PYTHON
INTRODUCTION

A.I COURSE FALL 2021

MEHRSHAD SAADATINIA

About Python

Python is a dynamically typed, interpreted programming language which was created in 1991 by Guido Van Rossum, Its design philosophy emphasizes code readability with its use of significant indentation.

Why python?

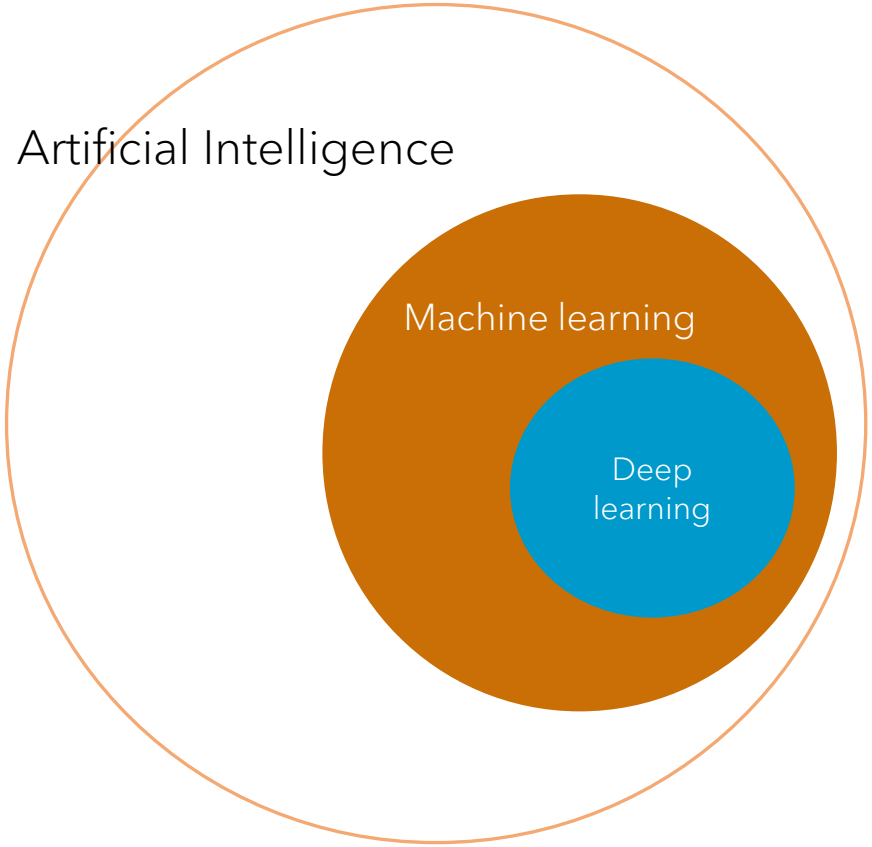
1) Code readability & simple syntax
2) Wide range of modules & packages
3) Multi-paradigm
4) Widely used in different fields
5) Suitable for scientific computing

Where is Python Used

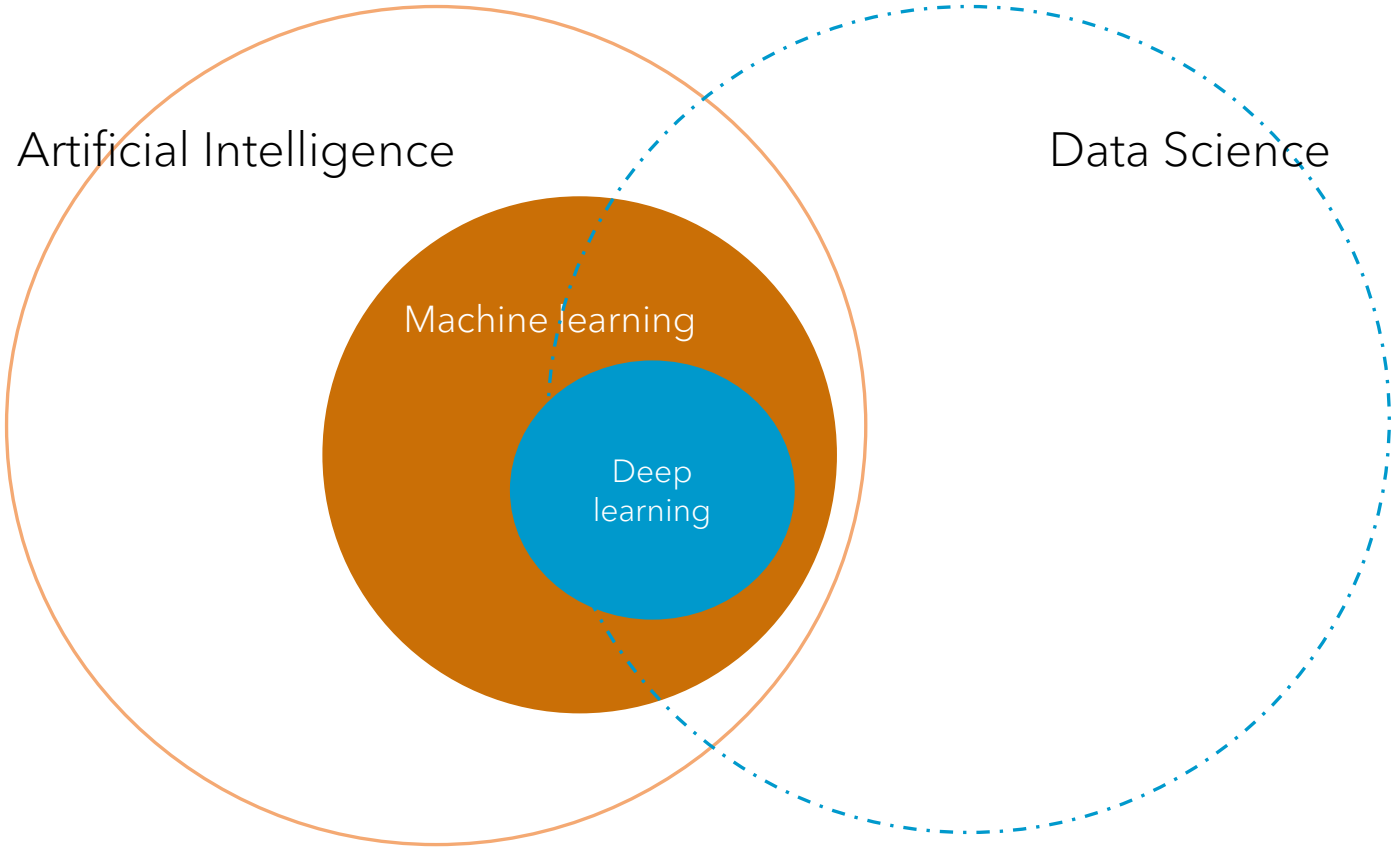
Python's simple syntax & wide range of libraries makes it easy to use nearly everywhere including but not limited to:

