



DÀI HỌC ĐÀ NẴNG

TRƯỜNG ĐẠI HỌC CÔNG NGHỆ THÔNG TIN VÀ TRUYỀN THÔNG VIỆT - HÀN  
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# Chapter 4

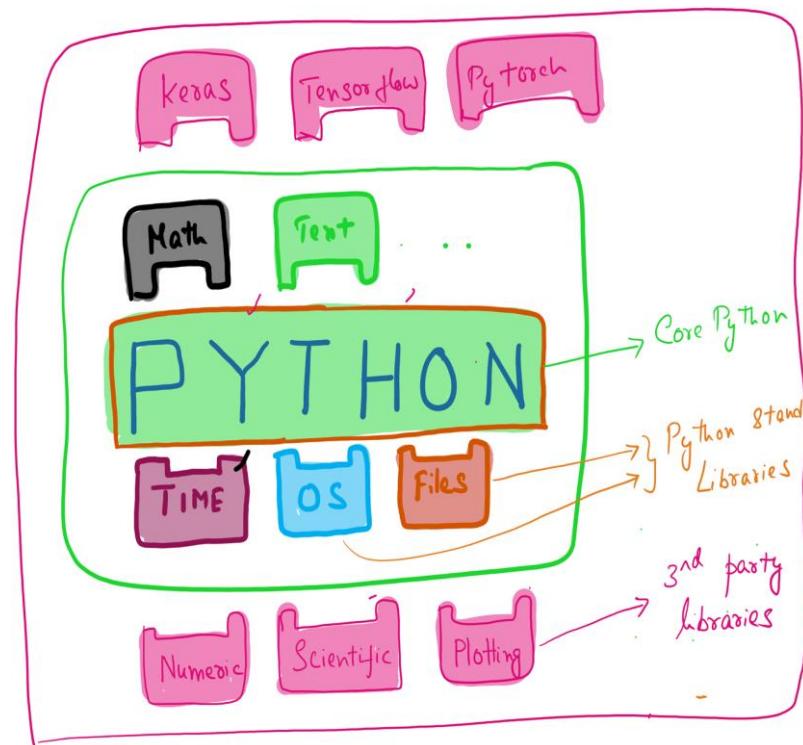
## Introduction to Python Libraries



Computer Science

- Python Libraries
- Use of Libraries in Python Program
- The Python Standard Library
- 3<sup>rd</sup> Party Libraries

- A Python library is a collection of related modules containing bundles of code that can be used repeatedly in different programs.
- It makes Python Programming simpler and convenient for the programmer when we needn't to write the same code again and again for different programs



- Importing the libraries:

```
# Importing math library
import math
A = 16
print(math.sqrt(A))
```

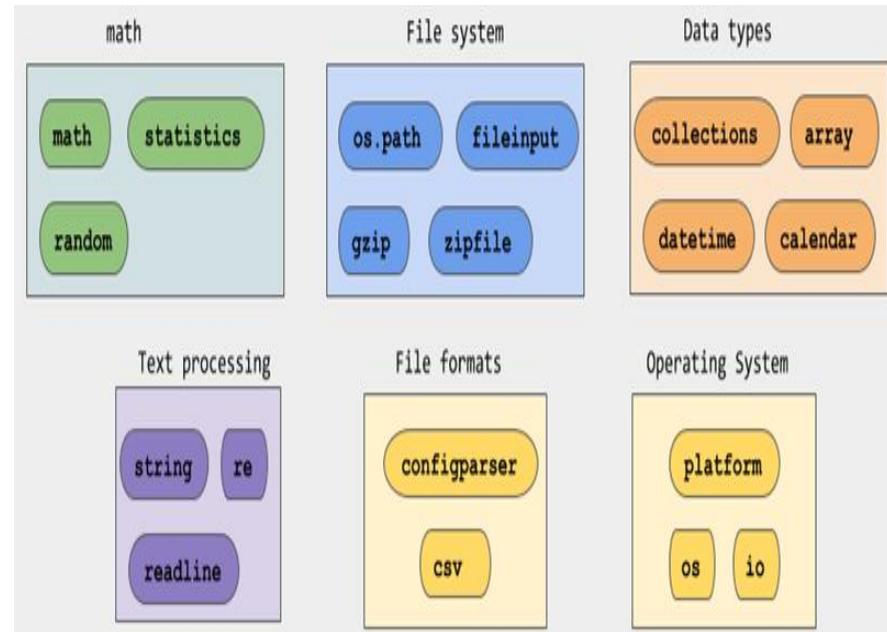
- Importing specific items from a library module:

```
# Importing specific items
from math import sqrt, sin
A = 16
B = 3.14
print(sqrt(A))
print(sin(B))
```

- Python Standard library plays a very important role to access to the system functionalities of Python

