THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

Get Ready –
COMP4423 Computer Vision

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Department of Computing
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Opening Minds • Shaping the Future
啟迪思維 • 成就未來

Outline

- Coloab Tutorial
- Jupyter Environment Setup

Colab

Colab, or "Colaboratory", allows you to write and execute Python in your browser, with

- Zero configuration required
- Access to GPUs free of charge
- Easy sharing

Colab

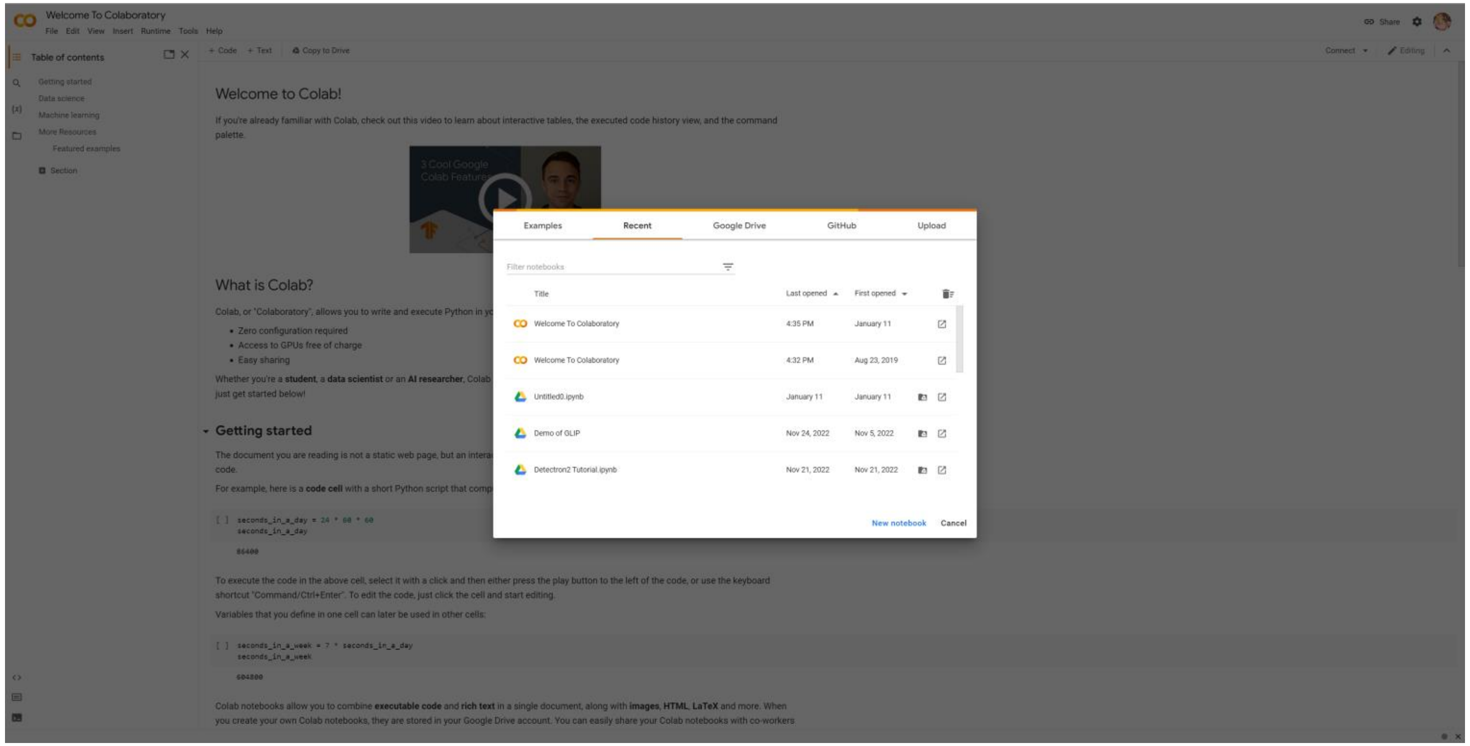
Step 1

- As Colab implicitly uses **Google Drive** for storing your notebooks, ensure that you are logged in to your **Google Drive** account before proceeding further.

Colab

Step 2

- Open the Colab website in your browser – Your browser would display the following screen (assuming that you are logged into your Google Drive)



Welcome to Colab!

If you're already familiar with Colab, check out this video to learn about interactive tables, the executed code history view, and the command palette.

What is Colab?

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Whether you're a **student**, a **data scientist** or an **AI researcher**, Colab
just get started below!

Getting started

The document you are reading is not a static web page, but an intera
code.

For example, here is a **code cell** with a short Python script that comp

```
[ ] seconds_in_a_day = 24 * 60 * 60
    seconds_in_a_day

    86400
```

To execute the code in the above cell, select it with a click and then either press the play button to the left of the code, or use the keyboard shortcut "Command/Ctrl+Enter". To edit the code, just click the cell and start editing.

Variables that you define in one cell can later be used in other cells:

```
[ ] seconds_in_a_week = 7 * seconds_in_a_day
    seconds_in_a_week

    604800
```

