**Assignment 1:**

**1. Pandas**

Pandas is a super useful Python library that makes working with data really straightforward. It’s like Excel for Python but way more powerful. The main features are Series (like a column in a table) and DataFrame (like a whole table). I use Pandas a lot for cleaning up data, filtering out the stuff I don’t need, and getting everything ready for analysis. It’s basically a must-have when dealing with any kind of data.

**2. NumPy**

NumPy stands for Numerical Python and is the backbone for a lot of scientific computing in Python. What makes it great is its ability to handle large arrays and matrices with a bunch of mathematical operations that are super fast. If you’re dealing with numbers, chances are you’ll be using NumPy. It’s also the foundation for a lot of other libraries like Pandas and TensorFlow, which rely on its speed and efficiency.

**3. TensorFlow**

TensorFlow is a machine learning library developed by Google. It’s pretty powerful and is used for building and training deep learning models. What’s cool about TensorFlow is that it can run on CPUs and GPUs, which makes it super fast for complex computations. Even though it can be a bit tricky to learn at first, once you get the hang of it, it’s really effective for building anything from simple models to more advanced neural networks.

**4. Keras**

Keras is like the friendly face of TensorFlow. It’s a high-level API that makes building neural networks way easier. Instead of worrying about all the low-level details, Keras lets you focus on designing and training your models. It’s great for quick experimentation and is often the go-to for beginners who are just getting into deep learning, as well as for pros who want to prototype ideas quickly.

**5. Scikit-learn (sklearn)**

Scikit-learn is the go-to library for traditional machine learning tasks in Python. It’s got a ton of algorithms for things like classification, regression, and clustering, and it’s super easy to use. One of the best things about scikit-learn is how it handles the whole machine learning pipeline, from preprocessing data to tuning models and validating results. It’s perfect for getting a quick start on machine learning projects.

**6. PyTorch**

PyTorch is another deep learning library, but it’s developed by Facebook. What’s neat about PyTorch is that it’s really flexible, especially when it comes to building neural networks. Unlike TensorFlow, PyTorch uses dynamic computation graphs, which means you can change things on the fly. This makes it great for research and experimentation. Plus, it integrates well with Python, so it feels more natural to work with if you’re already familiar with Python coding.

**Niwesh waiba**