



# Ideathon – Season 2





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# STOCK MARKET PREDICTION





# OBJECTIVES:

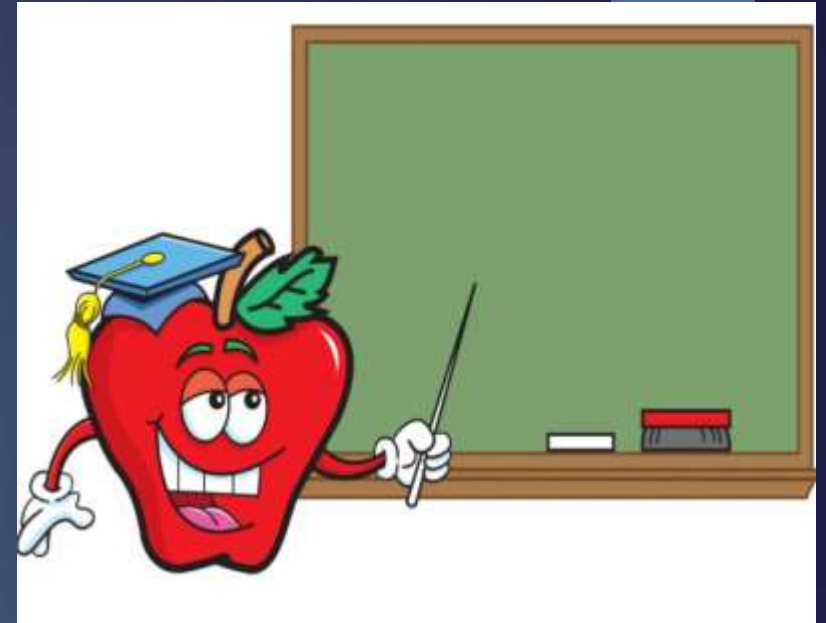
- ❑ Predicting how the stock market will perform is one of the most difficult things to do. There are so many factors involved in the prediction – physical factors vs. psychological, rational and irrational behavior, etc. All these aspects combine to make share prices volatile and very difficult to predict with a high degree of accuracy.
- ❑ Using features like the latest announcements about an organization, their quarterly revenue results, etc., machine learning techniques have the potential to unearth patterns and insights we didn't see before, and these can be used to make unerringly accurate predictions.