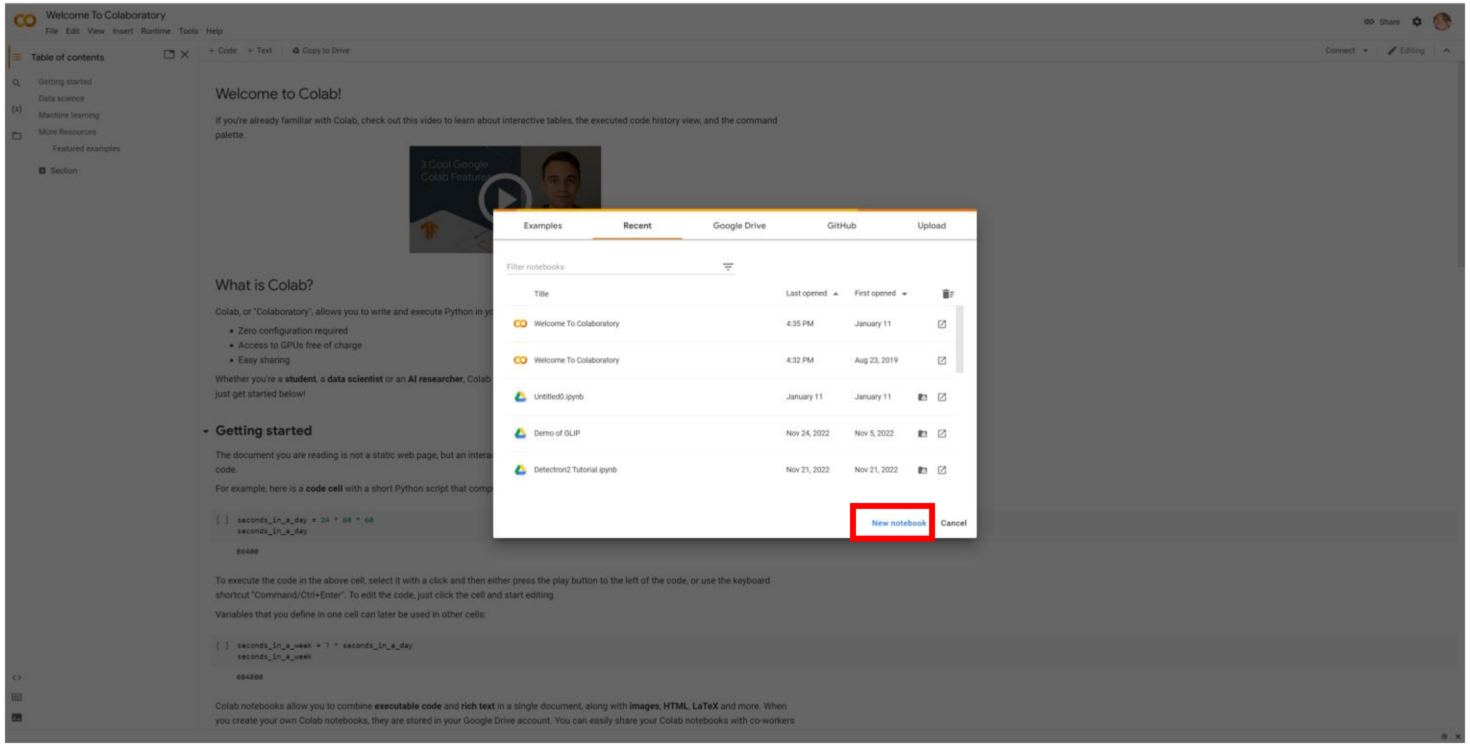
Colab notebooks allow you to combine **executable code** and **rich text** in a single document, along with **images**, **HTML**, **LaTeX** and more. When you create your own Colab notebooks, they are stored in your Google Drive account. You can easily share your Colab notebooks with co-workers

Title	Last opened	First opened
Welcome To Colaboratory	4:35 PM	January 11
Welcome To Colaboratory	4:32 PM	Aug 23, 2019
Untitled0.ipynb	January 11	January 11
Demo of GLIP	Nov 24, 2022	Nov 5, 2022
Detectron2 Tutorial.ipynb	Nov 21, 2022	Nov 21, 2022

Colab

Step 3

- Click NEW NOTEBOOK at the bottom of the screen. A new notebook would open up.



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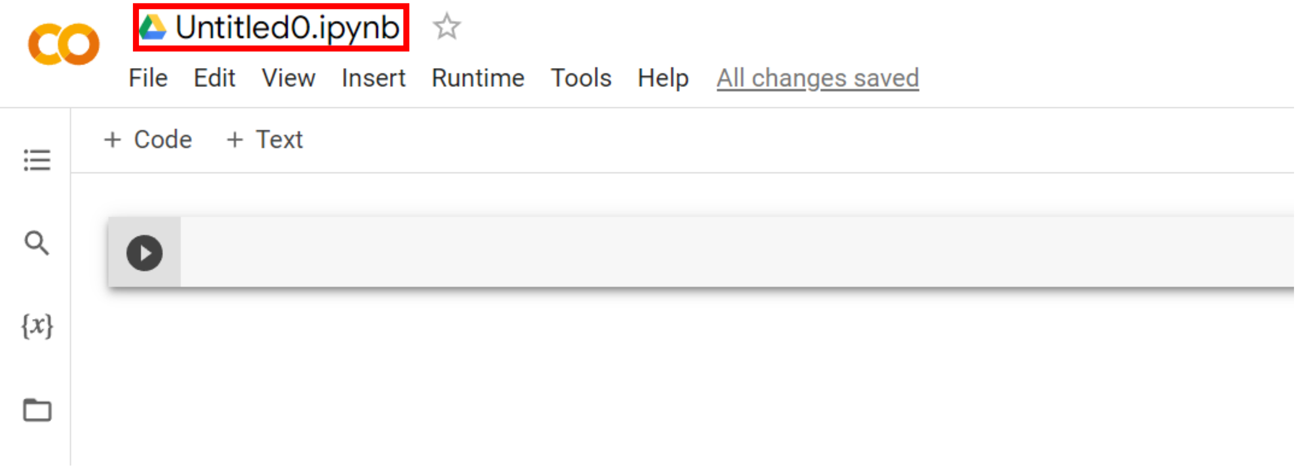
Colab

Setting Notebook Name

By default, the notebook uses the naming convention UntitledXX.ipynb.\
You can click on the name and type in the desired name.

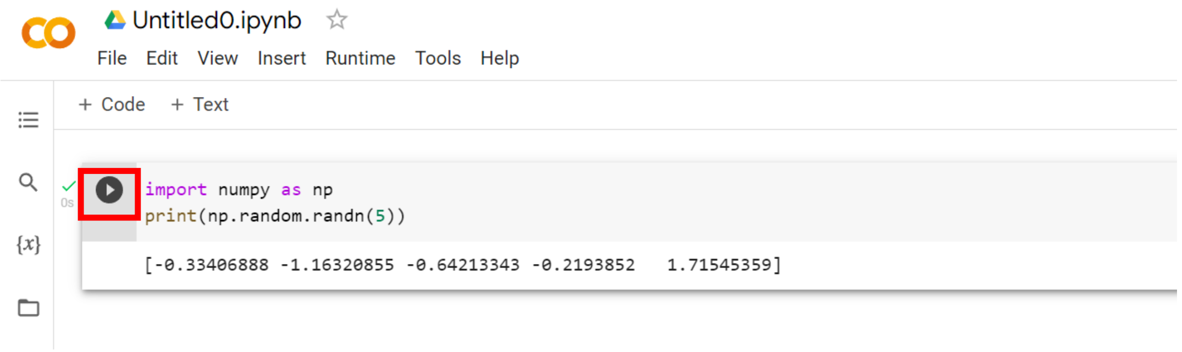


Colab

Entering and Executing the code

1. Now, you can enter the code.

2. To execute the code, click the button on the left side of the code window, or use the keyboard shortcut Ctrl+Enter (Command+Enter for Mac)



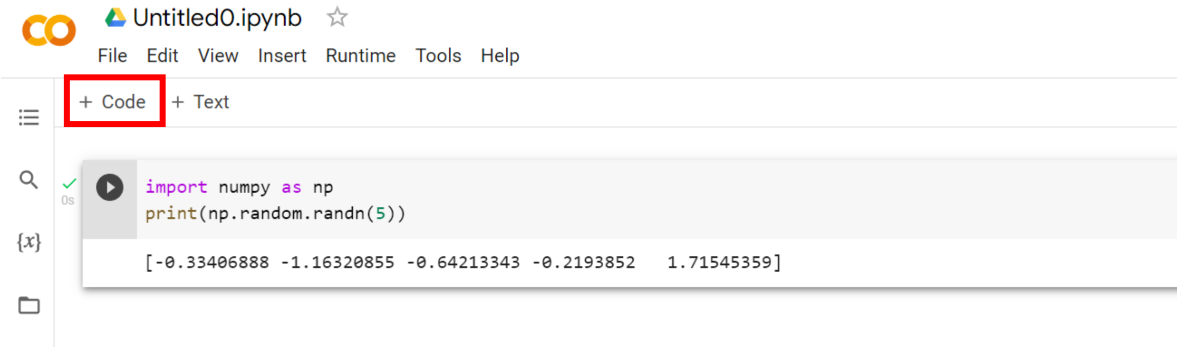
```
import numpy as np
print(np.random.randn(5))
```

```
[-0.33406888 -1.16320855 -0.64213343 -0.2193852   1.71545359]
```

Colab

Adding Code Cells

To add more code, click the corresponding button.