- Web Development with robust frameworks like Django
- Automation
- Game Development (not for big games though)
- **Artificial Intelligence and Data Science**

Python is the mostly used language in A.I & Data Science



Python is the mostly used language in A.I & Data Science



Some of Python famous libraries for machine learning

Python makes **working with data** and **training models** a lot easier by making use of robust libraries like NumPy, Pandas, Scikit Learn and …. and TensorFlow for training deep learning models

Choice of Development Environment

1) For web based software or programs which need to access file system IDEs and Editors like **PyCharm, VSCode, Atom** and ⋯ are suggested

1) For Data Science and A.I and any scientific computation it’s better to use **notebooks**

About Python notebooks

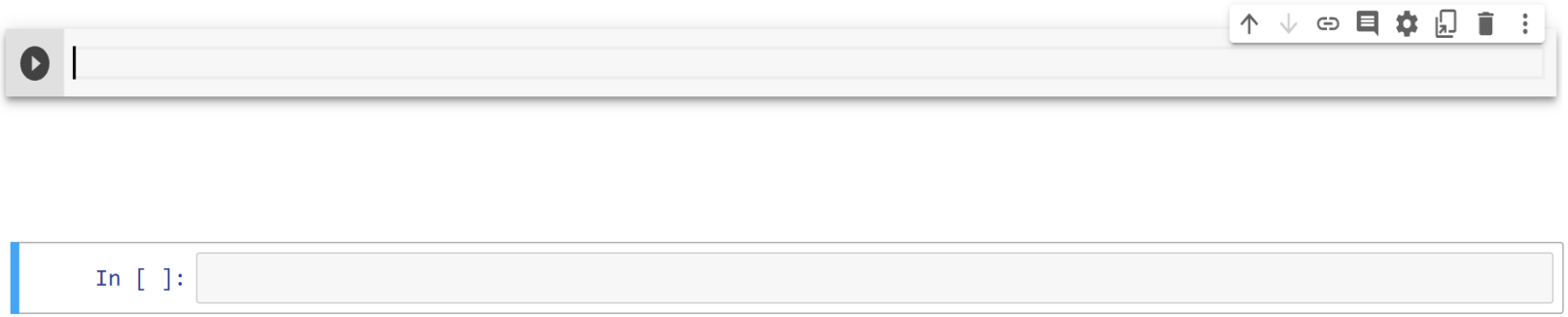
Notebooks are suitable for scientific computations as they allow you to use **text, images** and **plots** along with your code

Jupyter Notebooks are the most famous and used one

Jupyter : **Ju**lia , **Py**thon, **R**

About Python notebooks

Cell based structure makes it easy to separate and test code parts



Notebooks Comparison (1)

You can use locally hosted Jupyter environments or cloud hosted ones based on your needs.

Locally hosted Jupyter:

+)

- no service interruptions,
- easy to work with,
- available anytime

-)

- need to install almost all the libraries and packages,
- uses up local storage,
- computational power is limited to our system resources (RAM, CPU,..)

Notebooks Comparison (2)

You can use locally hosted Jupyter environments or cloud hosted ones based on your needs.

Cloud hosted Jupyter: (Google Colab specifically)

+)

- GPU backed & powerful for training deep models
- hosted on Google servers
- You will have access to the best GPU & TPU available

-)

- allocated limited amount of resources
- you can exceed your limit in the middle of training a model
- session could be preempted if not used for some time (😐)

Other choices

- **Kaggle**
- Paperspace Gradient
- IBM data platform