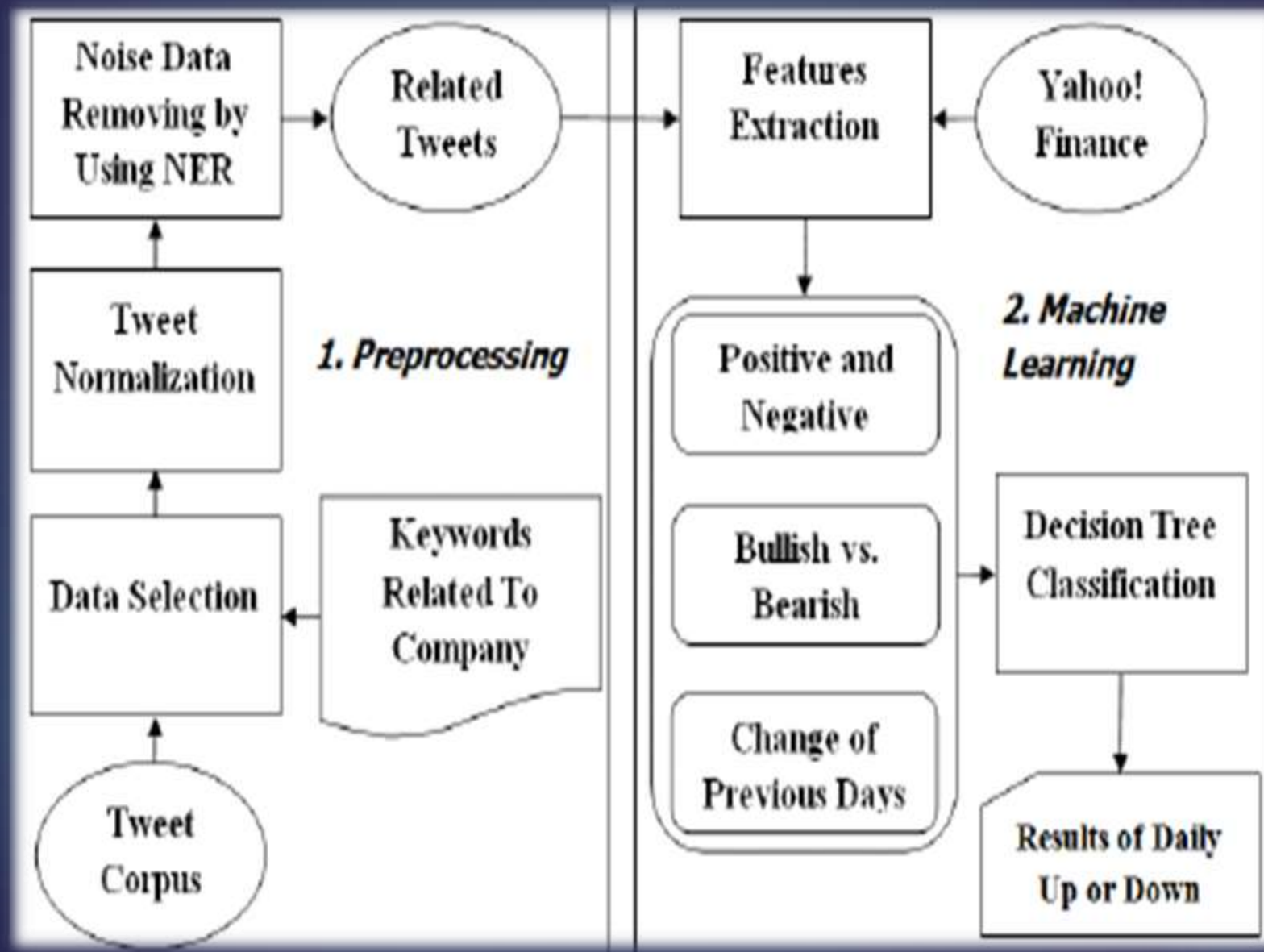
# APPROACH:

## OUR APPROACH TO THE PREDICTION MODEL:

- ▶ Importing the libraries.
- ▶ Importing the data and visualizing the data.
- ▶ Get DataFrame .
- ▶ Check for Null values.
- ▶ Plot true adjusted close values.
- ▶ Setting the target variable and selecting the features.
- ▶ Scaling
- ▶ Splitting to a training set and test set.
- ▶ Processing the data using the algorithm
- ▶ Building the model
- ▶ Training the model
- ▶ Predicting the values – true vs predicted close value using the algorithm



# Sample workflow of our approach to design the model



# Technique used

## ► **Artificial Neural Networks**

It can solve non-linear and complex problems and adjust the weights of each of the inputs, thus making it an ideal technique to start with.

## ► **K Nearest Neighbor**

This allows the data scientist the opportunity to look for similar patterns and predict the target

Thus, for a situation in the market, KNN can look for the most similar historical situation, find how the market behaved.

## ► **Support Vector Regression (SVR)**

Support Vector Machine is a machine learning technique that can solve regression and classification problems.

## ► **Recurrent Neural Network (RNN)**

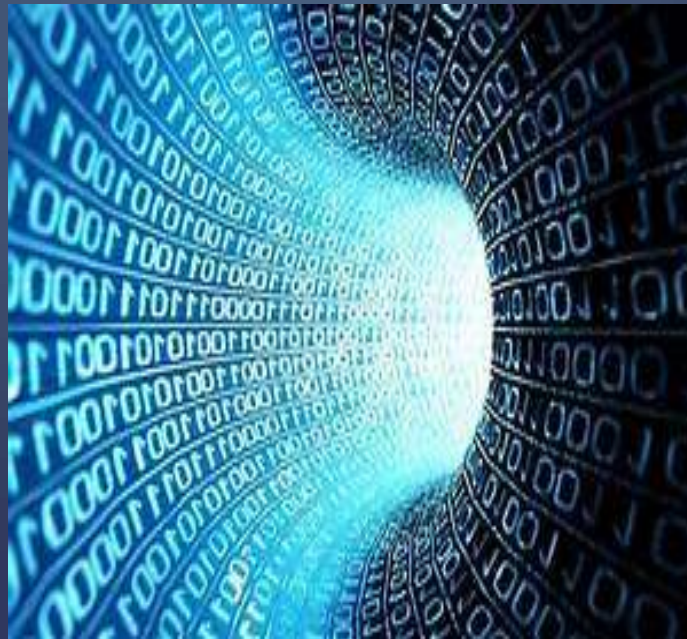
It takes input from the present and past and is ideal for mimicking the part of the human brain that deals with tasks that require short-term memory.



