NIHARIKA PENTAPATI

PES1201700215

TENSORFLOW

INTRODUCTION

Tensorflow is an open source software library for numerical computational using data flow graphs developed by Google’s research organization. It is mainly used for machine learning applications such as neural networks and deep learning. The name tensor refers to the multidimensional data arrays which include vectors and matrices. Tensorflow is a software tool in deep learning. It is used to create large scale neural networks with many layers.

COMPUTATIONAL GRAPHS

Tensorflow internally represents its computation using computational graphs. A computational graph is a directed graph consisting of nodes/vertices and edges. The nodes correspond to operations or variables. Variables can feed their value into operations and operations can feed their output into other operations. This way, every node in the graph defines a function of the variables. A set of directed arcs (edges) represents the data on which the operations are performed.

There are two types of edges, normal and special. Normal edges are carries of data structures between the nodes. The output of one operation becomes the input for another operation and the edge connecting two nodes carry the values. On the other hand, special edges don’t carry values. It just represents the control dependencies between two nodes.

APPLICATIONS

Tensorflow is mainly used for: Classification, perception, understanding, discovering, prediction and creation.

* Smart reply by Google: Tensorflow in deep learning is used to generate automatic email responses.
* Time series: Tensorflow time series algorithms are used for analyzing time series data in order to extract meaningful statistics. The most common use case for Time Series is Recommendation. Many websites like Amazon, Google and Facebook analyze user activity and compare it to the millions of other users to determine what the customer might like to purchase.
* Image Recognition: Tensorflow algorithms can process more information and spot patterns than their human counterparts. Computers are now able to review scans and spot more illness than humans.