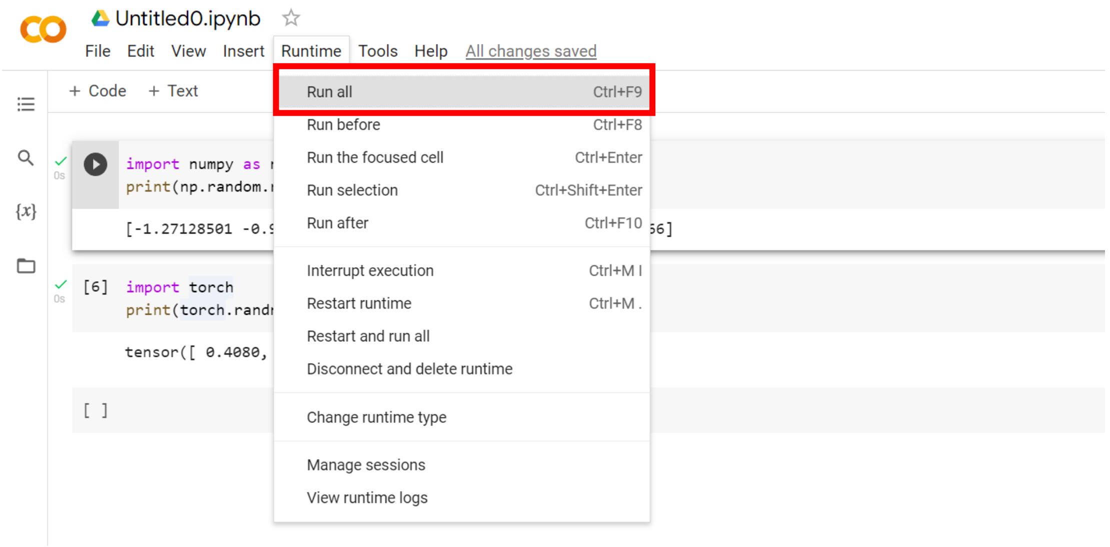
```
import numpy as np
print(np.random.randn(5))
```

```
[-0.33406888 -1.16320855 -0.64213343 -0.2193852   1.71545359]
```

Colab

Run All

To run the entire code in your notebook without an interruption, execute the following menu options.



```
import numpy as n
print(np.random.r
```

```
[-1.27128501 -0.9                                  56]
```

```
[6] import torch
    print(torch.randr
```

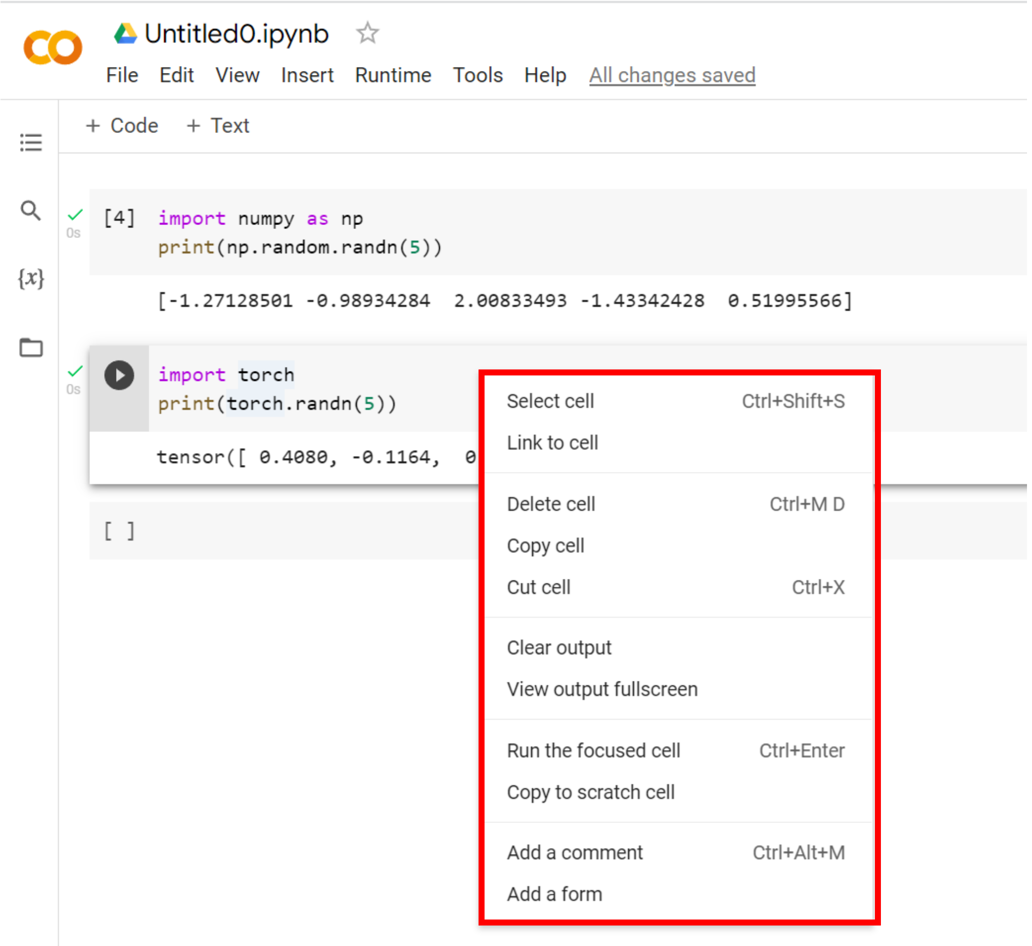
```
tensor([ 0.4080,
```

```
[ ]
```

Colab

Cell Operations

To operate the cells, right click and select the operation in the menu.



```
[4]  import numpy as np
     print(np.random.randn(5))

     [-1.27128501 -0.98934284  2.00833493 -1.43342428  0.51995566]
```

```
     import torch
     print(torch.randn(5))

     tensor([ 0.4080, -0.1164,  0
```

```
[ ]
```

