

## **Tech Review - mrafay2**

### **Sentiment Analysis using TensorFlow**

TensorFlow is an open-source deep learning framework by Google. Unfortunately, neural networks do not understand the text. The solution to this is to convert text into numbers and that can be done in various ways including embeddings. Neural network embeddings are learned low-dimensional representations of discrete data as continuous vectors. The purpose of these embedding is to finding nearest neighbors, input into another model, and visualizations.

Secondly, in the past we needed to do a lot of preprocessing - tokenization, stemming, remove punctuation, remove stop words, and more. Nowadays pre-trained models offer built-in preprocessing.

Sentiment Analysis is a binary classification problem. And Deep Learning is a classification algorithm so it is very suitable for this problem except that it deals with numbers. A commonly used approach is to use a Convolutional Neural Network (CNN). Another approach is Long Short Term Memory networks – usually just called “LSTMs” – are a special kind of RNN, capable of learning long-term dependencies. Just like humans retain the information they read along with an essay and make sense out of it. Similarly, LSTMs are a network with loops in them that allow information to persist.

Every classification model works by learning a line that separates data between classes. The large scale of neural networks allows them to be so flexible in drawing that line that it has proved to one of the best classification algorithms in recent years.