## Introduction

The stock market is basically an aggregation of various buyers and sellers of stock. A stock (also known as shares more commonly) in general represents ownership claims on business by a particular individual or a group of people. The attempt to determine the future value of the stock market is known as a stock market prediction. The prediction is expected to be robust, accurate and efficient. The system must work according to the real-life scenarios and should be well suited to real-world settings. The system is also expected to take into account all the variables that might affect the stock's value and performance. There are various methods and ways of implementing the prediction system like Fundamental Analysis, TechnicalAnalysis, Machine Learning, Market Mimicry, and Time series aspect structuring. With the advancement of the digital era, the prediction has moved up into the technological realm. The most prominent and promising technique involves the use of Artificial Neural Networks, Recurrent Neural Networks, that is basically the implementation of machine learning. Machine learning involves artificial intelligence which empowers the system to learn and improve from past experiences without being programmed time and again. Traditional methods of prediction in machine learning use algorithms like Backward Propagation, also known as Backpropagation errors. Lately, many researchers are using more of ensemble learning techniques. It would use low price and time lags to predict future highs while another network would use lagged highs to predict future highs. These predictions were used to form stock prices.

Stock market price prediction for short time windows appears to be a random process. The stock price movement over a long period of time usually develops a linear curve. People tend to buy those stocks whose prices are expected to rise in the near future. The uncertainty in the stock market refrain people from investing in stocks. Thus, there is a need to accurately predict the stock market which can be used in a real-life scenario. The methods used to predict the stock market includes a time series forecasting along with technical analysis, machine learning modeling and predicting the variable stock market. The datasets of the stock market prediction model include details like the closing price opening price, the data and various other variables that are needed to predict the object variable which is the price in a given day. The previous model used traditional methods of prediction like multivariate analysis with a prediction time series model. Stock market prediction outperforms when it is treated as a regression problem but performs well when treated as a classification. The aim is to design a model that gains from the market information utilizing machine learning strategies and gauge the future patterns in stock value development. The Support Vector Machine (SVM) can be used for both classification and regression. It has been observed that SVMs are more used in classification based problem like ours. The SVM technique, we plot every single data component as a point in n- dimensional space (where n is the number of features of the dataset available) with the value of feature being the value of a particular coordinate and, hence classification is performed by finding the hyperplane that differentiates the two classes explicitly

## Problem Definition

Stock market prediction is basically defined as trying to determine the stock value and offer a robust idea for the people to know and predict the market and the stock prices. It is generally presented using the quarterly financial ratio using the dataset. Thus, relying on a single dataset may not be sufficient for the prediction and can give a result which is inaccurate. Hence, we are contemplating towards the study of machine learning with various datasets integration to predict the market and the stock trends.

The problem with estimating the stock price will remain a problem if a better stock market prediction algorithm is not proposed. Predicting how the stock market will perform is quite difficult. The movement in the stock market is usually determined by the sentiments of thousands of investors. Stock market prediction, calls for an ability to predict the effect of recent events on the investors. These events can be political events like a statement by a political leader, a piece of news on scam etc. It can also be an international event like sharp movements in currencies and commodity etc. All these events affect the corporate earnings, which in turn affects the sentiment of investors. It is beyond the scope of almost all investors to correctly and consistently predict these hyperparameters. All these factors make stock price prediction very difficult. Once the right data is collected, it then can be used to train a machine and to generate a predictive result.

Predicting Stock Price Direction Using Support Vector Machines:

Financial organizations and merchants have made different exclusive models to attempt and beat the market for themselves or their customers, yet once in a while has anybody accomplished reliably higher-than-normal degrees of profitability. Nevertheless, the challenge of stock forecasting is so engaging in light of the fact that the improvement of only a couple of rate focuses can build benefit by a large number of dollars for these organizations. The simple vector machine classifier was used to implement the background knowledge that we had gathered.

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