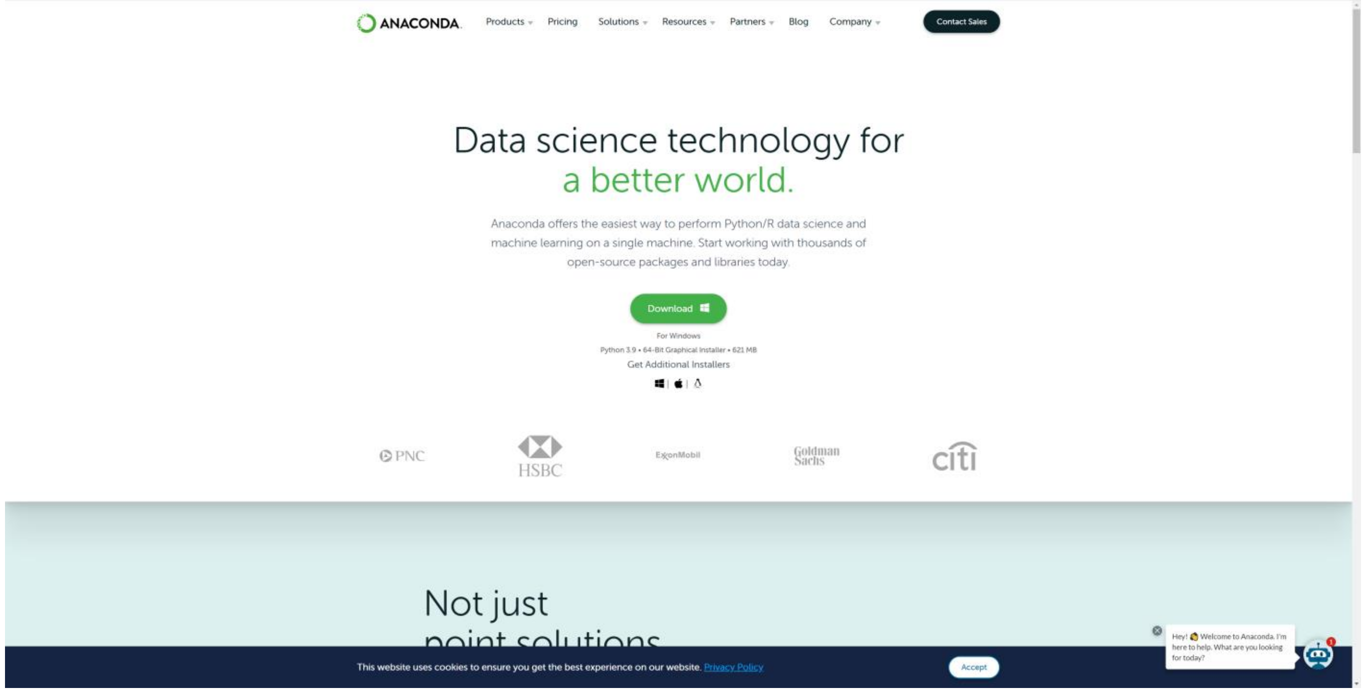
Jupyter Notebook

The Jupyter Notebook is the original web application for creating and sharing computational documents. It offers a simple, streamlined, document-centric experience.

Jupyter

Step 1 Installation

- Download the Anaconda and install it.



Data science technology for
a better world.

Anaconda offers the easiest way to perform Python/R data science and machine learning on a single machine. Start working with thousands of open-source packages and libraries today.

For Windows
Python 3.9 • 64-Bit Graphical Installer • 621 MB
Get Additional Installers

Not just
point solutions

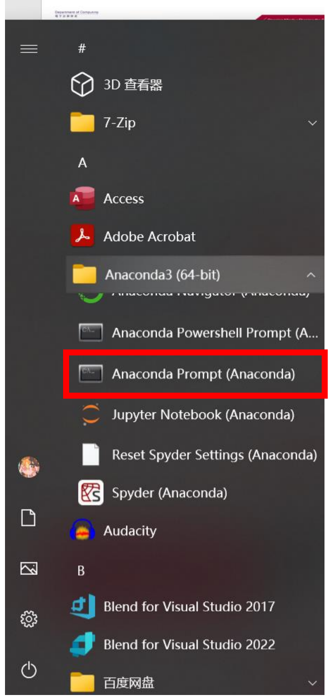
This website uses cookies to ensure you get the best experience on our website. Privacy Policy

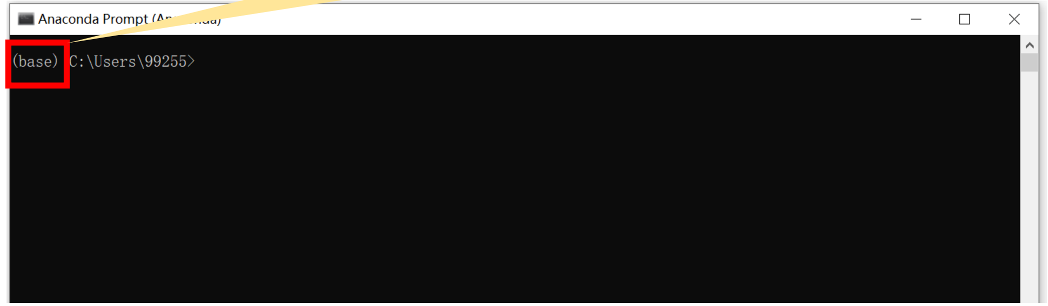
Hey! Welcome to Anaconda. I'm here to help. What are you looking for today?

Jupyter

Step 2.1 Check the *conda* Environment

- A *conda* environment is a directory that contains a specific collection of conda packages that you have installed.


#
3D 查看器
7-Zip
A
Access
Adobe Acrobat
Anaconda3 (64-bit)
Anaconda Navigator (Anaconda)
Anaconda Powershell Prompt (A...
Anaconda Prompt (Anaconda)
Jupyter Notebook (Anaconda)
Reset Spyder Settings (Anaconda)
Spyder (Anaconda)
Audacity
B
Blend for Visual Studio 2017
Blend for Visual Studio 2022
百度网盘



