

# Twitter Feed Analysis using Deep Neural Networks

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**Abstract** - The study on Twitter feed focuses on determining the Sentiment of a person, product or any trending topic around the World which uses the concepts of supervised machine learning. It first takes the entity as the input from the user and downloads the most recent tweets related to it. These tweets are stored in a file and are the passed on to the Deep Neural Network which consists of four layers in total which are an Input layer, two Hidden layers and an Output layer. The downloaded twitter data is then passed on to the Neural Network. This data is then converted into vector forms which goes through several Mathematical Computation through the Hidden layers and comes up with a prediction polarized as either a Positive or Negative with a reasonably high accuracy. This Sentiment Analysis tool is reliable and makes a prediction based purely on Mathematical calculations.

**Key Words:** Twitter feed, supervised machine learning, Deep Neural Network, Mathematical Computation, Sentiment Analysis tool

## 1. INTRODUCTION

Machine learning is the subfield of computer science that gives "computers the ability to learn without being explicitly programmed." Evolved from the study of pattern recognition and computational learning theory in artificial intelligence, machine learning explores the study and construction of algorithms that can learn from and make predictions on data – such algorithms overcome following strictly static program instructions by making data-driven predictions or decisions, through building a model from sample inputs. Machine learning is employed in a range of computing tasks where designing and programming explicit algorithms with good performance is difficult or infeasible.

Machine learning is closely related to computational statistics, which also focuses on prediction-making through the use of computers. Machine learning can also be unsupervised and be used to learn and establish baseline behavioural profiles for various entities and then used to find meaningful anomalies.

### 1.1 Types of Machine Learning

1. Supervised learning is the machine learning task of inferring a function from labelled training data. The training data consists of a set of training examples. In supervised learning, each example is a pair consisting of an input object and a desired output value.

2. Unsupervised learning is a type of machine learning algorithm used to draw inferences from datasets consisting of input data without labelled responses. The most common unsupervised learning method is cluster analysis, which is used for exploratory data analysis to find hidden patterns or

grouping in data. Sentiment Analysis is classification of the polarity of a given text in the document, sentence or phrase. The goal is to determine whether the expressed opinion in the text is positive, negative or neutral.

### 1.2 Problem Definition

This study focuses on determining what the Sentiment of a person, product or any trending topic around the World is. It first takes the entity as the input from the user and downloads the most recent tweets related to it. These tweets are stored in a file and are the passed on to the Deep Neural Network which consists of four layers in total which are an Input layer, two hidden layers and an Output layer. The downloaded twitter data is then passed on to the Neural Network. This data is then converted into vector forms which goes through a lot of Mathematical Computation through the Hidden layers and comes up with a prediction polarized as either a Positive or Negative with a reasonably high accuracy. This Sentiment Analysis tool is reliable and makes a prediction based purely on Mathematical calculations.

## 2. IMPLEMENTATION

**TWITTER EXTRACTION:** In the initial step in twitter extraction is the create a application in twitter. By doing this, twitter provides a unique identification and password to the user through which the user can access the twitter data.

**AUTHENTICATION:** The user creates an application inside twitter so as to obtain unique identification and password which are in turn called as keys and token. With the help of this key and token he authenticates himself with available APIs provided by twitter and python library called as the tweepy. Once the authentication is obtained the user is allowed to access the tweets and use them for analysis

**FILTERING THE TWEETS:** Once the user obtains the tweets the user is free to filter out the tweets according to his interest using the regular expression library provided by python. When the user finishes this process, the parsed tweets are then stored in a file. This file is further sent to the sentiment analysis module to analyse the tweets for its polarity.

**SENTIMENT ANALYSIS:** The sentiment analysis is done using deep neural network which requires the machine to be trained by building a model. The data set that is collected will contain reviews and each review given a label. The machine is further trained using this data set. This data set is divided into training set and test set. Once the machine trained, the fraction of the data set used as test set is provided to the machine to check for accuracy. Once the required accuracy is obtained, the file that stores the parsed

tweets are given to the sentiment analysis module to obtain the polarity of the tweets.

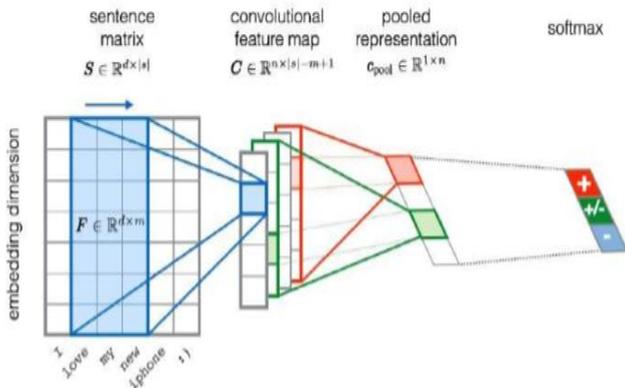


Fig -1: Sentiment analysis process

**USER INTERFACE:** The user interface is that part of the project where a user who is interested to know the sentiment of the tweets is allowed to enter a trending hashtag of his interest. After doing so the hashtag is then sent internally to the twitter extraction file. Through the search API provided by a library called twython. The following piece of code searches the tweets according to the hashtag. The tweets are extracted and after analysis, the output is further shown in the form as a graph on the front end with the help of D3.js, jQuery, HTML, CSS, JavaScript.

### 3. CONCLUSION

In this project we have worked to provide a user interface through which the user can enter a trending hashtag of his interest. At the back end, the tweets, based on the entered hashtag are extracted and sent to the sentiment analysis module. This module performs the analysis in accordance with the trained data set and obtains the polarity of the tweets in terms of probability. Once the polarity is obtained, the values are then displayed on the screen in the form of a graph, in terms of percentage. The data obtained from the graph can be helpful in making various kinds of decision, creating mass opinion, in business analytics, stocks and shares, etc.,

### REFERENCES

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