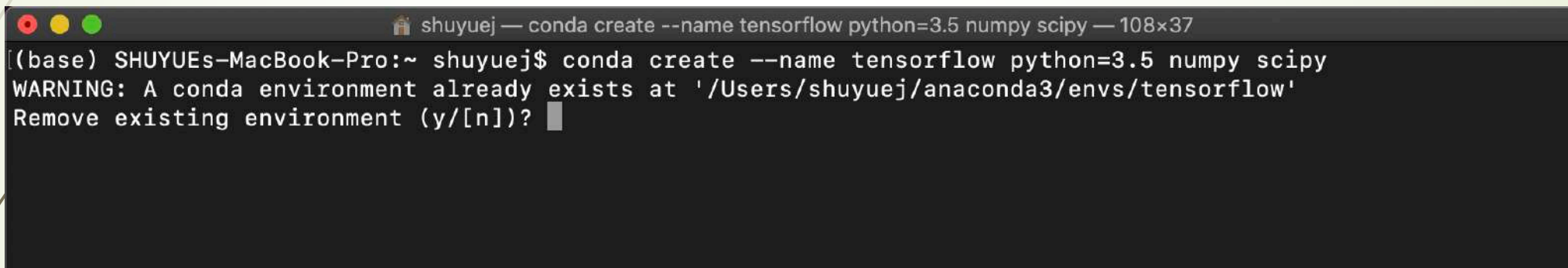
```
tensorboard >=1.10.0,<1.11.0
```

```
tensorflow-base ==1.10.0 eigen_py27h4f0eeca_0
```



```
conda create --name (your_env_name) python=3.5 numpy scipy
```

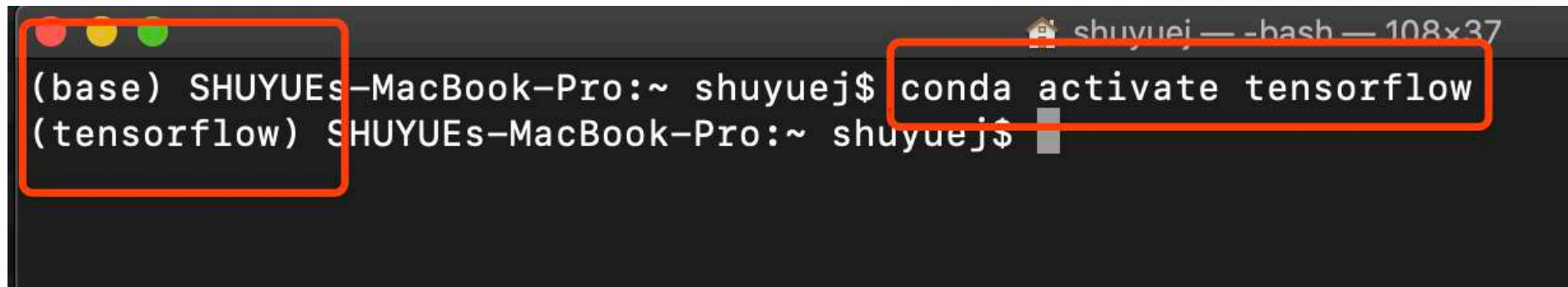
通过这个语句，可以创建一个Python 3.5版本的环境，环境名称可以自己拟定，我的截图中环境名称我起的是tensorflow；改变3.5为3.7，那时候创建的是python 3.7版本的环境了！



```
shuyuej — conda create --name tensorflow python=3.5 numpy scipy — 108x37  
[base] SHUYUES-MacBook-Pro:~ shuyuej$ conda create --name tensorflow python=3.5 numpy scipy  
WARNING: A conda environment already exists at '/Users/shuyuej/anaconda3/envs/tensorflow'  
Remove existing environment (y/[n])? █
```

```
conda remove --name your_env_name -all
```

