TensorFlow

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What is TensorFlow?

- Open-source library developed by Google 2015.
- Primarily used for machine learning and deep learning.
- Provides tools to build and train neural networks.

TF supported Languages

- Most commonly used in python
- https://www.tensorflow.org/api_docs

Why TensorFlow?

- Popular and widely adopted in the industry.
- Large and active community support.
- Extensive ecosystem of tools and libraries.
- Flexible and versatile for various applications.
- Strong support for research and production.

Key Components

Tensors: The basic unit of data in TensorFlow. Think of them as multi-dimensional array

Operations (Ops): Perform computations on tensors, like addition, multiplication, etc.

Graphs: Represent the flow of data through a series of operations.

Demo : jupyter notebook : Tensorflow_basic.ipynb

TensorFlow Ecosystem

- **Keras:** High-level API for quick model building.
- **TensorFlow.js:** For running models in the browser.
- **TensorFlow Lite:** For mobile and embedded devices.
- **TensorFlow Extended (TFX):** For production deployment.

Applications of TensorFlow

- **Image recognition:** Classifying and identifying objects in images.
- **Natural language processing (NLP):** Understanding and generating human language.
- **Speech recognition:** Converting audio to text.
- **Recommendation systems:** Suggesting products or content to users.
- **And many more:** Robotics, healthcare, finance, etc.

Getting Started with TensorFlow

- Install TensorFlow: ***pip install tensorflow***
- Import TensorFlow: ***import tensorflow as tf***
- Build a simple model: ***Refer Jupyter notebook***

Summary

- TensorFlow is a powerful and versatile library for machine learning.
- It provides tools for building, training, and deploying various models.
- TensorFlow has a rich ecosystem and strong community support.
- It is widely used in various applications and industries.
- TensorFlow 2.0 and later versions are easier to use and more performant than previous versions.