<https://docs.python.org/3/library/>

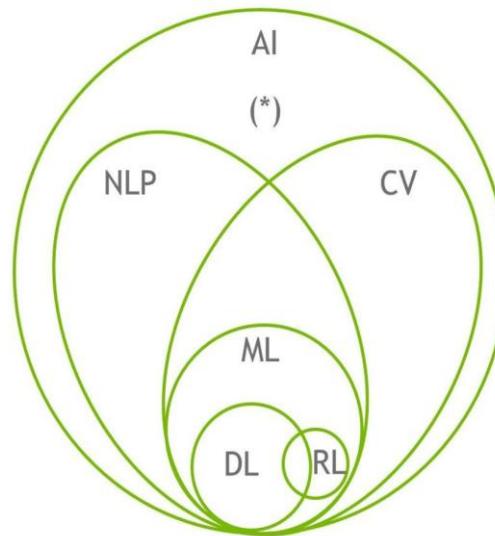
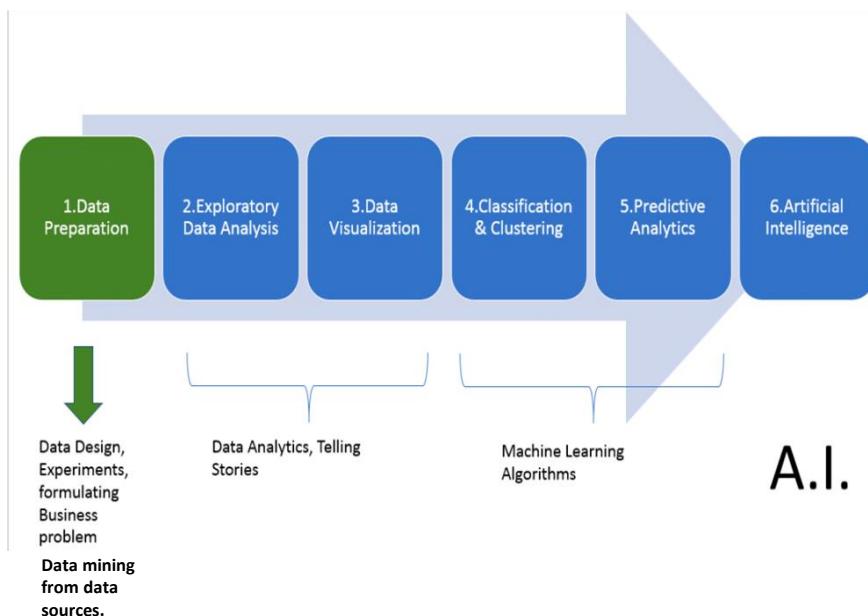
- The library contains more than 200 core prebuilt prestested modules (written in C) that are provided as part of the default python installation itself.



- Are open-source libraries (packages) developed by somebody else and made available for download using a standard interface.
- used to create applications and models in a variety of fields, e.g. machine learning, data science, data visualization, image and data manipulation, and many more.
- Find, install and publish Python packages with the Python Package Index <https://pypi.org/>
- Using pip to install packages

```
pip install <packages>
```

# Data Science & AI



AI = Artificial Intelligence  
NLP=Natural Language Processing  
CV=Computer Vision  
ML=Machine Learning  
DL=Deep Learning  
RL=Reinforcement Learning

- There are several Python tools for scraping data used in Python machine learning models.
- These libraries are known for web crawling, data scraping and arrange it into the required format



- There are several Python tools for processing and visualizing data.



- provide the implementation of traditional Machine Learning Algorithms like classification (SVM, Random Forest, Decision Tree, etc), Clustering (K-Mean, etc ),... except neural networks.





TensorFlow



Keras

mxnet



PyTorch



*Pylearn2*

# Reinforcement Learning Python Libraries

- There are libraries designed to have all the necessary tools to both implement and test Reinforcement Learning models.



OpenAI  
Baselines



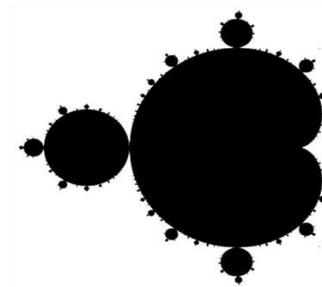
Dopamine



DeepMind  
TRFL



- There are many Python libraries that can be used for practically implementing natural language processing (NLP) and text mining tasks.

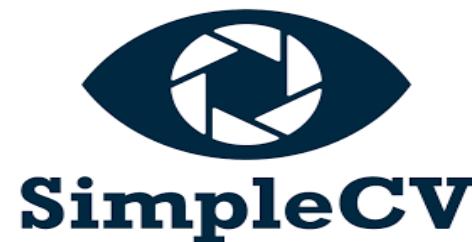
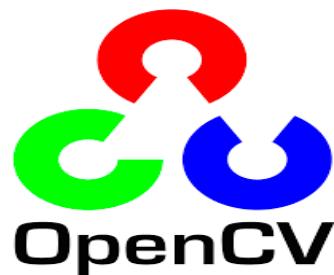


TextBlob

spaCy



- Python provides several computer vision libraries and frameworks for developers to help them automate tasks, which includes detections and visualisations.



- Link demo 1
- Link demo 2
- Link demo 3