

一、Python 环境安装

可采用 Anaconda 安装 python 及其相应的科学计算库，简单方便，且容易管理和切换虚拟环境。

以 Windows 为例，安装过程参见：<https://docs.anaconda.com/anaconda/install/windows>

可以从国内镜像站点下载，相关资源参见：<https://mirror.tuna.tsinghua.edu.cn/help/anaconda/>

准备：

安装 nb_conda 用于 notebook 自动关联 nb_conda 的环境，为后面 jupyter notebook 的使用作准备。

conda install nb_conda

二、创建机器学习的虚拟环境：

在命令行中执行：

```
conda create -n mlcourse
```

The screenshot shows a Windows Command Prompt window titled "命令提示符 - activate mlcourse - C:\ProgramData\Anaconda3\condabin\conda.bat" in...". The command entered was "conda create -n mlcourse". The output shows the package metadata being collected, the environment being solved, and a package plan being generated. It also provides instructions on how to activate and deactivate the environment. Finally, it shows the environment being activated and the user navigating to the root directory.

```
C:\Users\ailab>conda create -n mlcourse
Collecting package metadata (repodata.json): done
Solving environment: done

## Package Plan ##

environment location: C:\ProgramData\Anaconda3\envs\mlcourse

Proceed ([y]/n)? y

Preparing transaction: done
Verifying transaction: done
Executing transaction: done
#
# To activate this environment, use
#
#     $ conda activate mlcourse
#
# To deactivate an active environment, use
#
#     $ conda deactivate

C:\Users\ailab>activate mlcourse
C:\Users\ailab>conda.bat activate mlcourse
(mlcourse) C:\Users\ailab>jupyter notebook
```

使用 mlcourse 环境： conda activate mlcourse

退出 mlcourse 环境： conda deactivate

三、安装所需的资源

以下均在命令行中执行：

```
//添加清华conda镜像仓库，主要是为了能快速下载和安装相应的组件
```

```
conda config --add channels  
https://mirrors.tuna.tsinghua.edu.cn/anaconda/pkgs/free/  
conda config --add channels  
https://mirrors.tuna.tsinghua.edu.cn/anaconda/pkgs/main/  
conda config --set show_channel_urls yes
```

