TensorFlow and Keras

TensorFlow

TensorFlow is an open-source machine learning platform developed by Google which helps in training large-scale neural networks with many layers. It provides a comprehensive ecosystem of tools for developers, enterprises, and researchers who want to push the state-of-the-art in Machine Learning and build scalable ML-powered applications.

Why TensorFlow?

- TensorFlow provides an accessible and readable syntax which is essential for making programming resources easier to use.
- It can carry out high-performance numerical computations.
- It provides excellent architecture support which allows easy deployment of computations across a variety of platforms, ranging from desktops to clusters of servers, mobiles, and edge devices.
- It helps researchers implement new technologies.

If you want to know about the implementation of TensorFlow in Python, kindly refer to the following tutorials:
https://www.tensorflow.org/tutorials

Keras is a deep learning API written in Python, running on top of the machine learning platform TensorFlow. It was developed with a focus on enabling fast experimentation. Being able to go from idea to result as fast as possible is key to doing good research.

In Python, we can import TensorFlow as:

```
import tensorflow as tf
```

After importing TensorFlow, we can use *tf.keras*, which is used to implement the Keras version having a TensorFlow backend.

Why use tf.keras?

Using tf.keras allows you to design, fit, evaluate, and use deep learning models to make predictions in just a few lines of code.

It makes common deep learning tasks, such as classification, regression, and predictive modeling, accessible to average developers looking to get things done.

Keras has many inbuilt APIs which highly simplify the implementation of different types of neural networks.

You can refer to the link given here if you want to read about these APIs.

You can either install Keras and TensorFlow in your system and implement them using a Jupyter notebook or you can use Google Colab. We recommend using Google Colab for this course.

Google Colab is a cloud-based alternative to Jupyter notebooks and is designed to run notebooks online on your browser. It comes with different pre-installed packages and you can start working on it with very few dependencies.

For this week, we will be using **Google Colab** for the implementation of neural networks using TensorFlow and Keras.

Next, we will look at how to get started with Google Colab.

Help