**Python Libraries**

* **Pandas**

**Definition**: Pandas is an open-source data manipulation and analysis library in Python. It provides data structures like DataFrames and Series, which make it easy to work with structured data.

**Common Use Cases:**

- Data cleaning and preprocessing

- Handling missing data

- Data analysis and exploration

- Reading and writing data to different formats (e.g., CSV, Excel, SQL)

* **NumPy**

**Definition**: NumPy (Numerical Python) is a fundamental library for scientific computing in Python. It provides support for arrays, matrices, and a large collection of mathematical functions to operate on these arrays.

**Common Use Cases:**

- Performing mathematical operations on arrays and matrices

- Supporting linear algebra, Fourier transforms, and random number generation

- Serving as the foundation for other scientific libraries like Pandas and SciPy

* **TensorFlow**

**Definition**: TensorFlow is an open-source machine learning framework developed by Google. It allows for the creation and training of deep learning models through a flexible architecture.

**Common Use Cases**:

- Building and training deep learning models (e.g., neural networks)

- Deploying machine learning models to various platforms (e.g., mobile, web)

- Researching advanced machine learning algorithms and techniques

* **Keras**

**Definition**: Keras is a high-level neural networks API, written in Python, that runs on top of TensorFlow, Theano, or CNTK. It is user-friendly, modular, and extensible, making it easier to build and experiment with deep learning models.

**Common Use Cases**:

- Quickly prototyping deep learning models

- Developing models for image and text data

- Fine-tuning and experimenting with neural networks

* **PyTorch**

**Definition**: PyTorch is an open-source deep learning framework developed by Facebook's AI Research lab. It provides a flexible and intuitive platform for building and training neural networks, with strong support for dynamic computational graphs.

**Common Use Cases**:

- Building and training deep learning models with dynamic computational graphs

- Performing natural language processing (NLP) and computer vision tasks

- Researching and experimenting with new deep learning techniques

* **scikit-learn (sklearn)**

**Definition**: Scikit-learn is a powerful machine learning library in Python. It provides simple and efficient tools for data mining, data analysis, and machine learning. It is built on NumPy, SciPy, and matplotlib.

**Common Use Cases**:

- Implementing classical machine learning algorithms (e.g., regression, classification, clustering)

- Feature selection and preprocessing

- Model evaluation and validation