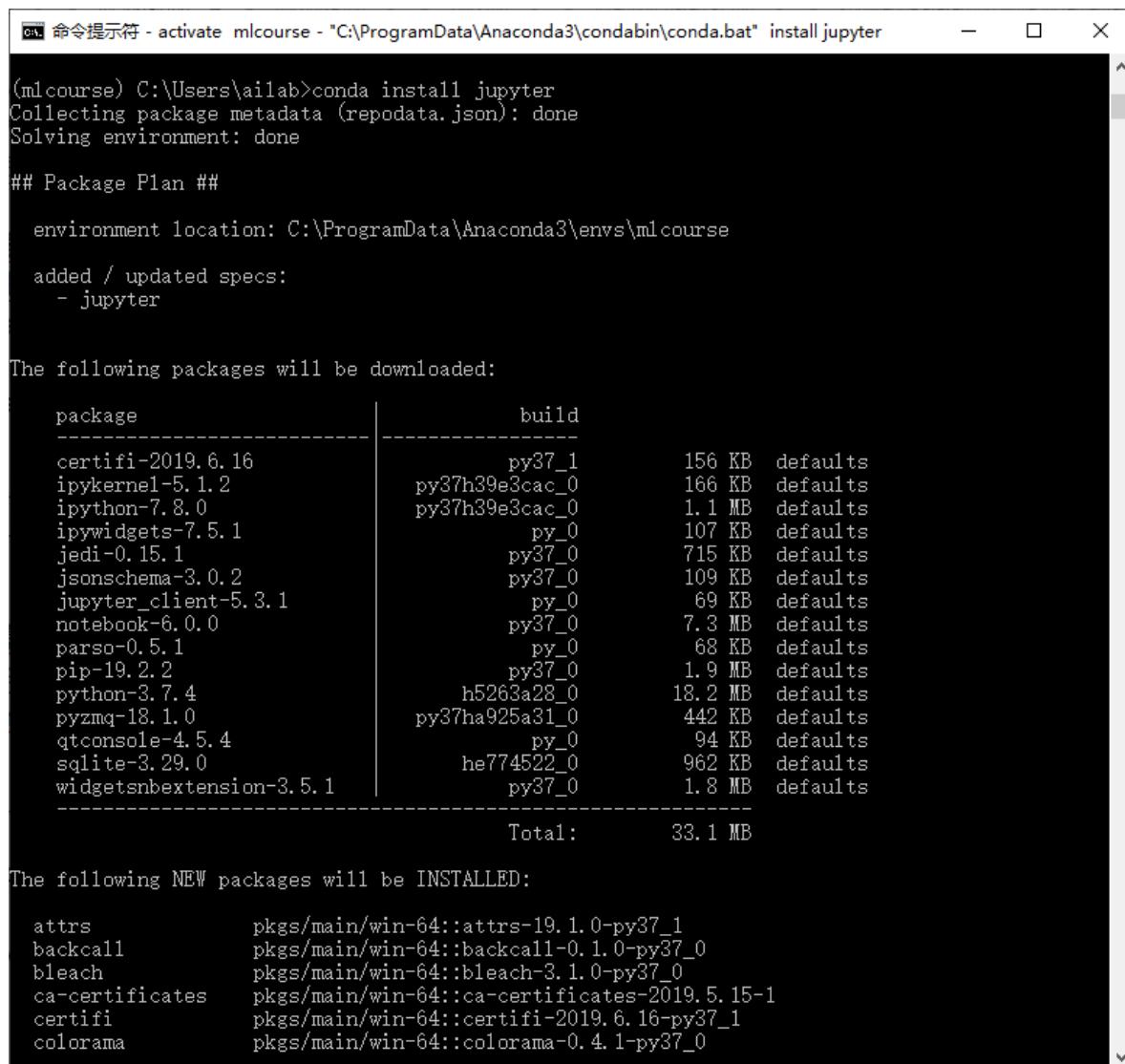
activate mlcourse

1. 安装 jupyter notebook

Jupyter Notebook 是一个 Web 应用程序，便于创建和共享文学化程序文档，支持实时代码、数学方程、可视化和Markdown，其用途包括数据清理和转换、数值模拟、统计建模、机器学习等等。

参见：[机器学习新手必看：Jupyter Notebook入门指南](#)

conda install jupyter 或者用 pip install jupyter (后面的类似)



```
(mlcourse) C:\Users\ailab>conda install jupyter  
Collecting package metadata (repodata.json): done  
Solving environment: done  
  
## Package Plan ##  
  
environment location: C:\ProgramData\Anaconda3\envs\mlcourse  
  
added / updated specs:  
- jupyter  
  
The following packages will be downloaded:  
  
  package          build  
-----  
certifi-2019.6.16      py37_1      156 KB  defaults  
ipykernel-5.1.2        py37h39e3cac_0    166 KB  defaults  
ipython-7.8.0          py37h39e3cac_0    1.1 MB  defaults  
ipywidgets-7.5.1       py_0        107 KB  defaults  
jedi-0.15.1           py37_0        715 KB  defaults  
jsonschema-3.0.2       py37_0        109 KB  defaults  
jupyter_client-5.3.1    py_0        69 KB  defaults  
notebook-6.0.0          py37_0        7.3 MB  defaults  
parso-0.5.1            py_0        68 KB  defaults  
pip-19.2.2             py37_0        1.9 MB  defaults  
python-3.7.4           h5263a28_0    18.2 MB  defaults  
pyzmq-18.1.0           py37ha925a31_0    442 KB  defaults  
qtconsole-4.5.4         py_0        94 KB  defaults  
sqlite-3.29.0          he774522_0    962 KB  defaults  
widgetsnbextension-3.5.1 py37_0        1.8 MB  defaults  
  
Total:      33.1 MB  
  
The following NEW packages will be INSTALLED:  
  
  attrs          pkgs/main/win-64::attrs-19.1.0-py37_1  
  backcall       pkgs/main/win-64::backcall-0.1.0-py37_0  
  bleach         pkgs/main/win-64::bleach-3.1.0-py37_0  
  ca-certificates pkgs/main/win-64::ca-certificates-2019.5.15-1  
  certifi        pkgs/main/win-64::certifi-2019.6.16-py37_1  
  colorama       pkgs/main/win-64::colorama-0.4.1-py37_0
```

