

## 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：

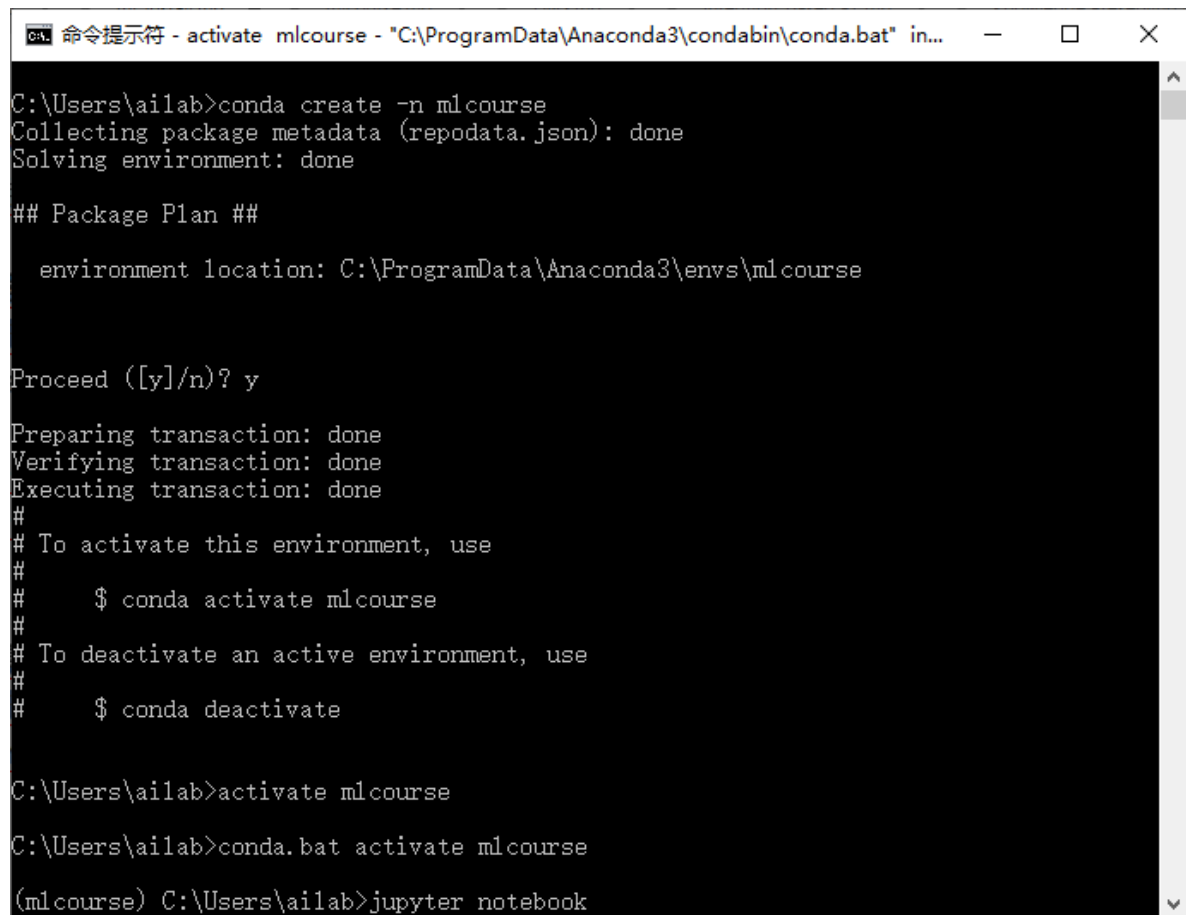
安装 nb\_conda 用于 notebook 自动关联 nb\_conda 的环境，为后面 jupyter notebook 的使用作准备。

```
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
```



```
C:\ProgramData\Anaconda3\condabin\conda.bat in...