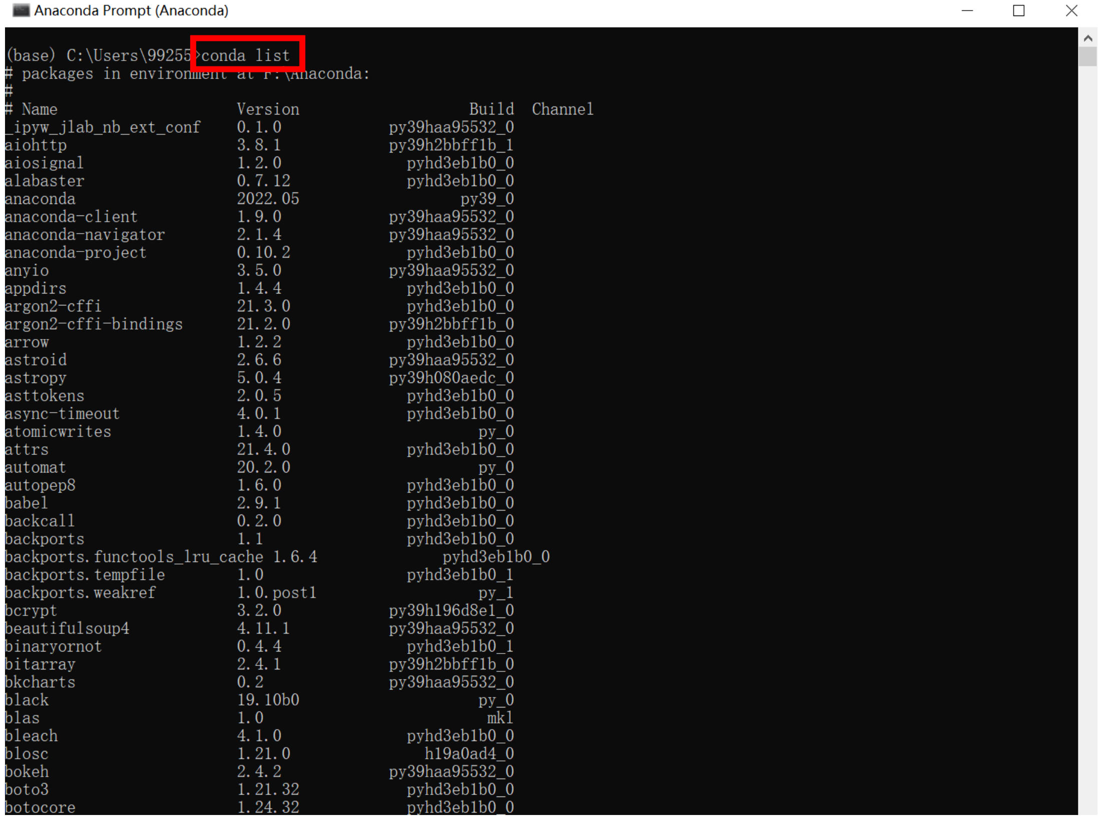
```
(base) C:\Users\99255>
```

Conda environment name

Jupyter

Step 2.2 Check the *conda* Environment

- Type in ***conda list*** to check out what you have installed in this environment.

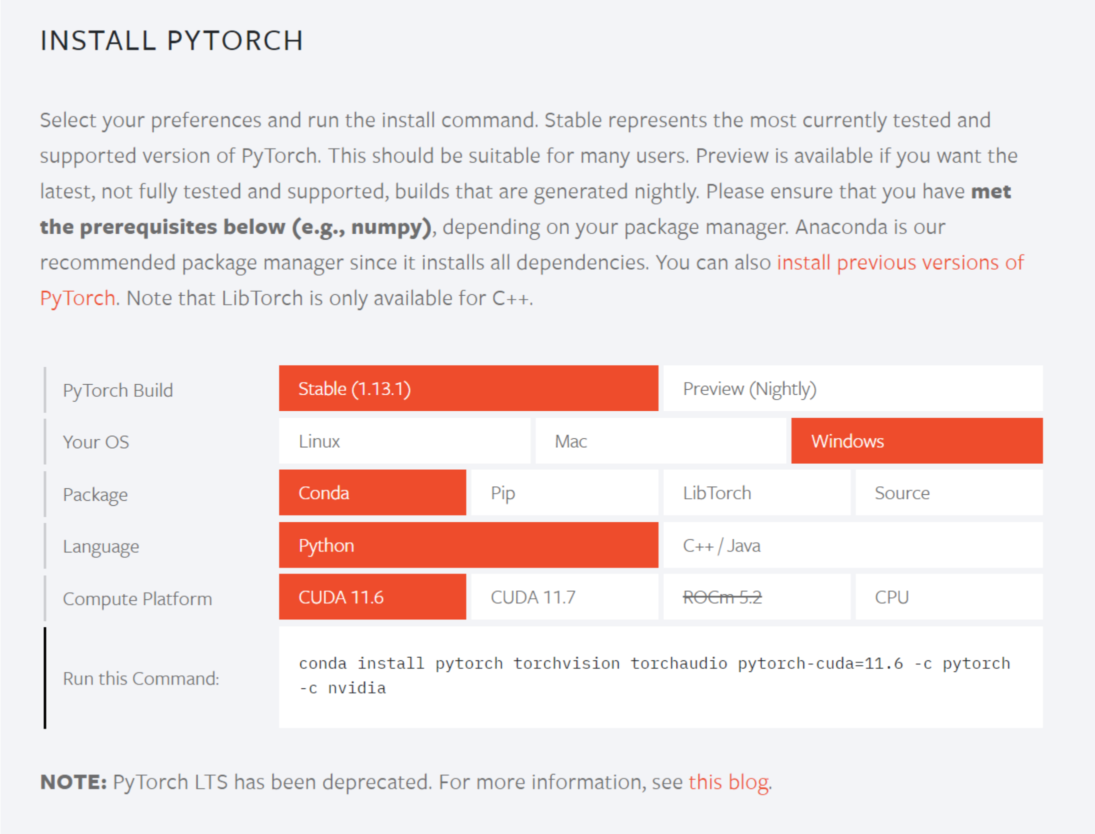


```
(base) C:\Users\99255>conda list
# packages in environment at F:\Anaconda:
#
# Name                    Version                   Build  Channel
_ipyw_jlab_nb_ext_conf    0.1.0            py39haa95532_0
aiohttp                   3.8.1            py39h2bbff1b_1
aiosignal                 1.2.0              pyhd3eb1b0_0
alabaster                 0.7.12             pyhd3eb1b0_0
anaconda                  2022.05                  py39_0
anaconda-client           1.9.0            py39haa95532_0
anaconda-navigator        2.1.4            py39haa95532_0
anaconda-project          0.10.2             pyhd3eb1b0_0
anyio                     3.5.0            py39haa95532_0
appdirs                   1.4.4              pyhd3eb1b0_0
argon2-cffi               21.3.0             pyhd3eb1b0_0
argon2-cffi-bindings      21.2.0           py39h2bbff1b_0
arrow                     1.2.2              pyhd3eb1b0_0
astroid                   2.6.6            py39haa95532_0
astropy                   5.0.4            py39h080aedc_0
asttokens                 2.0.5              pyhd3eb1b0_0
async-timeout             4.0.1              pyhd3eb1b0_0
atomicwrites              1.4.0                      py_0
attrs                     21.4.0             pyhd3eb1b0_0
automat                   20.2.0                     py_0
autopep8                  1.6.0              pyhd3eb1b0_0
babel                     2.9.1              pyhd3eb1b0_0
backcall                  0.2.0              pyhd3eb1b0_0
backports                 1.1                pyhd3eb1b0_0
backports.functools_lru_cache 1.6.4              pyhd3eb1b0_0
backports.tempfile        1.0                pyhd3eb1b0_1
backports.weakref         1.0.post1                  py_1
bcrypt                    3.2.0            py39h196d8e1_0
beautifulsoup4            4.11.1           py39haa95532_0
binaryornot               0.4.4              pyhd3eb1b0_1
bitarray                  2.4.1            py39h2bbff1b_0
bkcharts                  0.2              py39haa95532_0
black                     19.10b0                    py_0
blas                      1.0                         mkl
bleach                    4.1.0              pyhd3eb1b0_0
blosc                     1.21.0               h19a0ad4_0
bokeh                     2.4.2            py39haa95532_0
boto3                     1.21.32            pyhd3eb1b0_0
botocore                  1.24.32            pyhd3eb1b0_0
```

Jupyter

Step 3 Intall packages in the environment

- Type in ***conda install xxx*** or ***pip install xxx*** to install the desired packages.