## Long Short Term Memory (LSTM):

LSTMs are widely used for sequence prediction problems and have proven to be extremely effective. The reason they work so well is because LSTM is able to store past information that is important, and forget the information that is not. LSTM has three gates:

- ❑ **The input gate:** The input gate adds information to the cell state
- ❑ **The forget gate:** It removes the information that is no longer required by the model
- ❑ **The output gate:** Output Gate at LSTM selects the information to be shown as output





# EXTERNAL FACTORS AFFECTING STOCK MARKET

There are several factors that can affect the stock price. Understanding what can make the stock prices go up or go down is crucial. It is necessary to consider these while building the prediction model. Few such factors are:

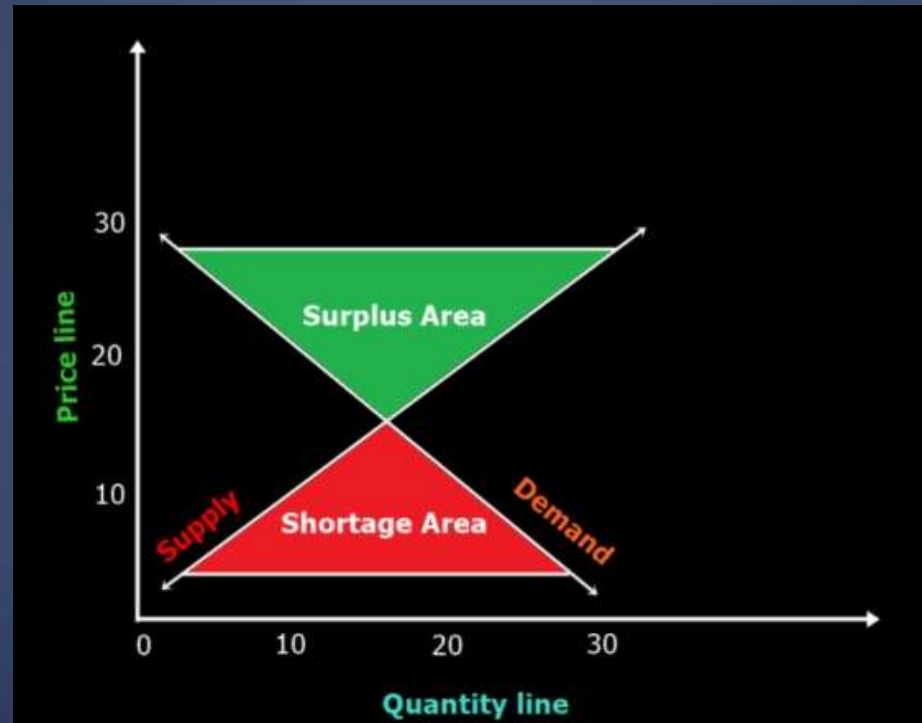
- ▶ Supply and demand
- ▶ Company related factors
- ▶ Politics
- ▶ Current events
- ▶ Natural calamities
- ▶ Exchange rates
- ▶ Investors sentiments ( bullish or bearish market)



# Solution:

Identifying trends, looking for patterns on charts and performing sentiment analysis on data from various places like previous stock data, public share news, political and current event news could be used in designing the model. For example,

Supply and demand trading implies the movement of buy and sell attributes of a stock to make predictions. An increase in supply lowers the price and vice versa.



Some Technical analysis strategies like Arbitrage, seasonal trading, market neutral strategies can be used in the right place to extract necessary data.

# OUTCOME OF THE MODEL

- ▶ Though the stock price is affected by the news about the company and other factors and there are certain intangible factors as well which can often be impossible to predict beforehand, not accurate but approximate prices could be obtained.
- ▶ The more the factors considered the more accurate the model is







Thank You