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
```

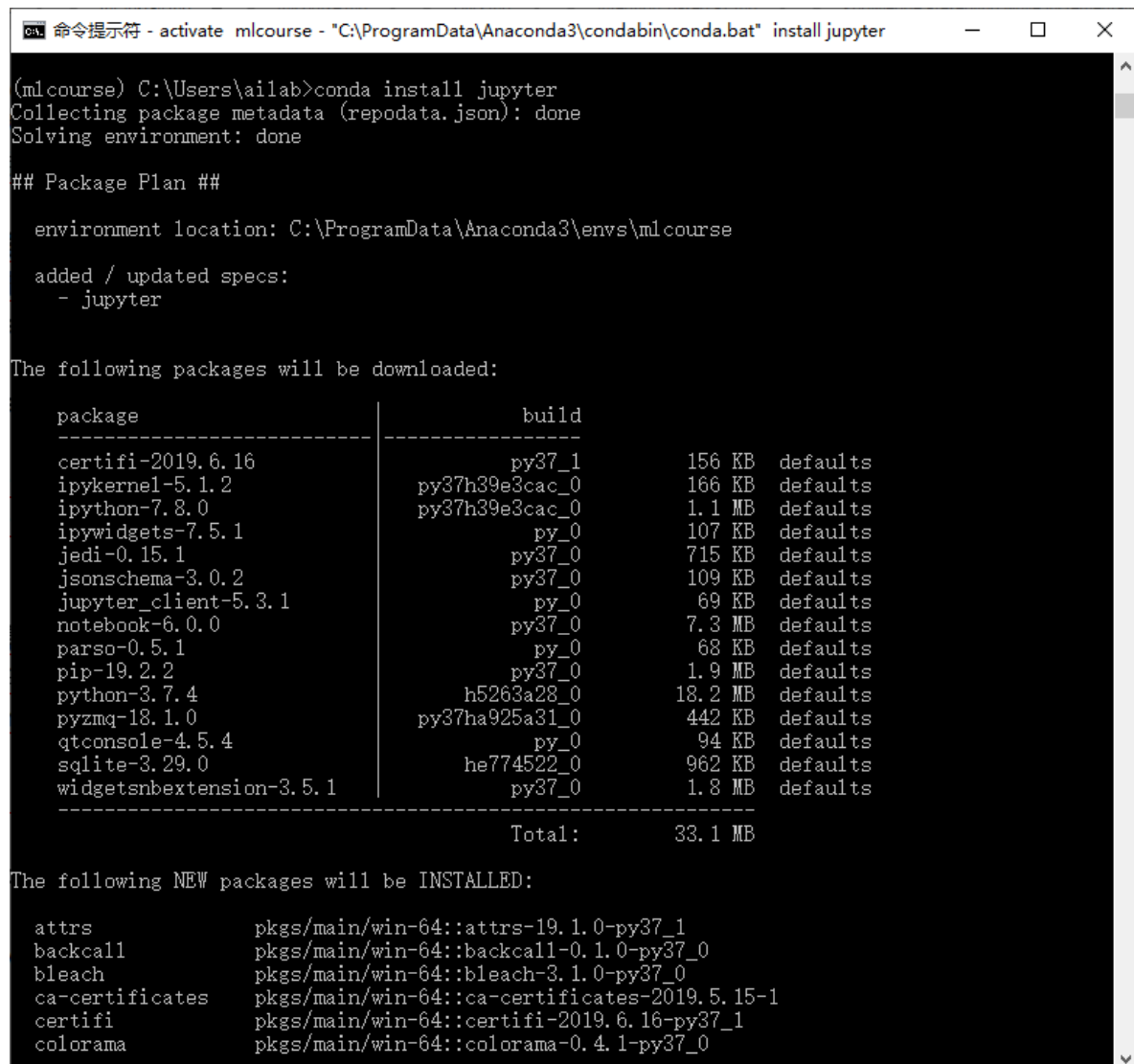
activate mlcourse

## 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)



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

(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                                size  channel
-----
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 jupytertext】

conda install jupytertext

【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
```

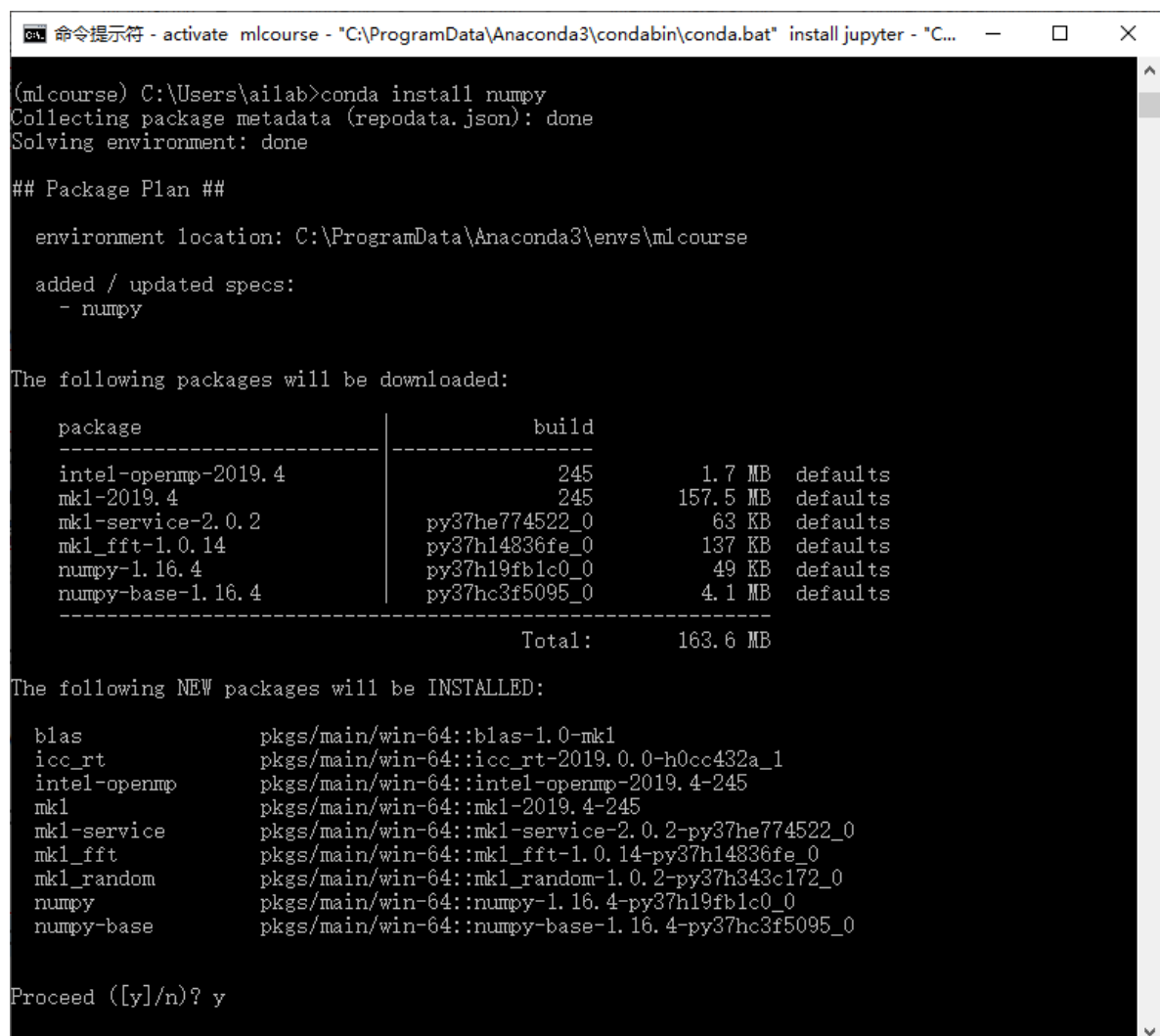
经过以上设置后，再网页上打开的 jupyter notebook中就可以选择或切换 notebook所使用的python环境了(即不同的虚拟环境)。

## 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                                1.7 MB defaults
intel-openmp-2019.4                         245                                157.5 MB defaults
mkl-2019.4                                   245                                63 KB defaults
mkl-service-2.0.2                           py37he774522_0                     137 KB defaults
mkl_fft-1.0.14                              py37h14836fe_0                     49 KB defaults
numpy-1.16.4                                py37h19fblc0_0                     4.1 MB defaults
numpy-base-1.16.4                          py37hc3f5095_0
-----
Total:                                     163.6 MB

The following NEW packages will be INSTALLED:

blas                pkgs/main/win-64::blas-1.0-mkl
icc_rt              pkgs/main/win-64::icc_rt-2019.0.0-h0cc432a_1
intel-openmp        pkgs/main/win-64::intel-openmp-2019.4-245
mkl                 pkgs/main/win-64::mkl-2019.4-245
mkl-service         pkgs/main/win-64::mkl-service-2.0.2-py37he774522_0
mkl_fft             pkgs/main/win-64::mkl_fft-1.0.14-py37h14836fe_0
mkl_random          pkgs/main/win-64::mkl_random-1.0.2-py37h343c172_0
numpy               pkgs/main/win-64::numpy-1.16.4-py37h19fblc0_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...
