**Assignment-1**

Q. Write short notes on the following python libraries:

**1. Pandas:**

Pandas is an open-source Python library/package which provides a interface where data structure are manipulated in a relational way or tabular structure. Pandas are suitable for different types of data like tabular data composed of different data types or format as in SQL or Excel, ordered and unordered data, matrix data, or any statistical datasets. These are the few things Pandas are used for:

* Columns can be inserted and deleted from Dataframe or higher dimensional objects.
* Series (1-D) and frames (2-D) are used to automatically align the data to users.
* Robust IO tools for loading and saving data from files (CSV), excel files, DB.

Steps to install Pandas

* Go to command prompt
* Locate folder using "cd" command where python-pip files are installed.
* Then type : " pip install pandas "
* For importing pandas : " import pandas as pd "

**2. NumPy:**

NumPy stands for Numerical Python, is also an open-source Python library that provides an interface processing multidimensional array objects and tools for working with these arrays. It was created by Travis Oliphant in 2005 for a package including array processing. These are the few things NumPy are used for:

* Allows to store multiple values in a single variable.
* Fourier transform (decomposition of complex function to constituent frequencies) and routines for shape manipulation.
* In-built functions for linear and algebraic operations.

Steps to install NumPy

* Go to command prompt
* Then type : " pip install numpy "

**3. TensorFlow:**

Google developed an open-source machine learning library called TensorFlow. It is used in building computational graph where a series of TensorFlow operations are arranged into a graph of nodes.

Here, the nodes represents the mathematical operations.

Steps to install TensorFlow

* Go to command prompt -> Import tensorflow as tf

**4. Keras:**

Keras is a high-level, cross-platform, user-friendly API used for building and training neural networks handling tasks across natural language processing, image processing. Keras are used in CNNs (Convolutional neural networks) due to its functionalities for layer stacking i.e. essential for steps necessary for image and video recognition tasks.

**5. Sklearn:**

Sk-Learn stands for Scikit-learn, is an open-source Python library that are used to build and implement machine learning, cross-validation, pre-processing and visualized algorithms using unified interface.

Steps to install Scikit-Learn

* Scikit requires:
* NumPy
* SciPy as its dependencies
* Go to cmd
* Type : " !pip install –U scikit – learn "

**6. PyTorch:**

Pytorch is an open- source deep learning framework about machine learning where algorithms are written that mimics the functioning of a human brain. This is available with Python and C++ interface. Pytorch are used to process tensors for n-dimensional NumPy arrays.

Steps to install Pytorch

* Cmd -> " conda install pytorch torchvision cpuonly –c pytorch "