INSTALL PYTORCH

Select your preferences and run the install command. Stable represents the most currently tested and supported version of PyTorch. This should be suitable for many users. Preview is available if you want the latest, not fully tested and supported, builds that are generated nightly. Please ensure that you have **met the prerequisites below (e.g., numpy)**, depending on your package manager. Anaconda is our recommended package manager since it installs all dependencies. You can also install previous versions of PyTorch. Note that LibTorch is only available for C++.

PyTorch Build	[✓ Stable (1.13.1)]	Preview (Nightly)		
Your OS	Linux	Mac	[✓ Windows]	
Package	[✓ Conda]	Pip	LibTorch	Source
Language	[✓ Python]	C++ / Java		
Compute Platform	[✓ CUDA 11.6]	CUDA 11.7	~~ROCm 5.2~~	CPU

Run this Command:

```
conda install pytorch torchvision torchaudio pytorch-cuda=11.6 -c pytorch
-c nvidia
```

NOTE: PyTorch LTS has been deprecated. For more information, see this blog.

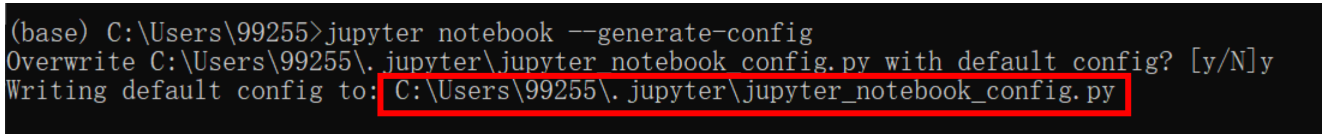
To install Pytorch, go to https://pytorch.org/

Jupyter

Step 4.1 Set up Jupyter

- Type in ***conda install jupyter notebook*** to install the jupyter.

- Type in ***jupyter notebook --generate-config*** and open the generated file.

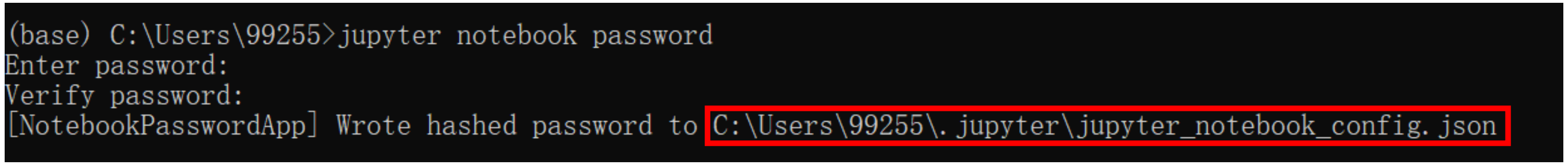


```
(base) C:\Users\99255>jupyter notebook --generate-config
Overwrite C:\Users\99255\.jupyter\jupyter_notebook_config.py with default config? [y/N]y
Writing default config to: C:\Users\99255\.jupyter\jupyter_notebook_config.py
```

Jupyter

Step 4.2 Set up Jupyter

- Type in ***jupyter notebook password*** to set the password.
- Open the json file.



```
(base) C:\Users\99255>jupyter notebook password
Enter password:
Verify password:
[NotebookPasswordApp] Wrote hashed password to C:\Users\99255\.jupyter\jupyter_notebook_config.json
```

