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Stock Market Prediction Using Machine Learning

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A B S T R A C T

Although the future is unknowable and unpredictable, there are ways to forecast it and profit from it without risk. The use of machine learning for stock market prediction is one such opportunity. The goal of stock market prediction is to forecast the value of a company's financial stocks in the future. The use of machine learning, which makes predictions based on the values of current stock market indices by training on their previous values, is a recent trend in stock market prediction technologies.Machine learning itself employs different models to make prediction easier and authentic. The Machine Learning Algorithms used are Long Short Term Memory and Support Vector Machine which are used efficiently in their own manner. The ideas that can be implemented are discussed that are by using the Reinforcement Learning Algorithm unlike other algorithms the prediction for Inter day and Intra day can be also implemented as well as the suggestion can also be given with the help of chat bot in order to have efficient use.

Keywords: Long Short, Term Memory, Support Vector Machine, Inter Day, Intra Day

Introduction

1.1 Introduction to Stock market prediction using machine learning

Stock market prediction and analysis are one of the difficult tasks to do. There are several reasons for this, including the unsteady nature of the market and various dependent and independent variables that impact the worth of a specific stock in the market. A correct prediction of stocks can lead to huge profits for the seller and the broker. Frequently, it is brought out that prediction is chaotic rather than random, which means it can be predicted by carefully analyzing the history of respective stock market. Machine learning is an efficient way to represent such processes. It predicts a market value close to the tangible value, thereby increasing the accuracy. Introduction of machine learning to the area of stock prediction has appealed to many researches because of its efficient and accurate measurements.

1.2 Motivation

Stock Market is trending among all generations but to predict the correct stock price is essential so it can prevent loss and one can invest wisely.

1.3 Aim and Objective of work

In this, various machine learning algorithms are used like Support Vector Machine and Long Short Term Memory for prediction of stocks so that individual or group of people can use the prediction without having the fear of loss.

The Purpose of the Stock Market Prediction using Machine Learning is to aid in the prevention of Loss. The prediction will help to take appropriate decision while buying or selling of stocks.

The objective of this intermediate project is to build a prediction that will help people to take proper decisions related to stocks for good results.

2. Methodology

The study discussed how supervised machine learning techniques are applied to improve accuracy of stock market predictions. Support Vector Machine (SVM) was found to be the most frequently used technique for stock price prediction due to its good performance and accuracy. LSTM is the advanced version of Recurrent-Neural Networks (RNN) where the information belonging to previous state persists. These are different from RNNs as they involve long term dependencies and RNNs works on finding the relationship between the recent and the current information. This indicates that the interval of information is relatively smaller than that to LSTM. The main purpose behind using this model in stock market prediction is that the predictions depend on large amounts of data and are generally dependent on the long-term history of the market . LSTM regulates error by giving an aid to the RNNs through retaining information for older stages making the prediction more accurate. The main purpose behind using this model in stock market prediction is that

the predictions depend on large amounts of data and are generally dependent on the long-term history of the market. Since stock market involves processing of huge data, the gradients with respect to the weight matrix may become very small and may degrade the learning rate of the system. This corresponds to the problem of Vanishing Gradient. LSTM prevents this from happening. The data flow diagram for the same is given in Fig. 1 and the architecture diagram Fig. 2 below:

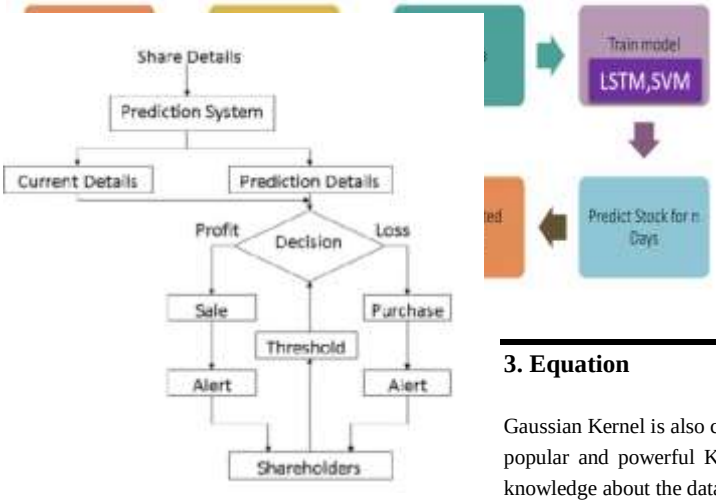

Fig. 1 - (a) Data flow Diagram

Fig. 2 - (b) Architecture Diagram

3. Equation

Gaussian Kernel is also called as Gaussian Radial Basis Function (RBF) and one of the most popular and powerful Kernel. It is a general-purpose kernel; used when there is no prior knowledge about the data. Sometimes parameterized using:

$$K(x, y) = exp(- ||x - y||2\ 2\sigma\ 2\ )$$

4. CONCLUSION AND FUTURE SCOPE

The data is trained using existing stock dataset that is available. The Data is used to predict the stock price of n-days.

The techniques have shown an improvement in the accuracy of predictions, thereby yielding positive results. Use of recently introduced machine learning techniques in the prediction of stocks have yielded promising results and thereby marked the use of them in profitable exchange schemes. It has led to the conclusion that it is possible to predict stock market with more accuracy and efficiency using machine learning techniques.

In the future, the stock market prediction system can be further improved by utilizing a much bigger dataset hence the one being utilized currently

By using the Reinforcement Learning Algorithm unlike other algorithms the prediction for Inter day and Intra day can be also implemented.
The suggestion can also be given with the help of chat bot in order to have efficient use.

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