

Libraries used in Python

Python's popularity stems (in part) from the wide range of libraries and frameworks that extend its capabilities. Frameworks and libraries contain prewritten code classes and functions that you can add to your own projects. They can make the development process quicker by saving time you'd otherwise spend writing code. Plus, everything's a bit cleaner because the frameworks and libraries add structure to your codebase.

- **Python's standard library:**

The Python ecosystem is vast and far-reaching in both scope and depth. Starting out in this crazy, open-source forest is daunting, and even with years of experience, it still requires continual effort to keep up-to-date with the best libraries and techniques.

Python itself already includes a huge number of high-quality libraries; collectively these are called the standard library. It is very rich and includes a bunch of additional functionalities that many Python programmers take too long to discover.

- <https://docs.python.org/3/library/>
- <https://learning.oreilly.com/library/view/20-python-libraries/9781492037866/ch01.html#idm139737065031200>
- <https://learning.oreilly.com/library/view/python-in-practice/9780133373271/ch06.html#ch06lev1sec1>

- **NumPy**

NumPy is an open-source Python library that facilitates efficient numerical operations on large quantities of data. There are a few functions that exist in NumPy that we use on pandas DataFrames. For us, the most important part about NumPy is that pandas is built on top of it. So, NumPy is a dependency of Pandas.

- https://learning.oreilly.com/videos/data-manipulation-in/9781804614396/9781804614396-video3_1/
- <https://www.codecademy.com/article/introduction-to-numpy-and-pandas>

- **Panda:**

Pandas is a very popular library for working with data (its goal is to be the most powerful and flexible open-source tool, and in our opinion, it has reached that goal). DataFrames

are at the center of pandas. A DataFrame is structured like a table or spreadsheet. The rows and the columns both have indexes, and you can perform operations on rows or columns separately.

A pandas DataFrame can be easily changed and manipulated. Pandas has helpful functions for handling missing data, performing operations on columns and rows, and transforming data. If that wasn't enough, a lot of SQL functions have counterparts in pandas, such as join, merge, filter by, and group by. With all of these powerful tools, it should come as no surprise that pandas is very popular among data scientists.

- https://learning.oreilly.com/videos/data-manipulation-in/9781804614396/9781804614396-video5_1/

- **SciPy**

SciPy is a collection of mathematical algorithms and convenience functions built on the NumPy extension of Python. It adds significant power to the interactive Python session by providing the user with high-level commands and classes for manipulating and visualizing data. With SciPy, an interactive Python session becomes a data-processing and system-prototyping environment rivaling systems.

The additional benefit of basing SciPy on Python is that this also makes a powerful programming language available for use in developing sophisticated programs and specialized applications. Scientific applications using SciPy benefit from the development of additional modules in numerous niches of the software landscape by developers across the world. Everything from parallel programming to web and data-base subroutines and classes have been made available to the Python programmer. All of this power is available in addition to the mathematical libraries in SciPy.

- <https://docs.scipy.org/doc/scipy/tutorial/general.html>

- **Scikit**

Scikit-Learn, also known as sklearn is a python library to implement machine learning models and statistical modelling. Through scikit-learn, we can implement various machine learning models for regression, classification, clustering, and statistical tools for analyzing these models. It also provides functionality for dimensionality reduction, feature selection, feature extraction, ensemble techniques, and inbuilt datasets.

- <https://www.analyticsvidhya.com/blog/2021/07/15-most-important-features-of-scikit-learn/>
- <https://www.codecademy.com/article/scikit-learn-cheatsheet>

- **Various Python Libraries with their brief explanation and installation guide:**

- https://learning.oreilly.com/library/view/numerical-python/9781484242469/html/332789_2_En_1_Chapter.xhtml
- <https://www.interviewbit.com/blog/python-libraries/>

References –

- Scikit: <https://www.analyticsvidhya.com/blog/2021/07/15-most-important-features-of-scikit-learn/>
- SciPy: <https://docs.scipy.org/doc/scipy/tutorial/general.html>