conda list jupyter 可以查看安装的jupyter库

【为了能将notebook转换成其它格式，使用jupytext】

conda install jupytext

【为使用一些jupyter notebook的扩展功能，安装jupyter的扩展：】

pip install jupyter_contrib_nbextensions

【安装代码自动补全功能，结合tab键使用】

```
conda install pyreadline
```

【Jupyter 环境配置】

```
activate mlcourse
```

在虚拟环境中利用conda安装ipykernel:

```
conda install ipykernel
```

将环境写入notebook的kernel中:

```
python -m ipykernel install --user --name mlcourse --display-name mlcourse
```

将环境从kernel中移除:

```
jupyter kernelspec remove mlcourse
```

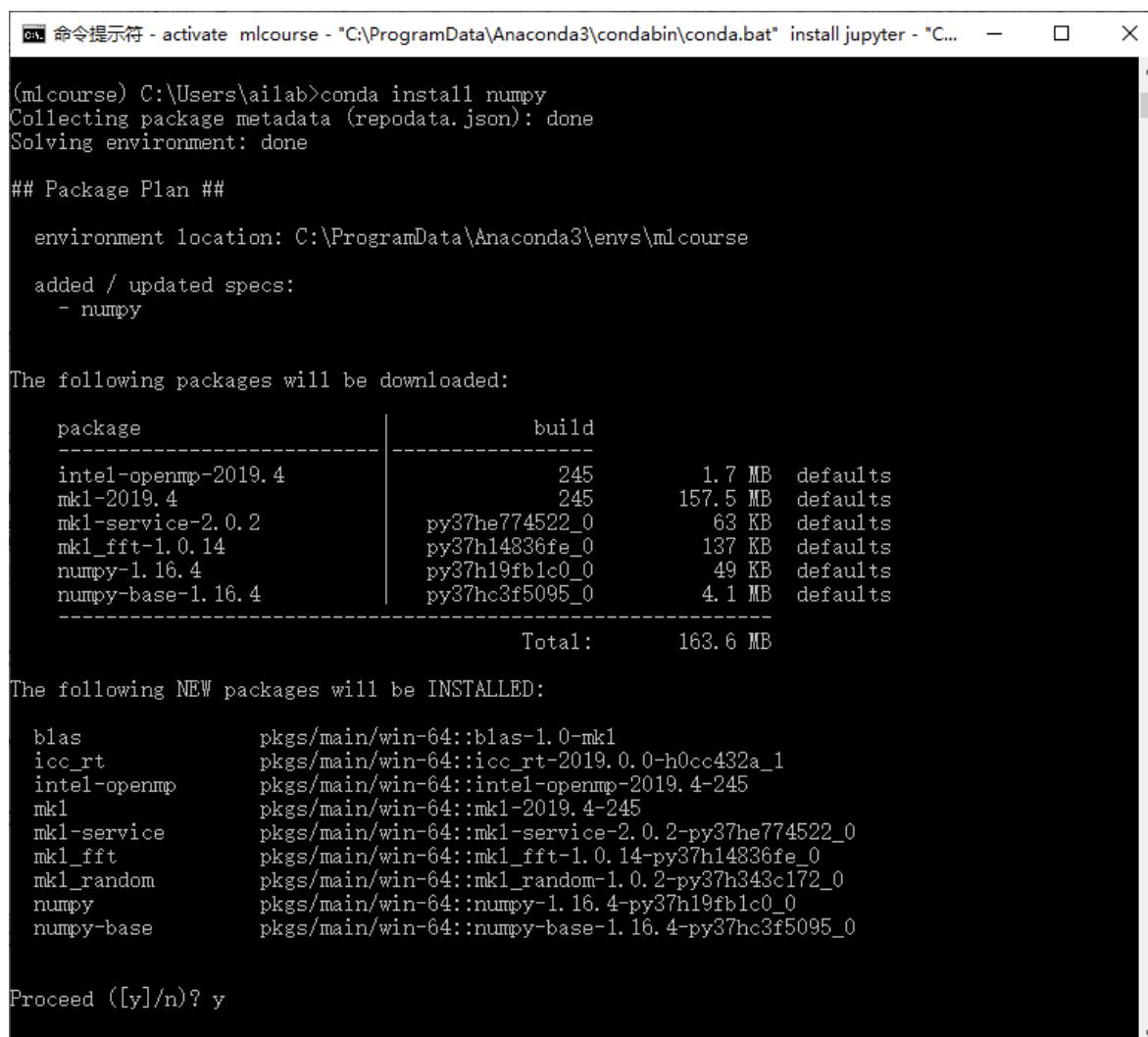
经过以上设置后，再网页上打开的 jupyter notebook 中就可以选择或切换 notebook 所使用的 python 环境了(即不同的虚拟环境)。

