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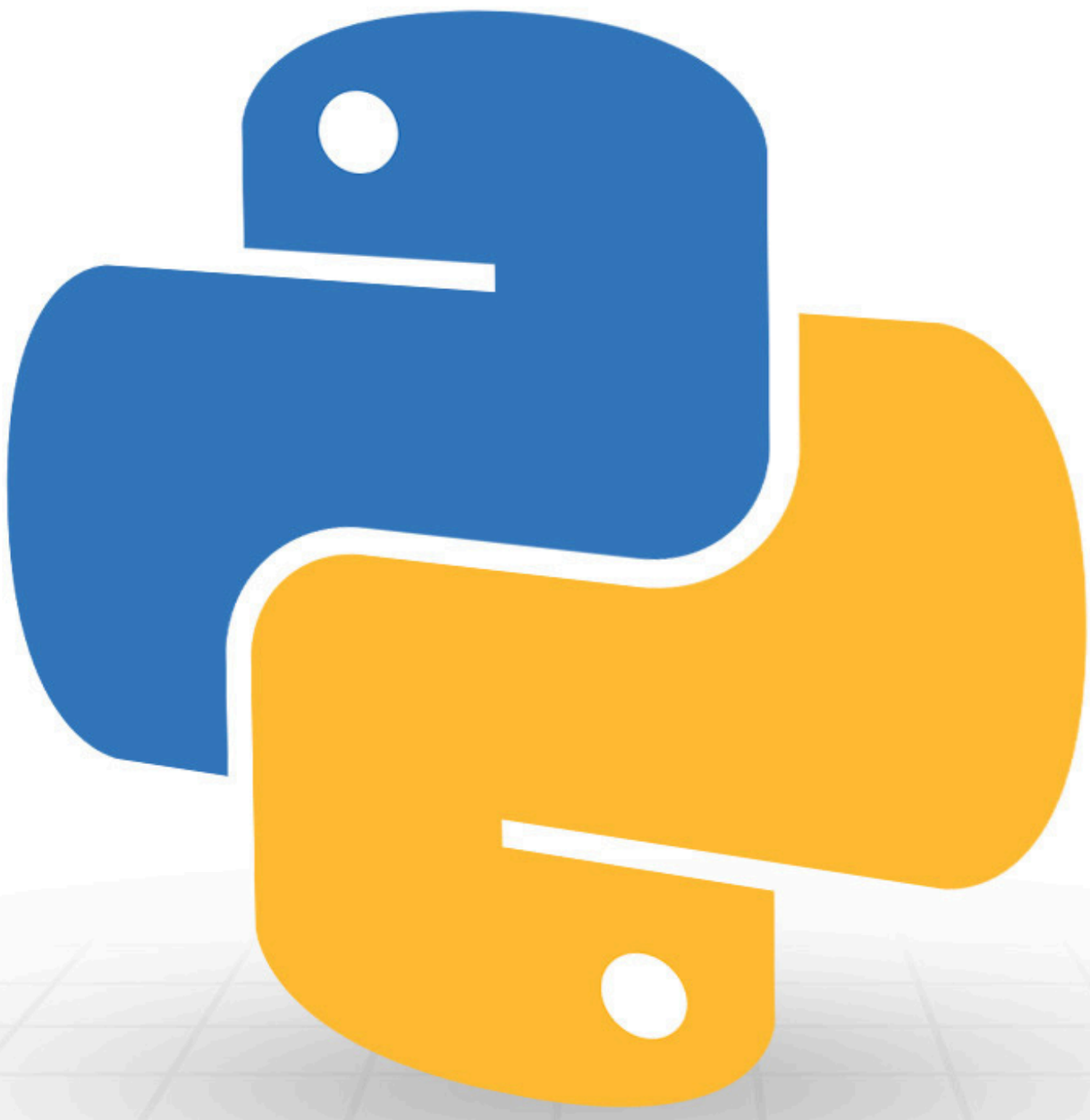
MOST USED PYTHON LIBRARIES IN DATA SCIENCE



#1

NumPy

A fundamental library for scientific computing, providing support for large, multi-dimensional arrays and matrices, along with a large collection of high-level mathematical functions to operate on these arrays.

