Machine Learning

Jupyter Notebook

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Teaching, Training and Coaching for more than a decade!

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Jupyter Notebook

- Jupyter Notebook is an open-source **interactive** **web application** that allows users to create and share documents that contain **live code, equations, visualizations, and explanatory text**.
- It is a common tool for AI/data science tutorial and basic projects
- Usually beginners find it easy and useful to learn ML/DS concepts
- File extension is: .**ipynb** (a json-file)
- Your ToDo: Learn json and yaml formats
    - Read and write using Python code

Python Visualization Libraries

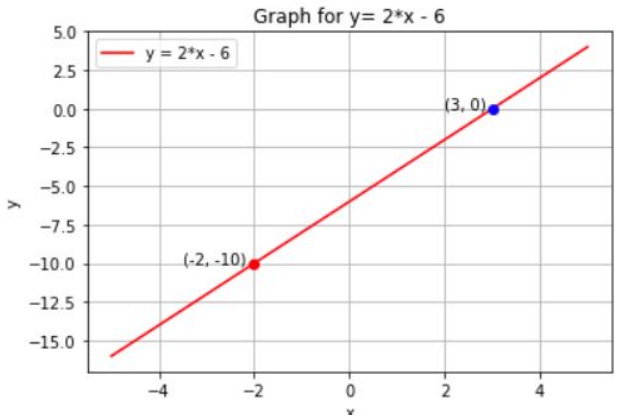
In [1]:
```
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
%matplotlib inline
```

Matplotlib

```
# Plot the 2 points
# bo and ro will draw a thick point: blue/red
plt.plot(point1[0], point1[1], 'bo')
plt.plot(*point2, 'ro')

plt.text(point1[0]-1, point1[1], f"{point1}")
plt.text(point2[0]-1.5, point2[1], f"{point2}")

plt.show()
```