2. 安装 numpy

NumPy(Numerical Python) 是 Python 语言的一个扩展程序库，支持大量的维度数组与矩阵运算，此外也针对数组运算提供大量的数学函数库。

文档参考：<https://www.runoob.com/numpy/numpy-tutorial.html>

```
conda install numpy
```



```
命令提示符 - activate mlcourse - "C:\ProgramData\Anaconda3\condabin\conda.bat" install jupyter - "C..." -
```

```
(mlcourse) C:\Users\ailab>conda install numpy
Collecting package metadata (repodata.json): done
Solving environment: done

## Package Plan ##

environment location: C:\ProgramData\Anaconda3\envs\mlcourse

added / updated specs:
- numpy

The following packages will be downloaded:

      package          build
intel-openmp-2019.4           245      1.7 MB  defaults
mk1-2019.4                   245     157.5 MB  defaults
mk1-service-2.0.2             py37he774522_0    63 KB  defaults
mk1_fft-1.0.14                py37h14836fe_0   137 KB  defaults
numpy-1.16.4                  py37h19fb1c0_0    49 KB  defaults
numpy-base-1.16.4              py37hc3f5095_0   4.1 MB  defaults

Total:          163.6 MB

The following NEW packages will be INSTALLED:

blas                  pkgs/main/win-64::blas-1.0-mk1
icc_rt                pkgs/main/win-64::icc_rt-2019.0.0-h0cc432a_1
intel-openmp           pkgs/main/win-64::intel-openmp-2019.4-245
mk1                  pkgs/main/win-64::mk1-2019.4-245
mk1-service            pkgs/main/win-64::mk1-service-2.0.2-py37he774522_0
mk1_fft               pkgs/main/win-64::mk1_fft-1.0.14-py37h14836fe_0
mk1_random             pkgs/main/win-64::mk1_random-1.0.2-py37h343c172_0
numpy                 pkgs/main/win-64::numpy-1.16.4-py37h19fb1c0_0
numpy-base              pkgs/main/win-64::numpy-base-1.16.4-py37hc3f5095_0

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

3. 安装 matplotlib

Matplotlib是一个Python 2D绘图库.

matplotlib 中文文档: <https://www.matplotlib.org.cn/>

conda install matplotlib

```
命令提示符 - activate mlcourse - "C:\ProgramData\Anaconda3\condabin\conda.bat" install jupyter - "C... -" X ^

(mlcourse) C:\Users\ailab>conda install matplotlib
Collecting package metadata (repodata.json): done
Solving environment: done

## Package Plan ##

environment location: C:\ProgramData\Anaconda3\envs\mlcourse

added / updated specs:
- matplotlib

The following packages will be downloaded:

  package          build
  -----          -----
cycler-0.10.0      py37_0      13 KB  defaults
kiwisolver-1.1.0  py37ha925a31_0  59 KB  defaults
matplotlib-3.1.1   py37hc8f65d3_0  6.6 MB  defaults
pyparsing-2.4.2     py_0        61 KB  defaults
pytz-2019.2         py_0       245 KB  defaults
  -----
                           Total:    6.9 MB