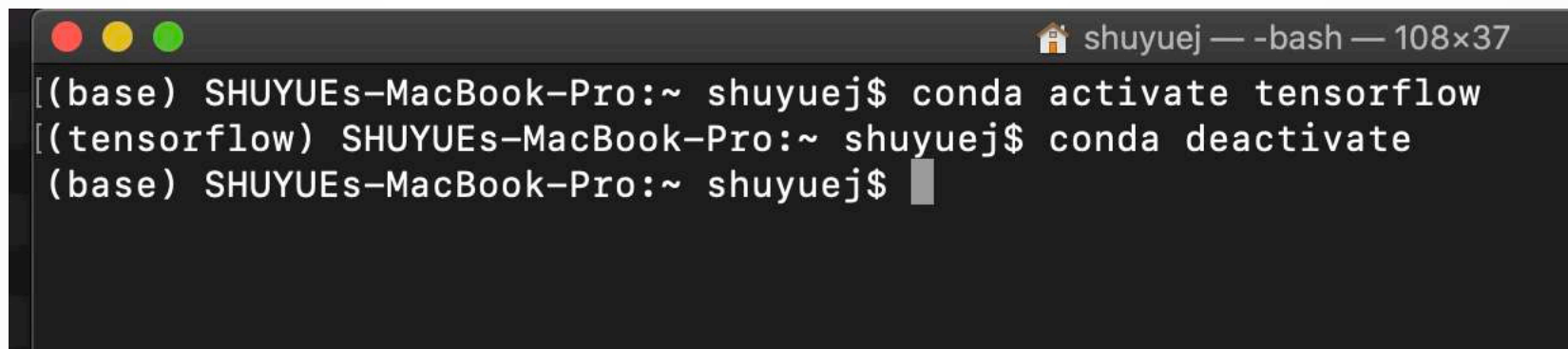
通过这条指令可以删除某个环境



```
shuyuej — -bash — 108x37
(base) SHUYUES-MacBook-Pro:~ shuyuej$ conda activate tensorflow
(tensorflow) SHUYUES-MacBook-Pro:~ shuyuej$
```

刚才执行指令安装好环境后，我刚才安装的是叫做tensorflow名称的一个python环境，通过“conda activate 环境名称”来进入那个环境中

通过deactivate或者conda deactivate来退出这个环境



```
shuyuej — -bash — 108x37
(base) SHUYUES-MacBook-Pro:~ shuyuej$ conda activate tensorflow
(tensorflow) SHUYUES-MacBook-Pro:~ shuyuej$ conda deactivate
(base) SHUYUES-MacBook-Pro:~ shuyuej$
```

# 安装各种包的指令

- ▶ conda install 包的名称
- ▶ pip install 包的名称
- ▶ 通过这两种方法来在环境中安装指定的包
- ▶ pip install --upgrade numpy
- ▶ pip install --upgrade pandas
- ▶ pip install --upgrade scipy
- ▶ 注意：通过conda安装的包在Anaconda中把各种包的兼容性都给搞好了，但是通过pip安装后仅仅是按照，各种包之前的兼容性没有管理，正常情况是不会出问题的。

# 还有很多很有用的操作指令！

- ▶ 通过百度“Anaconda命令”或者下面的网站可以浏览下具体的常用操作指令有哪些
- ▶ <https://blog.csdn.net/fyuanfena/article/details/52080270>
- ▶ 国内安装包速度慢，建议是用清华大学或者国科大的镜像

pip install tensorflow-gpu==1.14.0 -i <https://pypi.tuna.tsinghua.edu.cn/simple>

国内的话请在pip install \*\*\*\*\* 后面加上-i <https://pypi.tuna.tsinghua.edu.cn/simple>这句话，咱们用清华大学开源的python包镜像，这样下载速度更快些！（Python默认下载的镜像在米国，下载速度老慢了！！！！）



## PyCharm : What and Why ?

其实，这款软件就是个编辑器，但是是**非常强大的编辑器**

使用它的原因是这款软件的代码补全和提示功能做的特别特别好！所以写代码来说会省不少事情！

工业界有个使用它的原因是：它可以与GitHub对接，这就直接导致在公司做开发时候上传或者下载，修改、维护公司的代码会省非常多的事情。

了解一下JetBrain公司，他们的软件都是IT界顶尖的编辑器Editor的软件，PyCharm仅仅是为了写Python而开发的一款软件！

下载版本有社区版Community 与专业版Professional，建议下载专业版，Baidu破解版或者使用学校的邮箱学号@neepu.edu.cn去申请一年的免费试用