(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 | size | channel
-----|-----|-----|-----
cyclar-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:

cyclar | pkgs/main/win-64::cyclar-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.py pandas.cn/>

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                        9.8 MB defaults
  -----
  pandas-0.25.1                  py37ha925a31_0
  -----
                                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                        5.9 MB defaults
  -----
  scikit-learn-0.21.2            py37h6288b17_0
  -----
  package                        build                        14.3 MB defaults
  -----
  scipy-1.3.1                    py37h29ff71c_0
  -----
                                Total:      20.2 MB

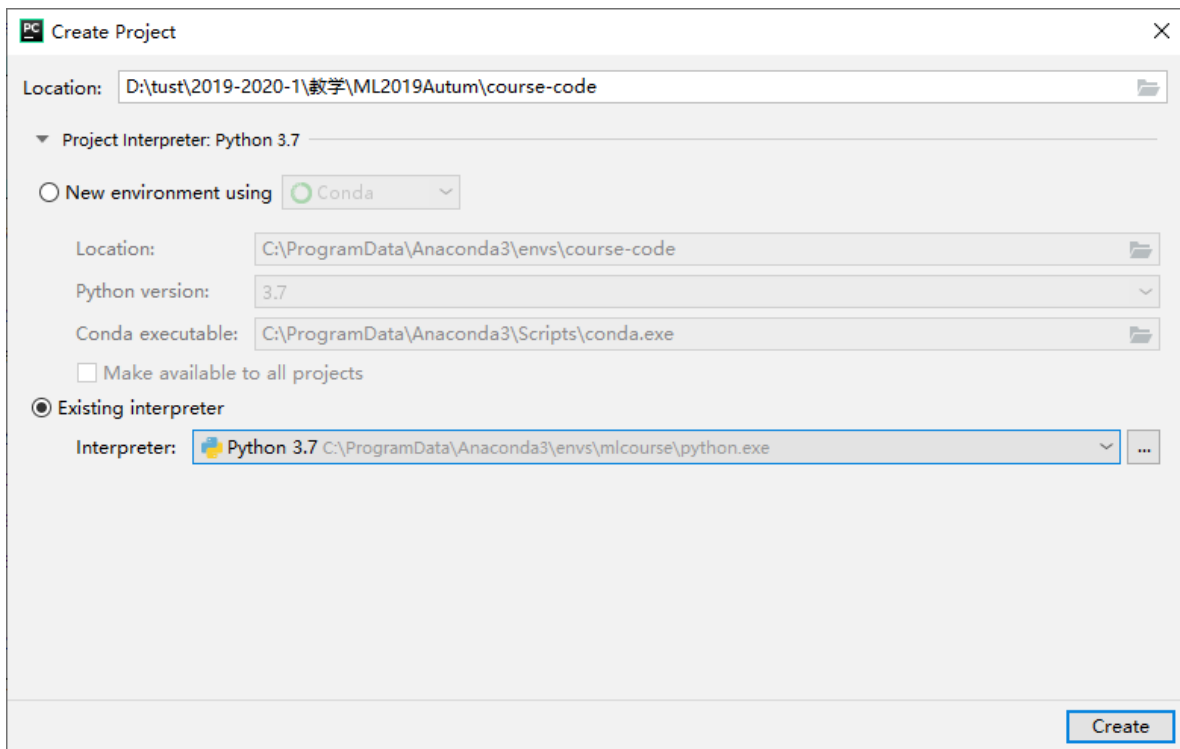
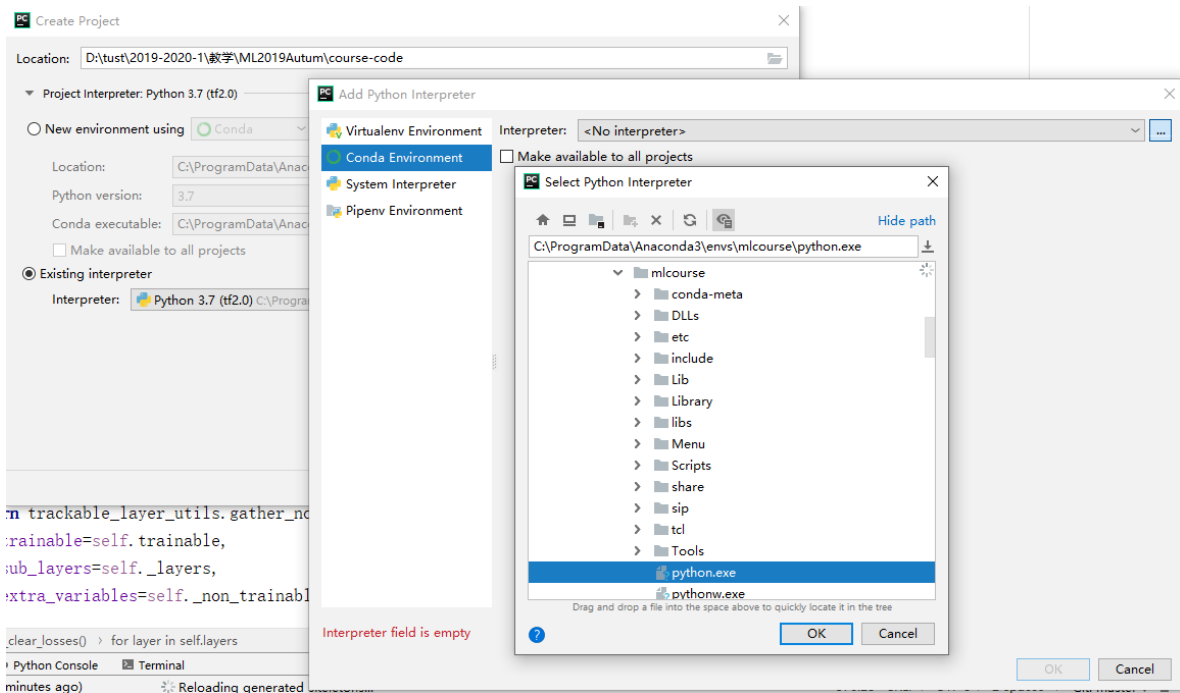
The following NEW packages will be INSTALLED:

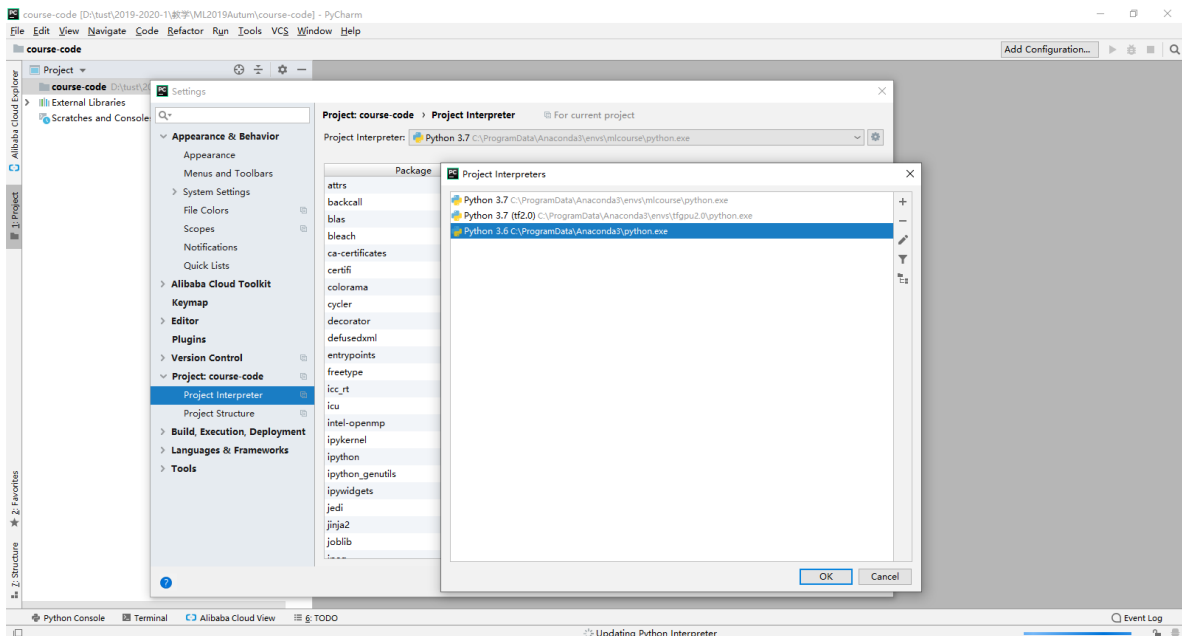
  joblib                pkgs/main/win-64::joblib-0.13.2-py37_0
  scikit-learn          pkgs/main/win-64::scikit-learn-0.21.2-py37h6288b17_0
  scipy                 pkgs/main/win-64::scipy-1.3.1-py37h29ff71c_0

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 2024/02/25 - 2024/09/25

所属学校 天津科技大学

课程状态 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/Mk3bb15xb>
- 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