Mix of code, text, figures and equations

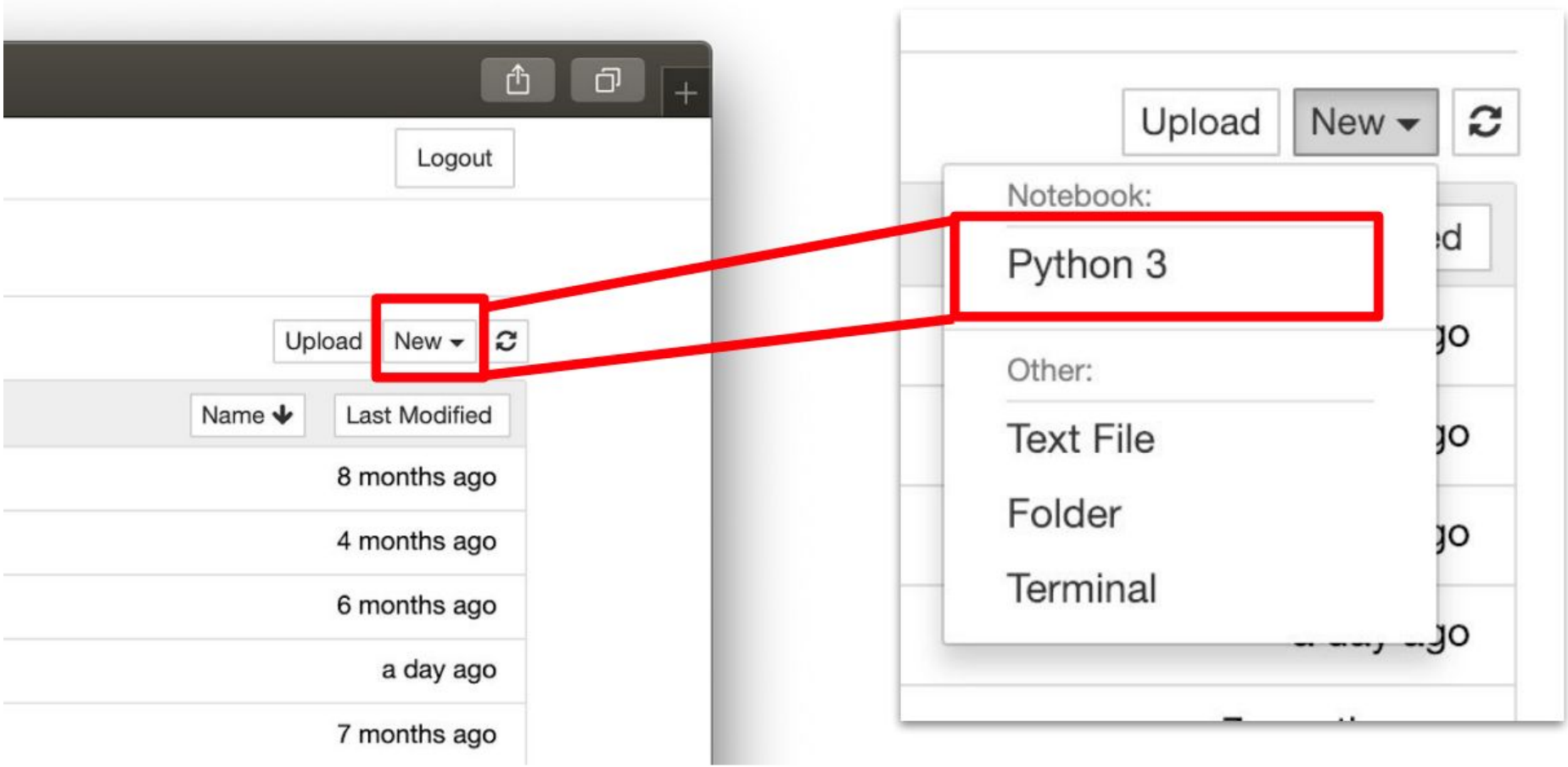
Installation

- First, install python
- On windows
  - python -m pip install -U pip setuptools
  - pip3 install jupyter
- On linux
  - pip install -U pip setuptools
  - pip3 install jupyter
- Tip: It is important to learn set up **virtual** environment for Python using **Anaconda**
- Facing problems? Please **google** them

Running

- Open your terminal and write:
- **jupyter notebook**
- A web page will be opened on the localhost
  - E.g. http://localhost:8888/ or http://localhost:8890
- Either browse your local desk to open an **existing notebook**
- Or clock the new button to launch a **new notebook**

Code tour


Logout
Upload
New
Name
Last Modified
8 months ago
4 months ago
6 months ago
a day ago
7 months ago
Upload
New
Notebook:
Python 3
Other:
Text File
Folder
Terminal

Cell

- We can write code (and other content types) in a cell.
- We can modify and rerun
- We can insert cells before or after
- You can stop a running cell

```
In [4]: x = 1000

In [15]: import numpy as np

         arr = np.array([[1, 2, 3],
                         [4, 5, 6]], np.int32)

         arr

Out[15]: array([[1, 2, 3],
                [4, 5, 6]], dtype=int32)
```

Markdown

- A simplified way to write HTML elements.
- I am **Mostafa** Saad Ibrahim
- Mostafa will appear **bold**

In [ ]:
```
# Heading 1
## Heading 2
Learning **Machine Learning** is fun

From cell, select cell type, then markdown or just from the drop down menu
Then Enter+Ctrl
```

Heading 1

Heading 2

Learning **Machine Learning** is fun

Google Colab

- Google Colab is a **Jupyter** implementation provided by **Google** meant for researchers and scholars and runs entirely on the cloud.
- The advantage of Google Colab is that it runs entirely on the **cloud**

nbconvert: Convert Notebooks to other formats

- For example, convert to python code
- **jupyter nbconvert** py_examples.ipynb --to **pdf**

Relevant Materials

- Articles: link
- Matplotlib Inline
- Videos: video video

"Acquire knowledge and impart it to the people."

"Seek knowledge from the Cradle to the Grave."