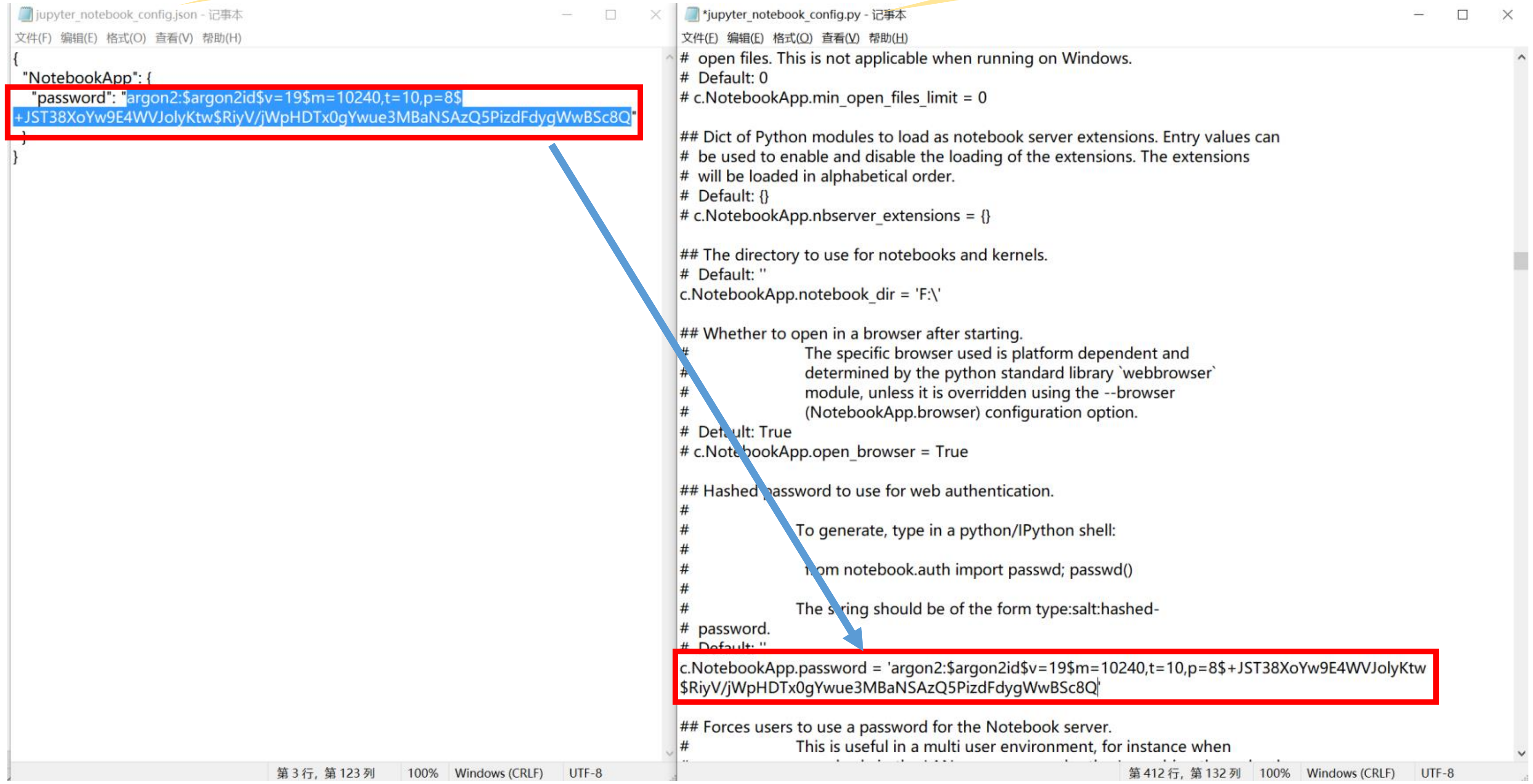
Jupyter

Step 4.3 Set up Jupyter

- Copy and paste the encrypted password. (Remember to delete # and save the file)

Generated in Step 4.2

Generated in Step 4.1


jupyter_notebook_config.json - 记事本
文件(F) 编辑(E) 格式(O) 查看(V) 帮助(H)
第 3 行，第 123 列
100%
Windows (CRLF)
UTF-8
*jupyter_notebook_config.py - 记事本
文件(F) 编辑(E) 格式(O) 查看(V) 帮助(H)
第 412 行，第 132 列
100%
Windows (CRLF)
UTF-8

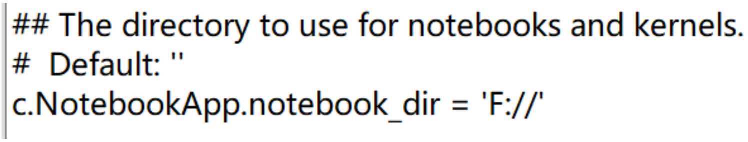
```
{
  "NotebookApp": {
    "password": "argon2:$argon2id$v=19$m=10240,t=10,p=8$
+JST38XoYw9E4WVJolyKtw$RiyV/jWpHDTx0gYwue3MBaNSAzQ5PizdFdygWwBSc8Q"
  }
}
```

```
#  open files. This is not applicable when running on Windows.
#  Default: 0
# c.NotebookApp.min_open_files_limit = 0

## Dict of Python modules to load as notebook server extensions. Entry values can
#  be used to enable and disable the loading of the extensions. The extensions
#  will be loaded in alphabetical order.
#  Default: {}
# c.NotebookApp.nbserver_extensions = {}

## The directory to use for notebooks and kernels.
#  Default: ''
c.NotebookApp.notebook_dir = 'F:\'

## Whether to open in a browser after starting.
#                        The specific browser used is platform dependent and
#                        determined by the python standard library `webbrowser`
#                        module, unless it is overridden using the --browser
#                        (NotebookApp.browser) configuration option.
#  Default: True
# c.NotebookApp.open_browser = True

## Hashed password to use for web authentication.
#
#                       To generate, type in a python/IPython shell:
#
#                        from notebook.auth import passwd; passwd()
#
#                       The string should be of the form type:salt:hashed-
#  password.
#  Default: ''
c.NotebookApp.password = 'argon2:$argon2id$v=19$m=10240,t=10,p=8$+JST38XoYw9E4WVJolyKtw
$RiyV/jWpHDTx0gYwue3MBaNSAzQ5PizdFdygWwBSc8Q'

## Forces users to use a password for the Notebook server.
#                       This is useful in a multi user environment, for instance when
```

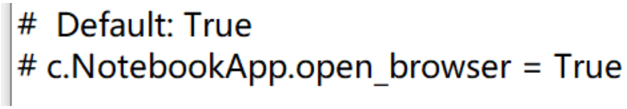
Jupyter

Step 4.4 Set up Jupyter

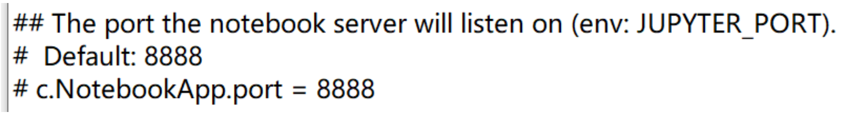
- There are also some useful settings in this config file.



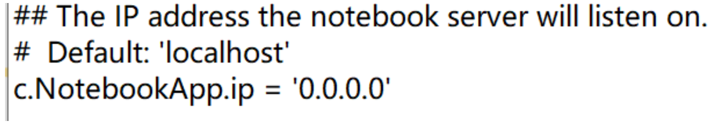
```
## The directory to use for notebooks and kernels.
#  Default: ''
c.NotebookApp.notebook_dir = 'F://'
```



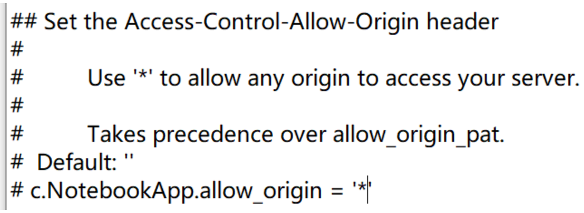
```
#  Default: True
# c.NotebookApp.open_browser = True
```



```
## The port the notebook server will listen on (env: JUPYTER_PORT).
#  Default: 8888
# c.NotebookApp.port = 8888
```



```
## The IP address the notebook server will listen on.
#  Default: 'localhost'
c.NotebookApp.ip = '0.0.0.0'
```

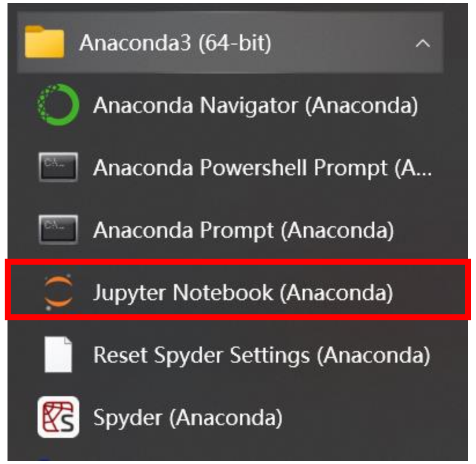


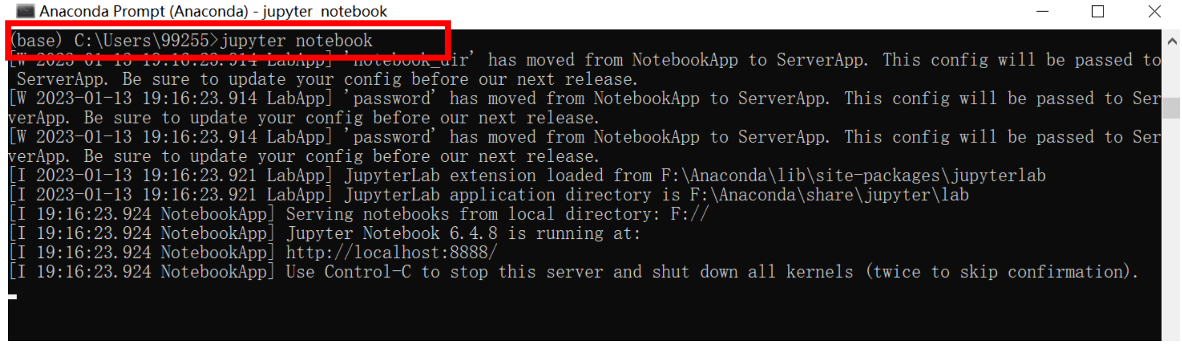
```
## Set the Access-Control-Allow-Origin header
#
#        Use '*' to allow any origin to access your server.
#
#        Takes precedence over allow_origin_pat.
#  Default: ''
# c.NotebookApp.allow_origin = '*'
```

