What are some of the popular Python libraries for Machine Learning and how are they used?

NumPy
NumPy or Numerical Python is a straight algebra made with Python. A large number of engineers and technicians prefer it over other Python library learning equipment. Because, almost all Python machine learning packages like scipy, Mat-plotlib, Scikit-learn, etc. are highly dependent on this library to some extent. In addition, it comes with functions to deal with complex mathematical operations such as Fourier conversion, precise algebra, random number, and matrix features and Python n-arrays. Also, this python pack makes scientific calculations. Therefore, it is widely used in the handling of sound waves, images, and other binary functions.

Characteristics:

- ❖ High performance of N-dimensional object
- ❖ Interaction
- ❖ A multidimensional container of standard data
- ❖ Accurate

How to use NumPy:
Install command

```
pip install numpy
```

Import the NumPy Package

```
import numpy as np
```

TensorFlow

TensorFlow is an end-to-end machine learning machine for advanced math calculations. It is one of Python's most highly recommended machine learning libraries. It can manage deep neural networks of NLP (Natural Language Processing), duplicate neural networks, image recognition, word embedding, hand digit separation, and PDE (Partial Differential Equation). TensorFlow Python ensures excellent architectural support to allow easy computational deployment across a variety of computers, including desktops, servers and mobile devices.

One of the great benefits of TensorFlow is Abstraction of learning tools and AI projects. This feature allows developers to focus on the overall concept of the application instead of dealing with the general details of using algorithms. Besides, with this library, python producers can now use AI and ML effortlessly to create unique responsive applications, which respond to user inputs such as face or voice speech.

Characteristics:

- ❖ Responsive Creating
- ❖ Flexible
- ❖ Easy to train
- ❖ Parallel Neural Network Training
- ❖ Great Community
- ❖ Open Source

How to use TensorFlow:

Install command

```
pip install tensorflow
```

Import the TensorFlow Package

```
import tensorflow as tf
```

PyTorch

PyTorch is a Python-ready machine learning library with excellent examples, applications, and usage cases supported by a strong community. This library absorbs

robust GPU acceleration and enables you to use it from applications such as NLP. As it supports GPU and CPU calculations, it provides you with awesome performance and terrifically distributed training in research and production. Deep neural networks and Tensor calculation at GPU speed are two of the top features of PyTorch. It incorporates a machine learning compiler called Glow that enhances the performance of in-depth learning frameworks.

Characteristics:

- Hybrid Front-End
- Distributed Training
- Python First
- Libraries and Tools

How to use PyTorch:

Install command

```
pip install pytorch
```

Import the PyTorch Package

```
import pytorch as pt
```

Pandas

In machine learning projects, much of the time is spent preparing data and analyzing basic styles and patterns. This is where Python Pandas attracts the attention of machine learning experts. Python Pandas is an open source library that comes with a variety of tools for managing and analyzing data. With the help of this library, you can read data from a wide range of sources such as SQL databases, CSV files, JSON, and Excel.

Allows you to manage complex data operations with one or two commands. In addition, the Pandas Pandas comes with a number of built-in ways to compile data, collect and filter the performance of a timeline. Overall, the Pandas not only handle data-related tasks; and serve as the best starting point for making data tools more focused and powerful.

Characteristics:

- A fast and effective DataFrame tool with automatic and customized indexes.
- Data loading tools for memory data objects from different file formats.
- Data synchronization and integrated handling of lost data.
- Reconfiguration and updating of data sets.

How to use Pandas:
Install command

```
pip install pandas
```

Import the Pandas Package

```
import pandas as pd
```

Matplotlib:
As the name suggests, Matplotlib provides a MATLAB-like interface and gives users a better user experience. It uses standard GUI tools such as Qt, wxPython, GTK +, or Thinter to provide editors with an object-based API to embed graphs and sites in their programs.
Matplotlib assists in producing high-quality 2D graphs and figures in many ways. Types of graphs and sites include error charts, sites, histograms, spreadsheets, bar charts with narrow lines of code.

Characteristics:

- Immediate Text Delivery
- Appropriate colormap
- Enhanced image support
- Improved text selection for offset

How to use Matplotlib:
Install command

```
pip install matplotlib
```

Import the Matplotlib Package

```
import matplotlib.pyplot as plt
```

SciPy:
SciPy is one of Python's most popular machine learning libraries. It has become a popular library among Learning Machine lovers as it contains various modules of integration, efficiency, precise algebra, and math. There is a difference between the

SciPy library and the SciPy stack. SciPy is one of the basic packages that make up the SciPy stack. Apart from that, SciPy is also very useful for image processing.

Characteristics:

- Easily handles mathematical operations.
- It provides effective pricing lines, such as aggregation using subtitles.
- Supports signal processing.

How to use SciPy:

Install command

```
pip install scipy
```

Import the SciPy Package

```
import scipy as sp
```

Keras:

Keras is one of Python's coolest reading libraries. If you are just starting out in machine learning I suggest you use Keras. Besides, It provides an easy way to express Neural networks. In addition, It also provides other modeling services, data set processing, test results, graph recognition, and much more.

The Keras inside use Tensorflow or Theano as a retrospective. Other popular network components such as CNTK can also be used. Keras is slow compared to other libraries because it builds a computer graph using background technology and uses it to perform tasks. In addition,Keras provides a wide range of pre-used data and pre-trained models such as Inception, SqueezeNet, Mnist, VGG, ResNet, etc.

Characteristics:

- Works well on both CPU and GPU.
- Datasets pre-set
- Many ways of data processing
- Model Testing
- Practice

Install command

```
pip install keras
```

Import the Keras Package

```
from keras.models import Sequential
```