The following NEW packages will be INSTALLED:

cycler      pkgs/main/win-64::cycler-0.10.0-py37_0
freetype     pkgs/main/win-64::freetype-2.9.1-ha9979f8_1
kiwisolver   pkgs/main/win-64::kiwisolver-1.1.0-py37ha925a31_0
matplotlib   pkgs/main/win-64::matplotlib-3.1.1-py37hc8f65d3_0
pyparsing    pkgs/main/noarch::pyparsing-2.4.2-py_0
pytz         pkgs/main/noarch::pytz-2019.2-py_0

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

4. 安装 pandas

Pandas是一个强大的分析结构化数据的工具集；它的使用基础是Numpy（提供高性能的矩阵运算）；用于数据挖掘和数据分析，同时也提供数据清洗功能。<https://www.pydata.org/>

conda install pandas

```
命令提示符 - activate mlcourse - "C:\ProgramData\Anaconda3\condabin\conda.bat" install jupyter - "C... -"

(mlcourse) C:\Users\ailab>conda install pandas
Collecting package metadata (repodata.json): done
Solving environment: done

## Package Plan ##

environment location: C:\ProgramData\Anaconda3\envs\mlcourse

added / updated specs:
- pandas

The following packages will be downloaded:

  package          |      build
  --::--           | py37ha925a31_0
pandas-0.25.1     |      9.8 MB  defaults
  --::--           |
                           Total:    9.8 MB

The following NEW packages will be INSTALLED:

pandas            pkgs/main/win-64::pandas-0.25.1-py37ha925a31_0

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

5. 安装 scikit-learn

scikit-learn是Python的一个开源机器学习模块，它建立在NumPy, SciPy和matplotlib模块之上能够为用户提供各种机器学习算法接口，可以让用户简单、高效地进行数据挖掘和数据分析。ML中的"瑞士军刀"。

conda install scikit-learn

```
命令提示符 - activate mlcourse - "C:\ProgramData\Anaconda3\condabin\conda.bat" install jupyter - "C... -"

(mlcourse) C:\Users\ailab>conda install scikit-learn
Collecting package metadata (repodata.json): done
Solving environment: done

## Package Plan ##

environment location: C:\ProgramData\Anaconda3\envs\mlcourse

added / updated specs:
- scikit-learn

The following packages will be downloaded:

  package          |      build
  --::--           | py37h6288b17_0
scikit-learn-0.21.2 |      5.9 MB  defaults
  --::--           | py37h29ff71c_0
scipy-1.3.1        |      14.3 MB  defaults
  --::--           |
                           Total:    20.2 MB

