Vivekanand Education Society's
Institute of Technology
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Artificial Intelligence and Data Science Department

Deep Learning /Odd Sem 2023-23/Experiment 1

Name: Subrato Tapaswi	**Class/Roll No.: D16AD/60**	**Grade:**

Title of Experiment: Explore Python Libraries TensorFlow and Keras

Objective of Experiment: To implement basic functions associated with python libraries - Tensorflow and Keras.

Outcome of Experiment \: Thus, we studied the basic deep learning libraries in python such as Tensorflow and Keras. Python code was implemented to explore these libraries.

Problem Statement: Write a program to explore Python Libraries TensorFlow and Keras.

Description / Theory :

TensorFlow:

TensorFlow is like a toolbox for building smart computer programs. It was created by Google in 2015 and can be used by both beginners and experts. You can use it to make programs that understand things like handwriting, pictures, and language. It's like having a bunch of powerful tools for building these programs.

You can use TensorFlow on computers, phones, the internet, and even in the cloud. It's like having tools that work everywhere.

One cool thing about TensorFlow is that you can teach it to do new things by showing it examples. For example, you can use it to teach a computer to recognize your handwriting or translate languages.

And when your program is ready, you can use TensorFlow to make it work for lots of people, not just one. It's like making a recipe that can feed a whole lot of people. So, TensorFlow is handy for building all kinds of smart programs and making them work for a lot of users.

Keras:

Keras is a user-friendly, open-source library for making computer programs that learn from data. It was created by a Google engineer named Francois Chollet and is written in Python. Keras can work with different powerful tools like TensorFlow, Theano, and CNTK. It's great for quickly trying out different ways to teach computers.

Keras doesn't do all the complicated math itself. Instead, it uses a helper library (the "backend") to do the hard math work. This allows Keras to work with different math engines like TensorFlow or Theano, making it flexible and easy to use for building smart programs.

Advantages:

- Focus on user experience has always been a major part of Keras.
- Large adoption in the industry.
- It is a multi-backend and supports multi-platform, which helps all the encoders come together for coding.
- Research community present for Keras works amazingly with the production community.
- Easy to grasp all concepts.
- It supports fast prototyping.
- It seamlessly runs on CPU as well as GPU.
- It provides the freedom to design any architecture, which then later is utilized as an API for the project.
- It is really very simple to get started with.
- Easy production of models actually makes Keras special.