# PC PyCharm

The Python IDE  
for Professional Developers

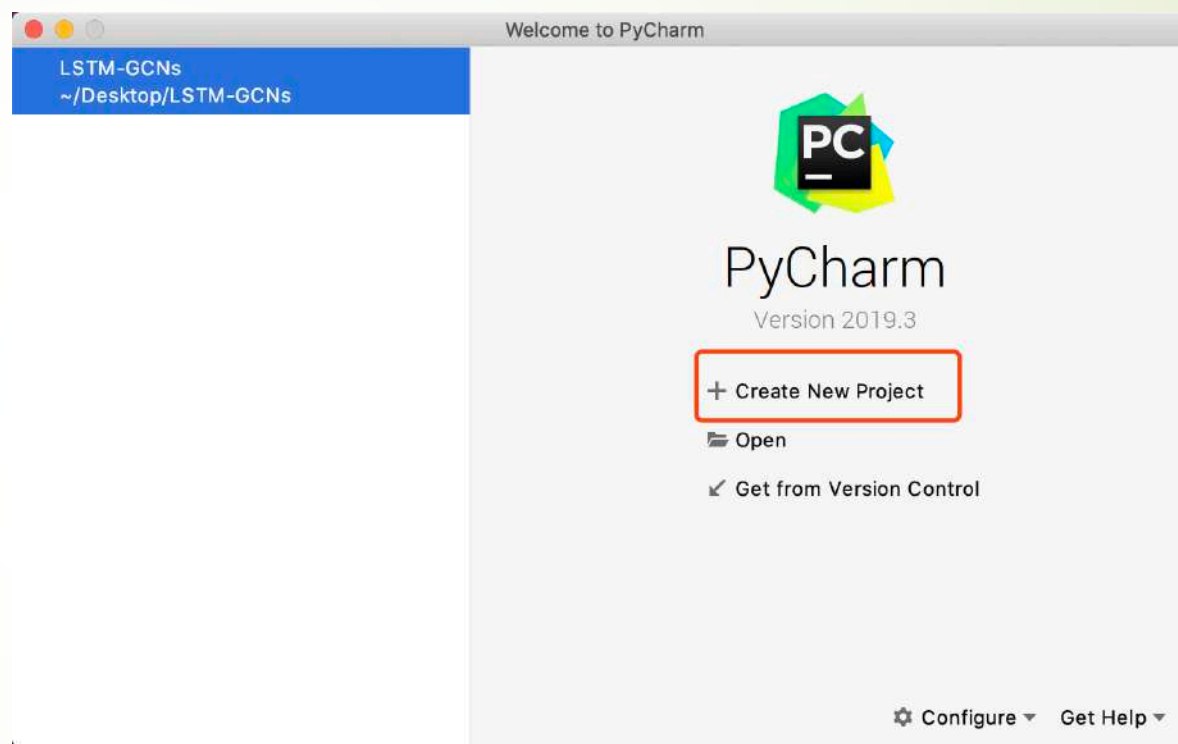
DOWNLOAD

Full-fledged Professional or Free Community

建议安装专业版

安装完成

PyCharm之后  
接下来，我们需  
要用PyCharm读  
取Anaconda创  
建的虚拟环境



# New Project

Pure Python

- Django
- Flask
- Google App Engine
- Pyramid
- Web2Py
- Scientific
- Angular CLI
- AngularJS
- Bootstrap
- HTML5 Boilerplate
- React App
- React Native

Location: /Users/shuyuej/PycharmProjects/untitled

Project Interpreter: Python 3.5 (tensorflow)

New environment using Virtualenv

Location: ed/venv

Base interpreter: /usr/local/bin/python3.7

Inherit global site-packages

Make available to all projects

Existing interpreter

Interpreter: Python 3.5 (tensorflow) ~/anaconda3/envs/tensorflow/bin/python

这个地方选择你的工作路径，叫做Project，这个路径很有用，选择的这个文件夹地址将会是文件读取的相对路径

这个是python解释器的地方，很关键！要读取Anaconda安装的python环境，具体看下一页

# Add Python Interpreter

Virtualenv Environment

**Conda Environment**

System Interpreter

Pipenv Environment

SSH Interpreter

Vagrant

Docker

Docker Compose

Interpreter:

Conda executable:

Make available to all projects

↑  
3

2



- Virtualenv Environment
- Conda Environment**
- System Interpreter
- Pipenv Environment
- SSH Interpreter
- Vagrant
- Docker
- Docker Compose

