


Python is supposed to be a pre-requirement in the workshops and hackathon of AI'Fest23.

Since first-year students have not studied Python yet, I have gathered in this post the most interesting resources that can help you get acquainted with it before the event.

1- This picture summarizes the most important things to know about Python in the field of AI and Data science (programming concepts, most popular libraries for each task, resources to practice, etc.)

 @sambelkacem		
Full Course for Beginners Full Course for Intermediate	freeCodeCamp: https://youtu.be/rfscvS0vtbw freeCodeCamp: https://youtu.be/HGOBQPFzWko	
Interactive tutorials	https://www.w3schools.com/python/ https://www.learnpython.org/	
Exercises, challenges, projects	https://www.w3resource.com/python-exercises/ https://leetcode.com/problems/all/ https://edabit.com/challenges/python3	
Most used IDEs	Jupyter Notebook Pycharm VS Code Google colab (cloud-based Jupyter Notebook environment)	
Important programming concepts	Lists, Tuples, Sets, Dictionaries List comprehension Lambda functions Map, Filter, and Reduce functions Collections Itertools Decorators Generators Regular Expressions Serialization (JSON and Pickle)	
Important libraries by task	Data preprocessing and analysis	Pandas, Numpy, Scipy
	Data visualization	Matplotlib, Seaborn
	Machine learning	Scikit-learn
	Deep learning	TensorFlow, Keras, PyTorch
	NLP	NLTK, Gensim, spaCy
	Computer vision	OpenCV, Pillow, Scikit-Image
	Web scraping	Scrapy, BeautifulSoup
	URL requests	urllib
	GUI	PyQT, Tkinter, PySide

2- I have gathered in this GitHub repository the most popular cheat sheets and reference cards for Python (main programming concepts, main data types, main libraries, etc.)

- <https://github.com/SamBelkacem/AI-ML-cheatsheets/tree/main/03-%20Python>

3- I have previously used this amazing Jupyter notebook from Stanford University to make a workshop at ENSIA entitled "Introduction to Programming with Python". The notebook explains all the details, step by step, including programming code that you can directly execute.

- <https://cs231n.github.io/python-numpy-tutorial/>

4- There are some dedicated resources that guide you and explain how to switch from C++ to Python. The purpose is to quickly understand the similarities and differences without restudying everything from scratch like beginners. Second-year students have used these resources in the module "Introduction to AI", where they had to switch from C++ to Python.

- <https://intro2ml.pages.doc.ic.ac.uk/autumn2021/modules/lab-cpp/introduction>
- <https://python.pages.doc.ic.ac.uk/cpp/lessons/cpp/>

P.S. All these resources can also be useful in the next few years as you will mainly be using Python