Jupyter

Step 5.1 Open Jupyter

- To open Jupyter, you can select it in **Window Start Menu** or type in ***jupyter notebook*** in **Anaconda Prompt**.


Anaconda3 (64-bit)
Anaconda Navigator (Anaconda)
Anaconda Powershell Prompt (A...
Anaconda Prompt (Anaconda)
Jupyter Notebook (Anaconda)
Reset Spyder Settings (Anaconda)
Spyder (Anaconda)

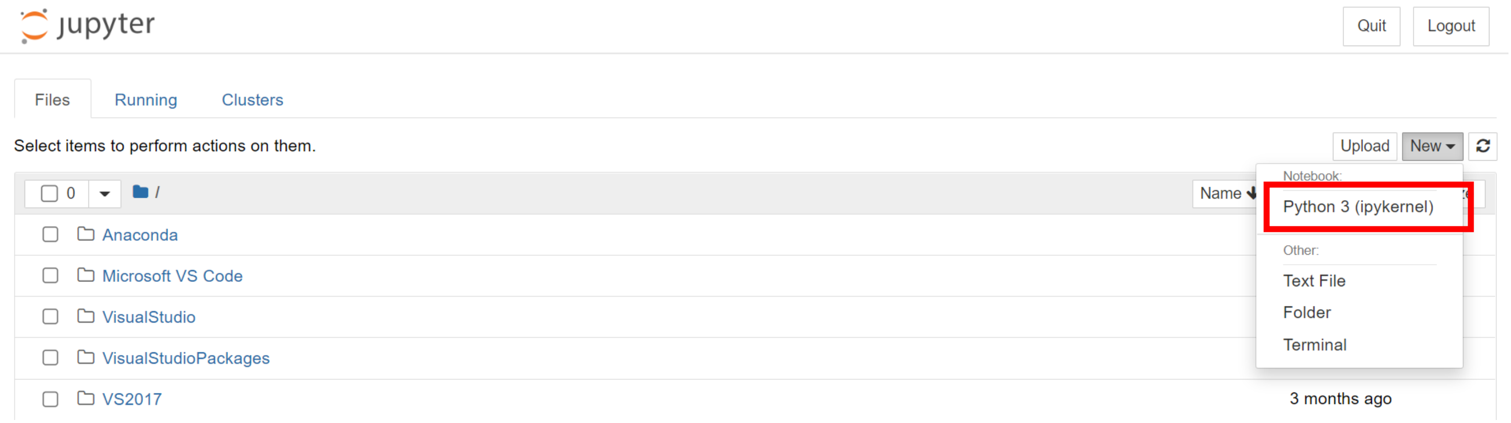


```
(base) C:\Users\99255>jupyter notebook
[W 2023-01-13 19:16:23.914 LabApp] 'notebook_dir' has moved from NotebookApp to ServerApp. This config will be passed to
 ServerApp. Be sure to update your config before our next release.
[W 2023-01-13 19:16:23.914 LabApp] 'password' has moved from NotebookApp to ServerApp. This config will be passed to Ser
verApp. Be sure to update your config before our next release.
[W 2023-01-13 19:16:23.914 LabApp] 'password' has moved from NotebookApp to ServerApp. This config will be passed to Ser
verApp. Be sure to update your config before our next release.
[I 2023-01-13 19:16:23.921 LabApp] JupyterLab extension loaded from F:\Anaconda\lib\site-packages\jupyterlab
[I 2023-01-13 19:16:23.921 LabApp] JupyterLab application directory is F:\Anaconda\share\jupyter\lab
[I 19:16:23.924 NotebookApp] Serving notebooks from local directory: F://
[I 19:16:23.924 NotebookApp] Jupyter Notebook 6.4.8 is running at:
[I 19:16:23.924 NotebookApp] http://localhost:8888/
[I 19:16:23.924 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
```

Jupyter

Step 5.2 Open Jupyter

- Now you can write your own code in your local computer!



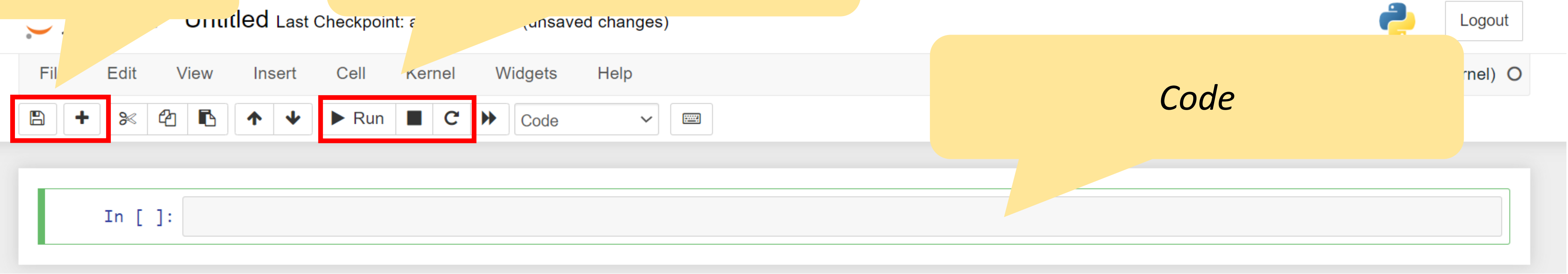
Select items to perform actions on them.

Anaconda
Microsoft VS Code
VisualStudio
VisualStudioPackages
VS2017 3 months ago

Jupyter

Entering and Executing the code

- It is really similar in Colab



Save and Add new cell

Run cell, interrupt the execution, restart the kernel

Code

Survery

As mentioned, we propose to build the lectures/tutorials/assignments/projects based on a mixed set of public data and real-world data. Therefore, we prepared a survey to see your willingness to share face images.

SCAN ME

https://learn.polyu.edu.hk/webapps/blackboard/content/launchLink.jsp?ann_id=_441125_1&course_id=_105113_1&mode=cpview

THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

Department of Computing
電子計算學系

Thank you!