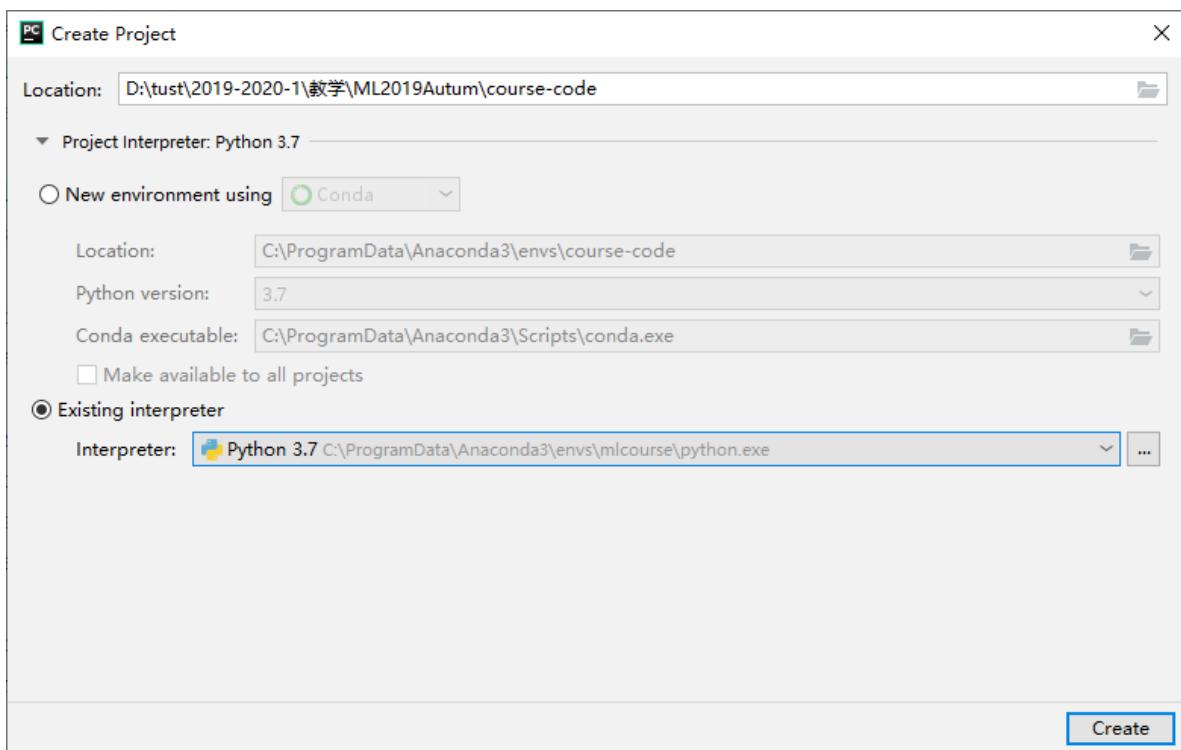
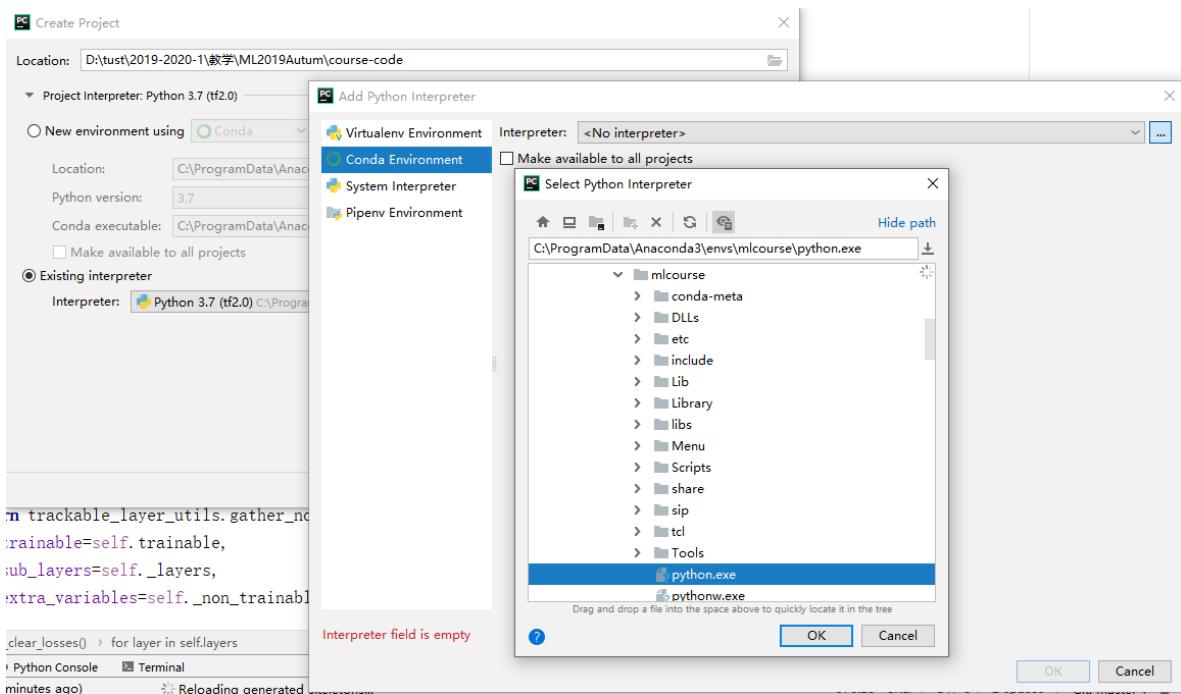
The following NEW packages will be INSTALLED:

