

Data Science Development Tools

January 24,2022

1 Introduction

Anaconda + Python3.7 + IDEA(PyCharm or Spyder or Jupyter Notebook).

2 Anaconda

Anaconda is a Python integration toolkit specifically designed for environment and packages management. We can create different environments in Anaconda without worrying about version conflicts.

2.1 Anaconda download and installation

- Download link: <https://www.anaconda.com/products/individual>.
- Double-click to open Anaconda and install it (Fig.1).
- Check whether the installation is successful in the terminal (Fig.2).

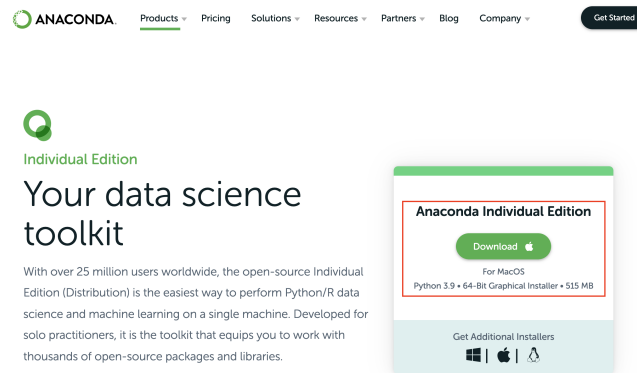


Figure 1: Download Anaconda.

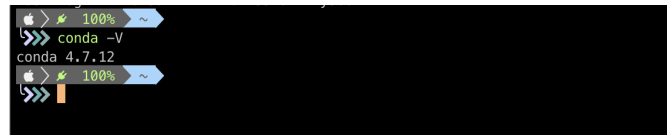


Figure 2: Installation successful.

2.2 Create an environment and specify Python versions

- Create an Anaconda environment in the terminal:

```
conda create -n name python=3.7
```

'name': give the environment a name you like.

'python = 3.7': specify python version as 3.7 (the stable version).

- Delete an Anaconda environment in terminal (careful):

```
conda remove -n name --all
```

'name': the name of the environment you want to delete.

- List all the environments you have created:

```
conda env list
```

2.3 Install various packages in the terminal

- We can install packages easily in the terminal with Anaconda. Firstly, we need to choose an environment to install:

```
conda activate name
```

'name': the name of the environment you want to choose.

- Install packages, Numpy, for instance (Fig.3):

```
conda install numpy
```

```
> 100% ~
>>> conda activate myEnv
> 100% ~
>>> conda install numpy
Collecting package metadata (current_repodata.json): done
Solving environment: done

## Package Plan ##

  environment location: /Users/opt/anaconda3/envs/myEnv

  added / updated specs:
    - numpy

The following NEW packages will be INSTALLED:

blas                pkgs/main/osx-64::blas-1.0-mkl
intel-openmp        pkgs/main/osx-64::intel-openmp-2021.4.0-hecd8cb5_3538
mkl                 pkgs/main/osx-64::mkl-2021.4.0-hecd8cb5_637
mkl-service         pkgs/main/osx-64::mkl-service-2.4.0-py37h9ed2024_0
mkl_fft             pkgs/main/osx-64::mkl_fft-1.3.1-py37h4ab4a9b_0
mkl_random          pkgs/main/osx-64::mkl_random-1.2.2-py37hb2f4e1b_0
numpy               pkgs/main/osx-64::numpy-1.21.2-py37h4b4dc7a_0
```

Figure 3: Conda environment configuration.

3 Connect PyCharm with Anaconda

Up to now, we have Python3.7 installed, along with other packages (Numpy, Matplotlib, Scipy). Next, we need to configure them in PyCharm.

- Open the 'Preferences' window and add a new 'Python Interpreter' (Fig.4).
- Select 'Conda Environment' and choose the conda environment we just created under the tag 'Existing environment' (Fig.5).

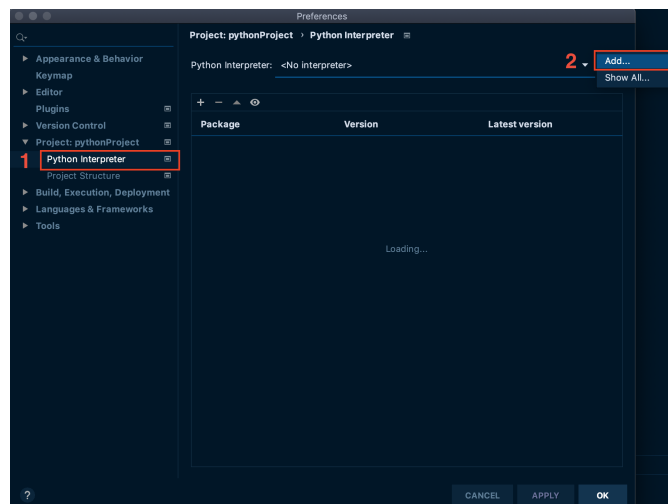


Figure 4: Add Python Interpreter.