Select Python Interpreter

/Users/shuyuej/anaconda3/envs/tensorflow

- .Trash
- vscode
- anaconda3**
  - Anaconda-Navigator.app
  - bin
  - conda-meta
  - condabin
  - doc
  - envs**
    - python2
    - pytorch
    - tensorflow**
      - bin
      - conda-meta
      - etc
      - include
      - lib

Drag and drop a file into the space above to quickly locate it in the tree

Cancel OK

low2/bin/python

首先，找到安装 Anaconda 的文件夹；

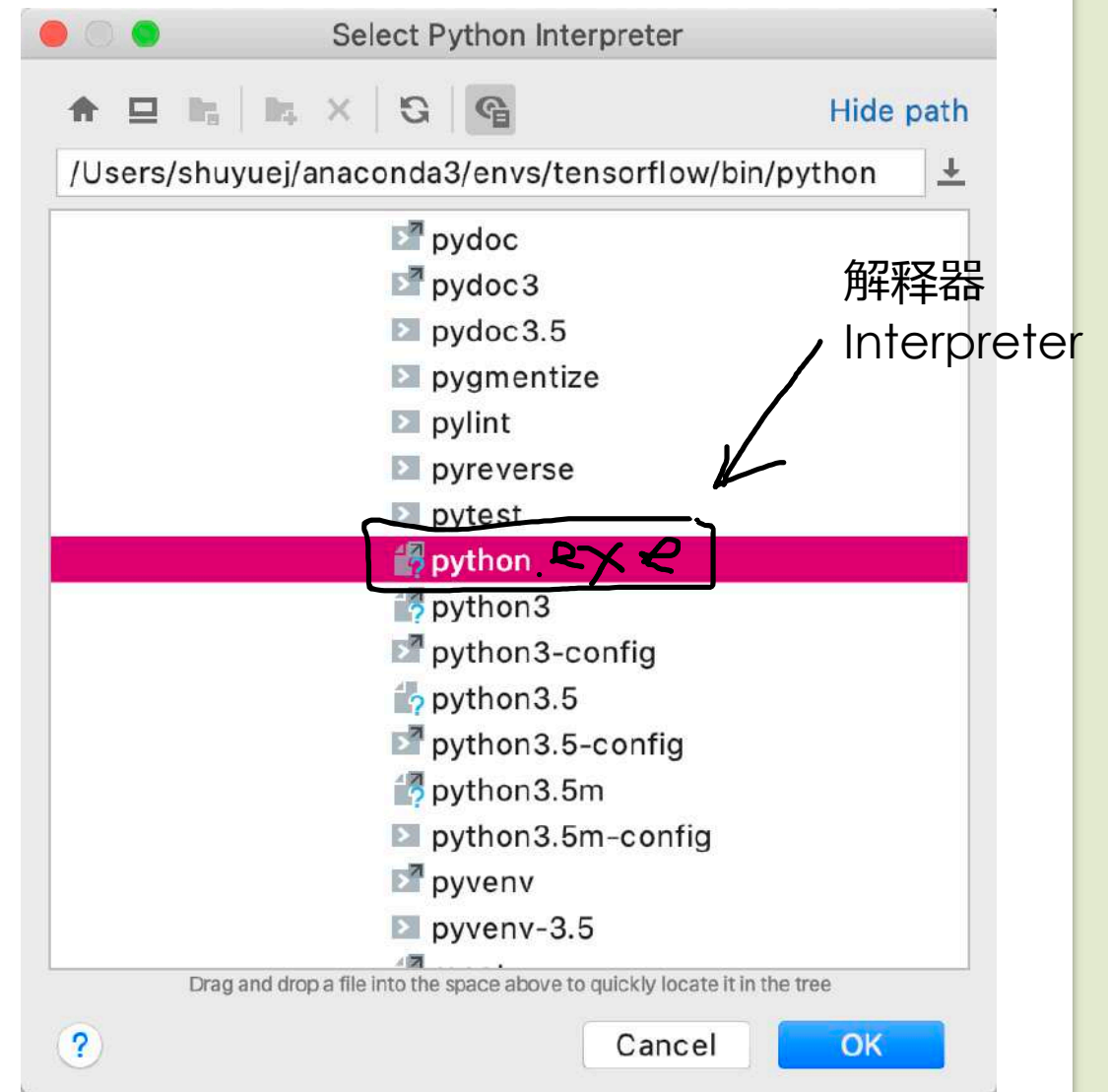
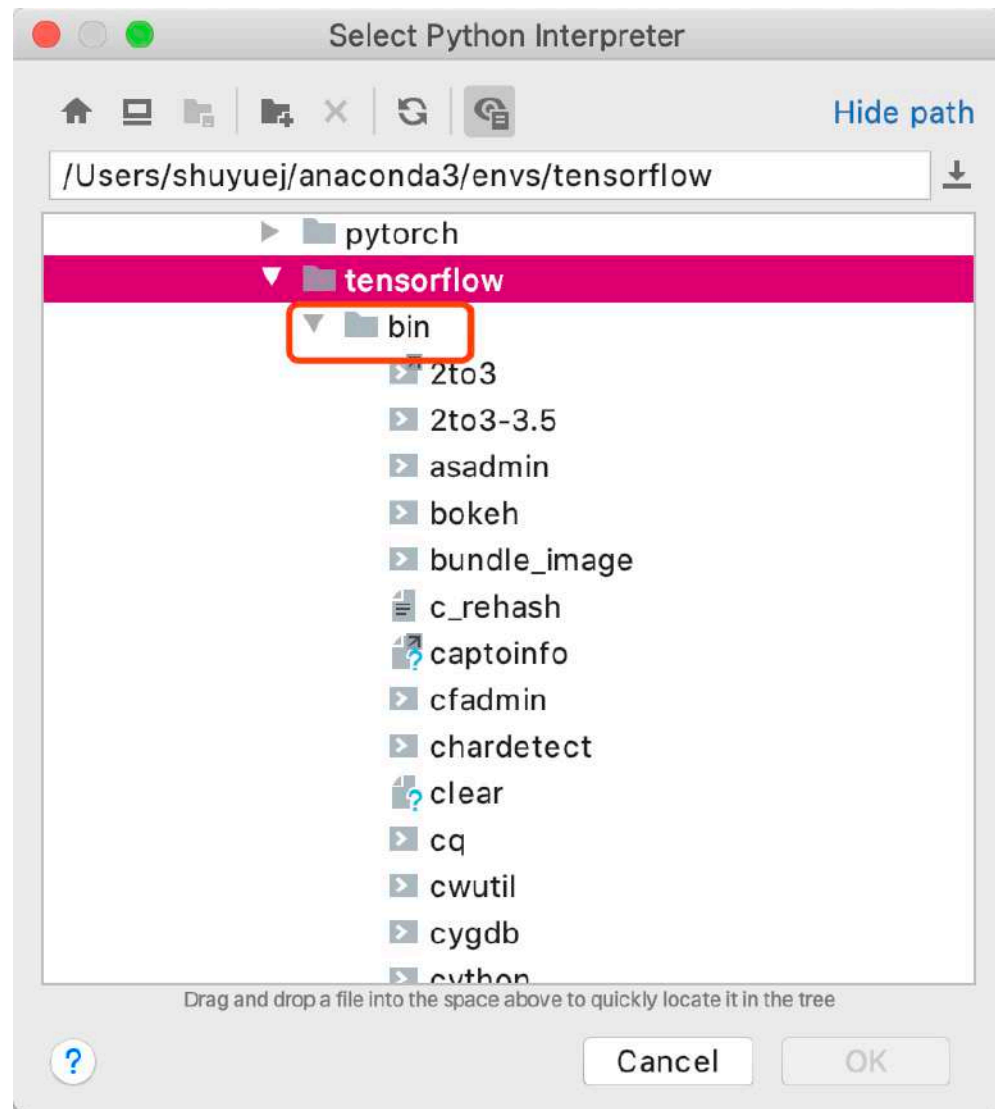
然后找 envs 这个文件夹，就是咱们安装的环境的路径；