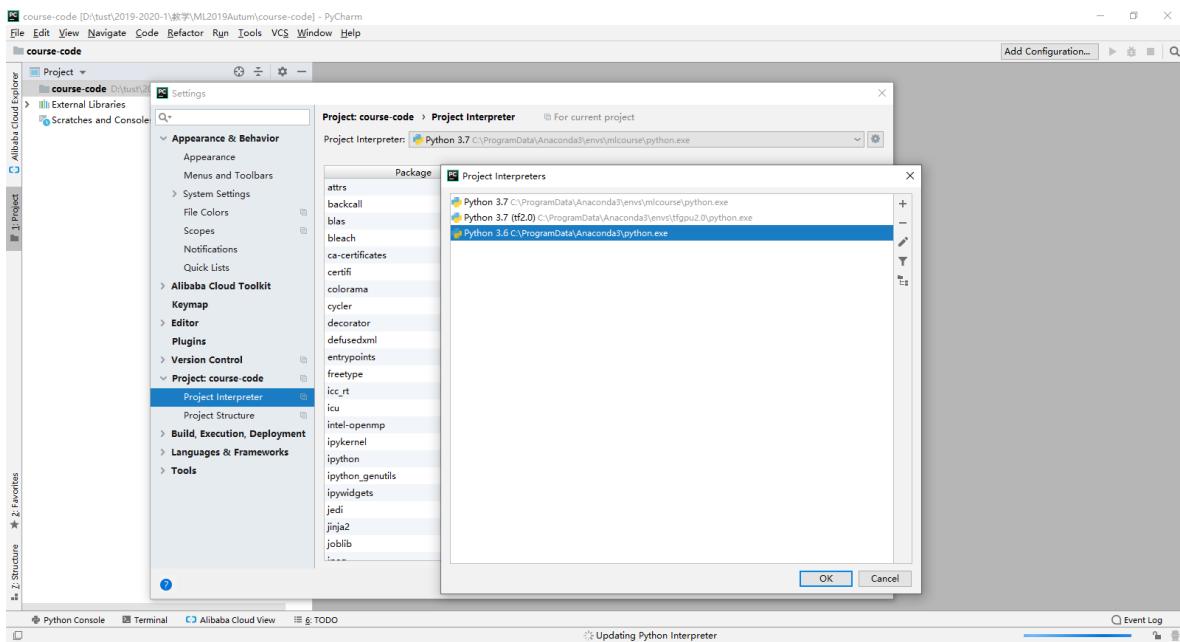
joblib            pkgs/main/win-64::joblib-0.13.2-py37_0
scikit-learn      pkgs/main/win-64::scikit-learn-0.21.2-py37h6288b17_0
scipy             pkgs/main/win-64::scipy-1.3.1-py37h29ff71c_0

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

四、安装 pycharm 集成开发环境（大规模编程）

安装参考：<https://www.jetbrains.com/help/pycharm/installation-guide.html>





五、Visual studio Code

(也可自选, 请百度搜索 “vscode python 开发” 查找环境安装、配置、使用方法)

六、百度AIStudio 使用

- TUST-机器学习2024春-CS22



课程名称 TUST-机器学习2024春CS22

课程时间 ② 2024/02/25 - 2024/09/25

所属学校 天津科技大学

课程状态 ② 进行中

- 免费提供的机器学习开发平台及计算资源, 用于完成实验 (可以不本地配置环境, 在AIStudio中完成)
- 项目:
 - 项目概述: <https://ai.baidu.com/ai-doc/AISTUDIO/0k3e2tfzm>
 - Notebook项目: <https://ai.baidu.com/ai-doc/AISTUDIO/Dk3e2vxg9>
 - Notebook环境使用说明: <https://ai.baidu.com/ai-doc/AISTUDIO/sk3e2z8sb>
 - BML Codelab环境使用说明: <https://ai.baidu.com/ai-doc/AISTUDIO/Gktuwqf1x>
- 课程使用说明: <https://ai.baidu.com/ai-doc/AISTUDIO/Mk3bbI5xb>
- 加入课程
 - 登录到aistudio后, 打开我课程 <https://aistudio.baidu.com/education/dashboard> -> 我参加的课程 ->加入新课程, 按下图中输入课程邀请码: 8EA8x3
 - 输入 姓名和自己学号 (比如22101101) 加入 TUST-机器学习2024春-CS22

