Deep Learning

Demo with Tensor flow

TensorFlow

Rekha R - Researcher
SETS

What is TensorFlow ?

- TensorFlow is an open-source library for Deep Learning and Machine learning

- Developed by the Google Brain team and released in November 2015

- TensorFlow is mainly used for: Classification, Perception, Understanding, Discovering, Prediction and Creation

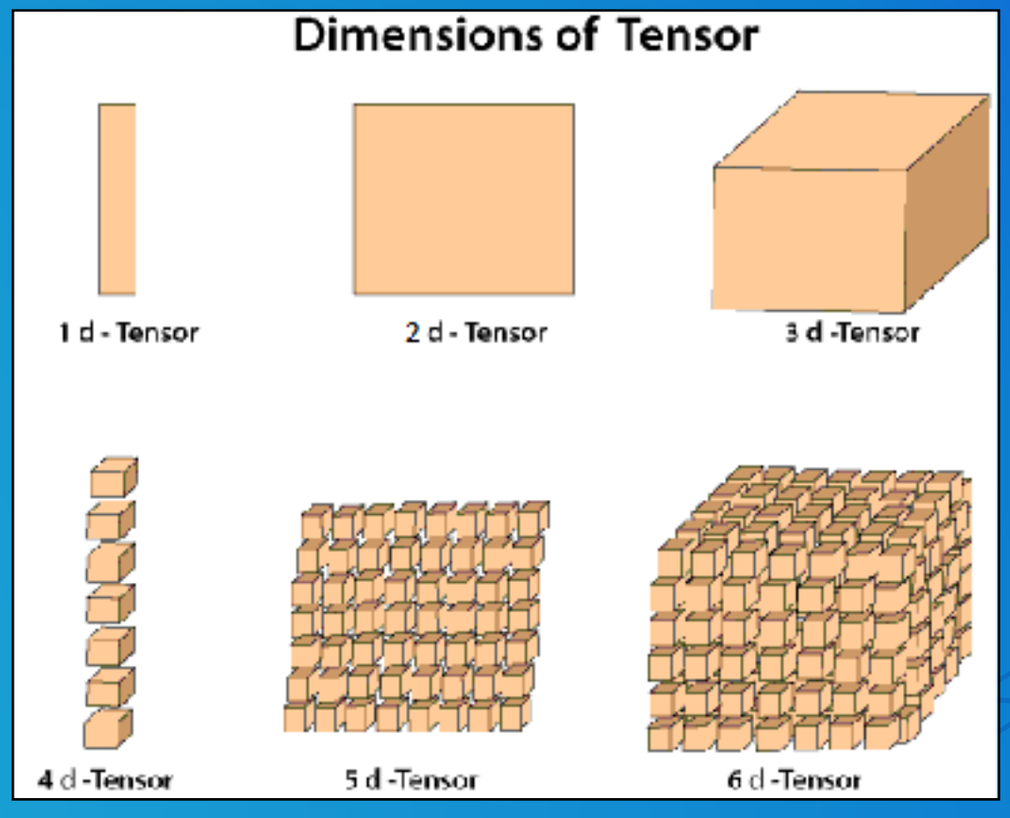
What is TensorFlow ?

TensorFlow = Tensor + Flow =
Data + Flow

But What is Tensor ?

An n-dimensional array :

- 0-d tensor: scalar (number)
- 1-d tensor: vector
- 2-d tensor: matrix
- and so on



But What is Tensor Flow?

Data Flow Graphs

- Dataflow is a common programming model for parallel computing.
- TensorFlow uses a dataflow graph to represent your computation

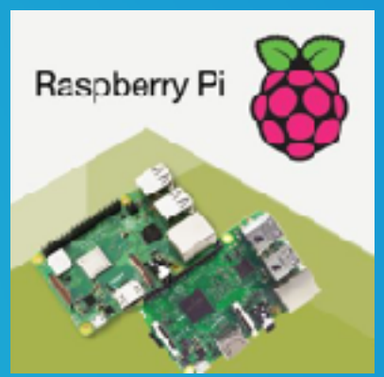
What are the benefits of using graphs ?

- Parallelism. (it is easy for the system to identify operations that can execute in parallel)
- Distributed execution (it is possible for TensorFlow to partition your program across multiple devices CPUs, GPUs, and TPUs)
- Compilation (generate faster code)

Why TensorFlow : Runs Everywhere

Runs on desktop and mobile devices such as

- Linux
- macOS
- iOS
- Android
- Raspberry pi
- And Windows



Deep Learning Demo

Task : Classify the Clothing Images using Deep Learning

Steps for Implementation:

1. Import basic libraries
2. Import the clothing dataset online - segregate test and training samples
3. Explore the data - Like size of images, labels, no. of images, etc.
4. Preprocess the data - Normalize
5. Build the model - Setup the neural network layers
6. Compile the model - By setting values for optimiser, loss function and metrics
7. Train the model with training data
8. Compare how the model performs on test data & compute test accuracy
9. Make Predictions
10. Verify Predictions - IF ok, use it for future predictions :-)

Tensor Flow Installation

https://www.tensorflow.org/install

Explore Cyber security implementations in GitHub

https://github.com/echowei/DeepTraffic

https://github.com/topics/traffic-classification

https://github.com/riak16/Malware-Detection-using-Deep-Learning

https://medium.com/@scet.amit/network-traffic-classification-using-deep-learning-641eb550d5d0

Link for Source code used in Demo

https://www.tensorflow.org/tutorials/keras/classification

Thank You !!!
Happy Learning

https://www.linkedin.com/in/rekharavindirran/