Resources

- NumPy User Guide
- NumPy Quickstart Tutorial

Practice Questions:

Create a 3x3 NumPy array filled with random integers between 1 and 10, and then find the mean, median, and standard deviation of the array.

#2

Pandas

A powerful data analysis and manipulation library, providing high-performance, easy-to-use data structures and data analysis tools.

Resources

- Pandas User Guide
- Pandas Tutorials

Practice Questions:

Load a CSV file into a Pandas DataFrame, handle any missing data, and then group the data by a specific column and calculate the sum of another column.

#3

Matplotlib

A comprehensive library for creating static, animated, and interactive visualizations in Python.

Resources

- Matplotlib User Guide
- Matplotlib Tutorials

Practice Questions:

Create a line plot, a scatter plot, and a histogram using Matplotlib, and customize the plot titles, axis labels, and legend.

#4

Scikit-learn

A machine learning library that features various classification, regression, and clustering algorithms, including support vector machines, random forests, gradient boosting, k-means, and more.

Resources

- Scikit-learn User Guide
- Scikit-learn Tutorials

Practice Questions:

Implement a linear regression model using Scikit-learn, train it on a dataset, and evaluate its performance using appropriate metrics.

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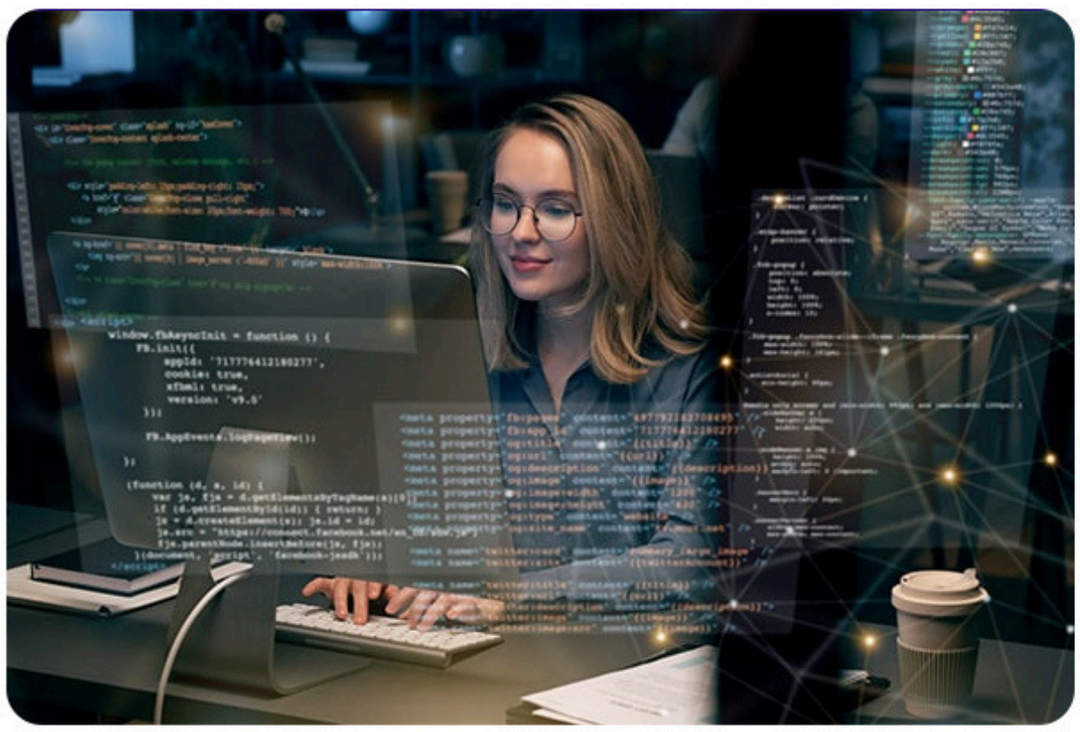