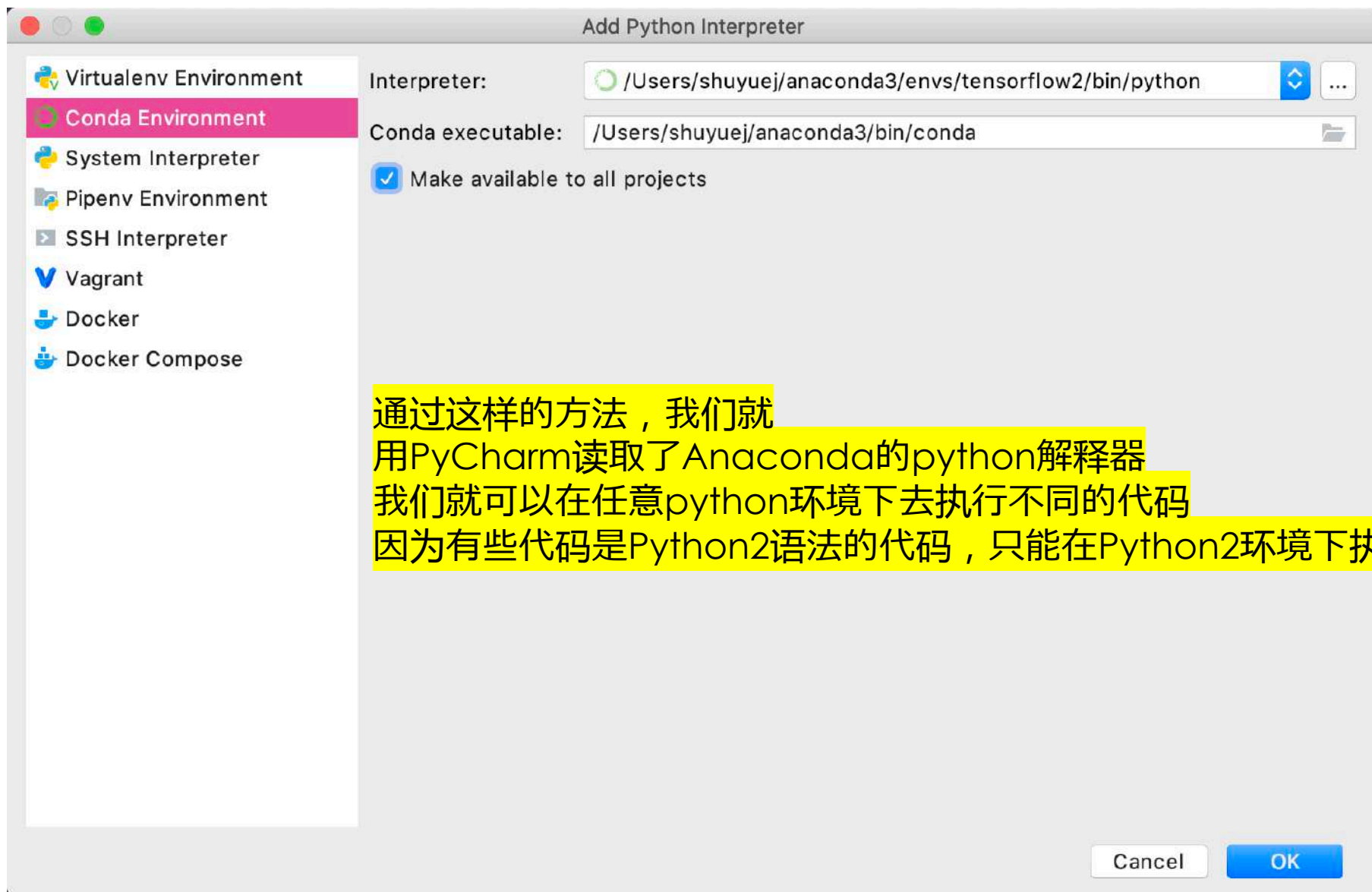
然后找咱们创建的那个名称的路径；

然后看下一页

Cancel OK

找bin文件夹，里面有个python.exe的文件，这个就是python的解释器，我们要找的东西！



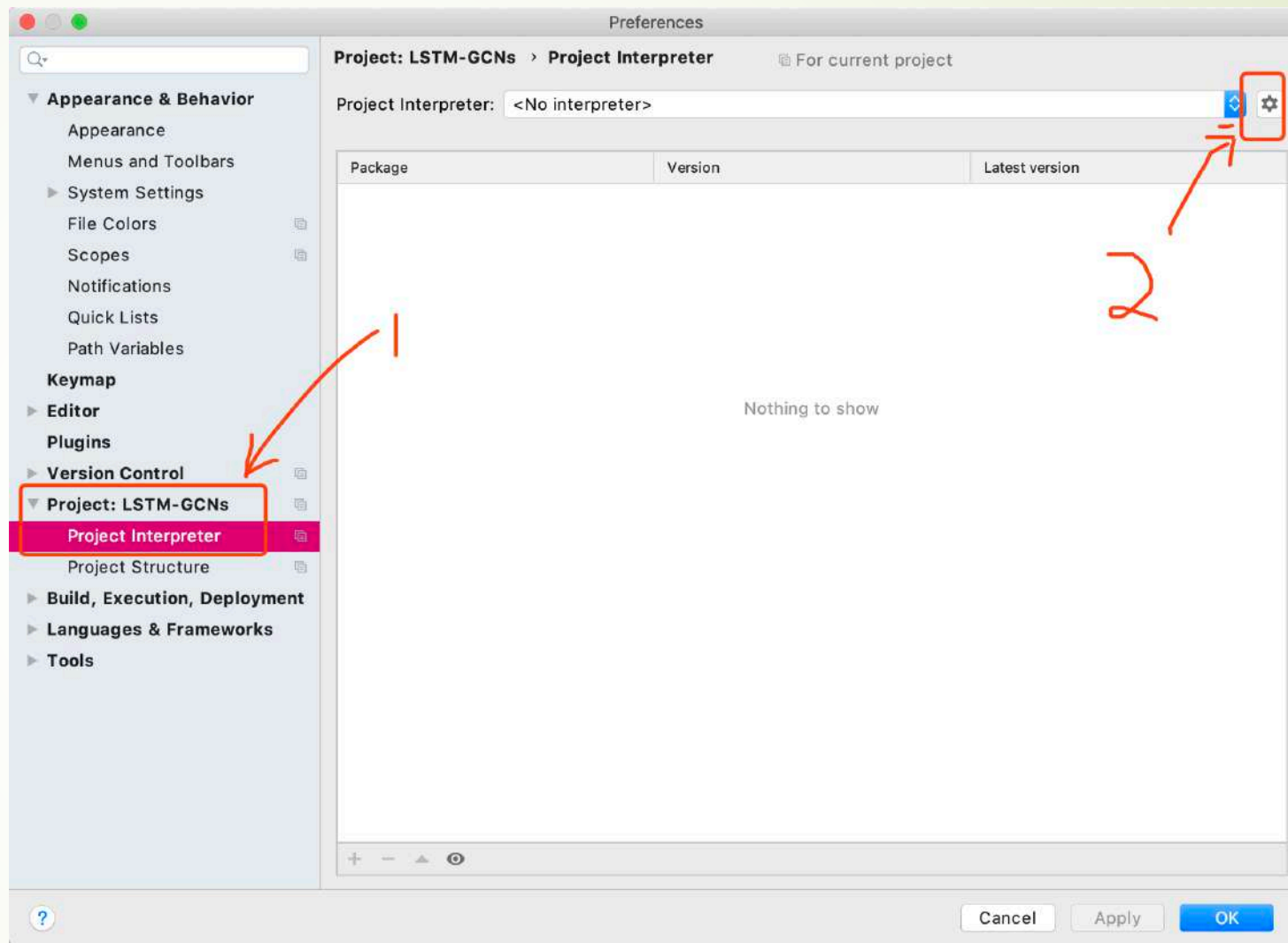


通过这样的方法，我们就  
用PyCharm读取了Anaconda的python解释器  
我们就可以在任意python环境下去执行不同的代码  
因为有些代码是Python2语法的代码，只能在Python2环境下执行



打开PyCharm的界面也可以进行环境的配置，先选择界面上的设置

- Mac中是“偏好设置”，打开设置后是这样的窗口
- 选择左侧的Project
- 里面选择Python Interpreter
- 右上角选择小齿轮的设置
- 后续读取Anaconda创建环境中的python.exe和咱们上几个ppt中的操作是一样的。



# 注意：如果要使用GPU（显卡）！ 需要安装CUDA与CuDNN

- ▶ 如果要用英伟达的显卡去加速训练深度学习模型，需要安装CUDA和CuDnn
- ▶ [https://blog.csdn.net/m0\\_37605642/article/details/98854753](https://blog.csdn.net/m0_37605642/article/details/98854753)
- ▶ 可以根据上面的教程安装CUDA，并将CuDNN的对应文件复制到CUDA中
- ▶ 然后切记！将CUDA的路径与CuDNN路径加入系统路径。
- ▶ 本PPT中Python的配置与是否使用显卡加速训练深度学习无关！
- ▶ 这一配置如果有问题，可以后续继续交流

CUDA : <https://baike.baidu.com/item/CUDA/1186262?fr=aladdin>



Thanks