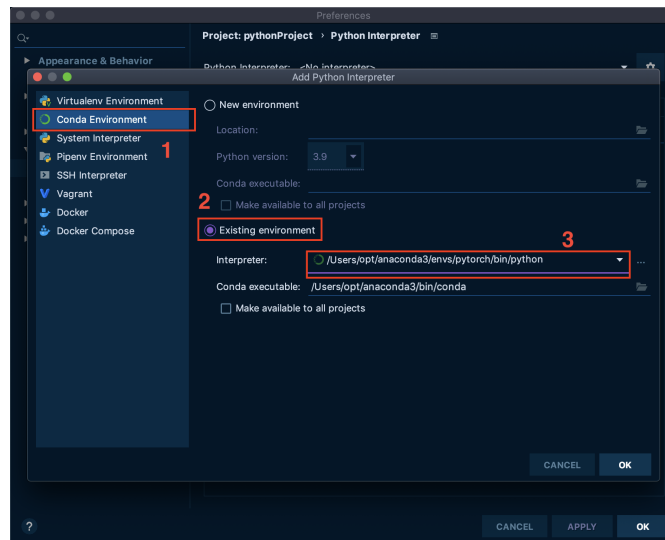


Figure 5: Select a conda environment.

4 Results

Finally, we can run Python code in PyCharm (Fig.6).

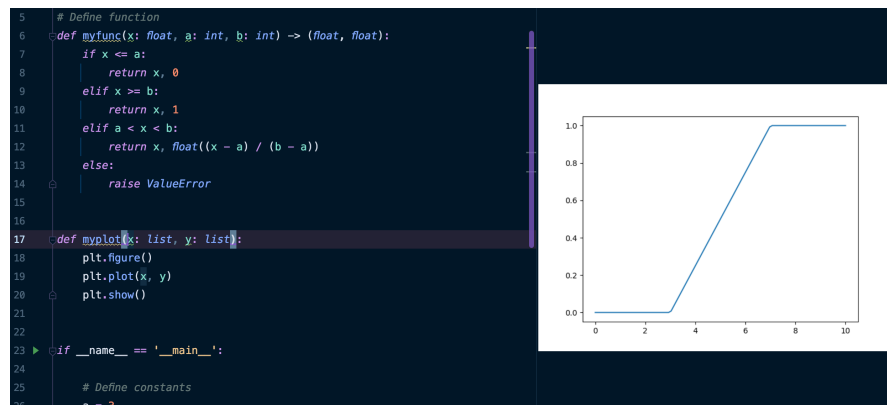


Figure 6: An example from FL class.

5 Programming with Jupyter Notebook

Jupyter Notebook is a good tool for coding and presentation. We can also write markdown code in Jupyter Notebook.

- Activate conda environment in the terminal:

```
conda activate myEnv
```

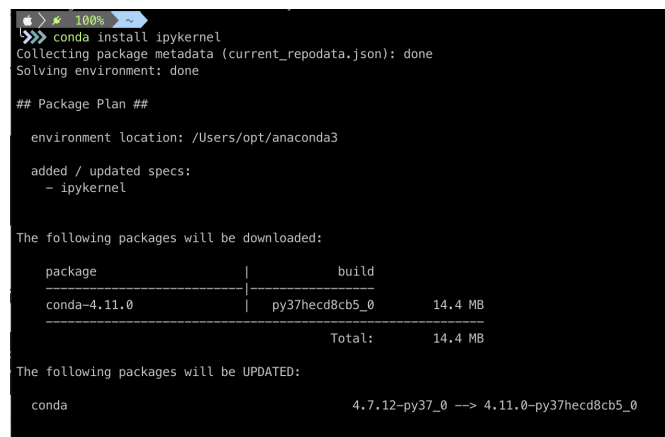
- Install ipykernel (Fig.7):

```
conda install ipykernel
```

- Configure kernel (Fig.8):

```
python -m ipykernel install --user --name=myEnv
```

- Launch Jupyter Notebook in Anaconda-Navigator.
- Select Jupyter kernel which we just created (Fig.9).



```

>>> conda install ipykernel
Collecting package metadata (current_repodata.json): done
Solving environment: done

## Package Plan ##

environment location: /Users/opt/anaconda3

added / updated specs:
- ipykernel

The following packages will be downloaded:

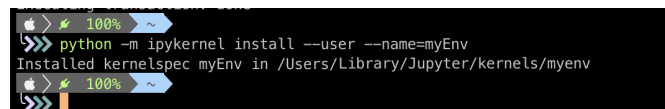
package | build | size
-----|-----|-----
conda-4.11.0 | py37hecd8cb5_0 | 14.4 MB
Total: 14.4 MB

The following packages will be UPDATED:

conda 4.7.12-py37_0 --> 4.11.0-py37hecd8cb5_0

```

Figure 7: Launch Jupyter Notebook.



```

>>> python -m ipykernel install --user --name=myEnv
Installed kernelspec myEnv in /Users/Library/Jupyter/kernels/myenv

```

Figure 8: Configure kernel.

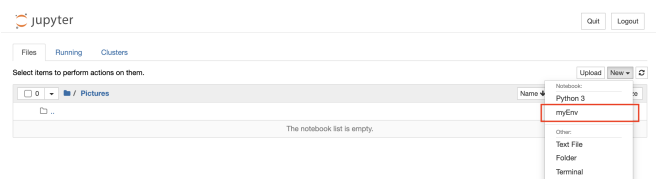


Figure 9: Set kernel.