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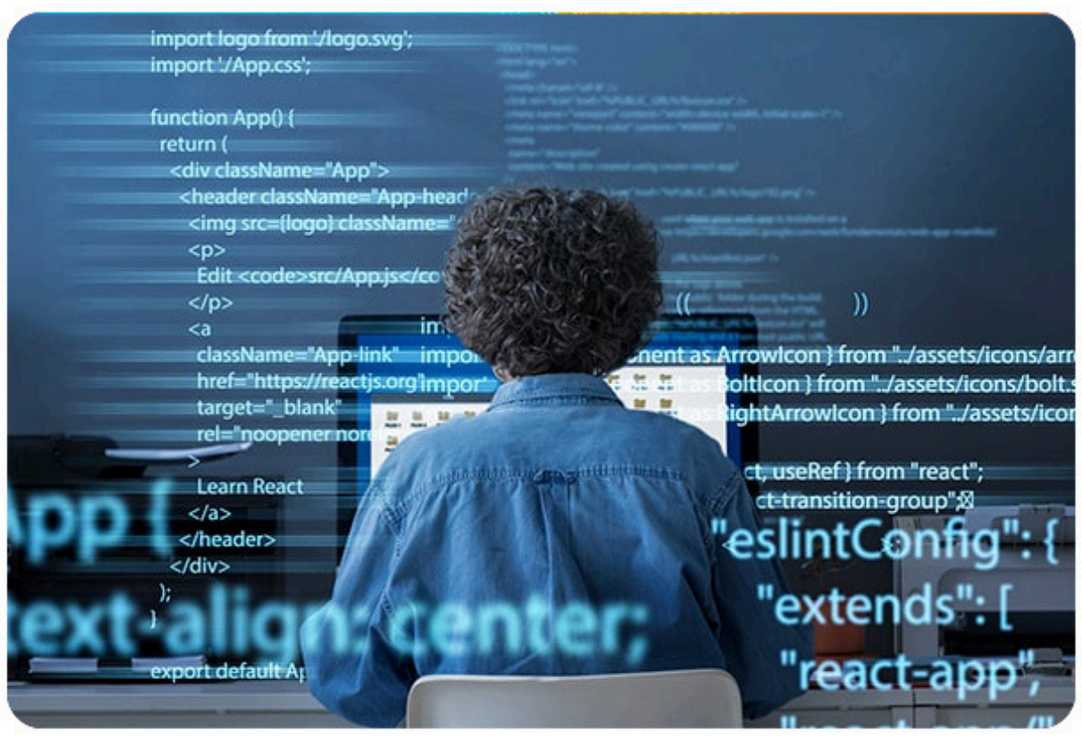

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#5

SciPy

A library for scientific and technical computing, providing user-friendly and efficient numerical routines, such as routines for numerical integration, interpolation, optimization, linear algebra, and statistics.

Resources

- SciPy User Guide
- SciPy Tutorials

Practice Questions:

Use SciPy to perform a linear regression analysis on a dataset, including calculating the regression coefficients, R-squared value, and statistical significance of the model.

#6

Seaborn

A data visualization library based on Matplotlib, providing a high-level interface for drawing attractive and informative statistical graphics.

Resources

- Seaborn User Guide
- Seaborn Examples

Practice Questions:

Create a heatmap, a pairplot, and a regression plot using Seaborn, and customize the plot titles, axis labels, and color schemes.

#7

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Keras

A high-level neural networks API, written in Python and capable of running on top of TensorFlow, CNTK, or Theano. It is designed to enable fast experimentation with deep neural networks and supports both convolutional networks and recurrent networks, as well as a combination of the two.

Resources

- Keras Documentation
- Keras Tutorials

Practice Questions:

Build a simple neural network using Keras, train it on a dataset, and evaluate its performance on a test set.

#8

TensorFlow

An open-source library for machine learning and deep learning, used for building and deploying machine learning models.

Resources

- TensorFlow Documentation
- TensorFlow Tutorials

Practice Questions:

Implement a convolutional neural network using TensorFlow for image classification, and optimize its performance using techniques like data augmentation and hyperparameter tuning.

#9

Plotly

A high-level data visualization library that provides a wide range of interactive, publication-quality graphs for both web-based and offline use.

Resources

- Plotly Documentation
- Plotly Tutorials

Practice Questions:

Create an interactive scatter plot, a bar chart, and a heatmap using Plotly, and add customizations like hover tooltips and animations.

#10

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Statsmodels

A Python module that provides classes and functions for the estimation of many different statistical models, as well as for conducting statistical tests, and statistical data exploration.

Resources

- Statsmodels Documentation
- Statsmodels Tutorials

Practice Questions:

Use Statsmodels to perform a multiple linear regression analysis on a dataset, interpret the regression coefficients, and assess the statistical significance of the model.

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