

STOCK MARKET PREDICTION USING MACHINE LEARNING TECHNIQUES

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Abstract - The objective of Stock market prediction is to determine the future value of a company stock or other financial instrument traded on a financial exchange. The successful prediction of a stock's future price will maximize investor's gains. This paper proposes a machine learning model to predict stock market price. Forecasting accuracy is the most important factor in selecting any forecasting methods. The appropriate stock selections those are suitable for investment is a very difficult task. The key factor for each investor is to earn maximum profits on their investments. By using dataset of stock market we are going to use preprocessing, processing and regression analysis. We will review the use of machine learning and deep learning algorithm on dataset and the result it generates. Predicting how the stock market will perform is one of the most difficult things to do.

Key Words: Machine Learning, Deep Learning, Time Series, Regression Analysis, Data Analysis.

1. INTRODUCTION

The stock market refers to the collection of markets and exchanges where regular activities of buying, selling, and issuance of shares of publicly-held companies take place. While today it is possible to purchase almost everything online, there is usually a designated market for every commodity. A stock market is a similar designated market for trading various kinds of securities in a controlled, secure and managed the environment. Since the stock market brings together hundreds of thousands of market participants who wish to buy and sell shares, it ensures fair pricing practices and transparency in transactions. Stock market prediction is the act of trying to determine the future value of a company stock or other financial instrument traded on an exchange. The successful prediction of a stock's future price could yield significant profit. In Fundamental analysis, Stock Market price movements are believed to derive from a security's relative data. Fundamentalists use numeric information such as earnings, ratios, and management effectiveness to determine future forecasts. In Technical analysis, it is believed that market timing is key. Technicians utilize charts and modeling techniques to identify trends in price and volume. These later individuals rely on historical data in order to predict future outcomes. Stock Market prediction has always had a certain appeal for researchers.

1.1 Problem Statement:

Investors investing in stock market usually are not aware of the stock market behavior. They are facing the problem of trading as they do not properly understand which stocks to buy or which stocks to sell in order to get more profits the input to our system will be historical data from Google. Appropriate data would be applied to find the stock price trends. Hence the prediction model will notify the up or down of the stock price movement for the next trading day and investors can act upon it so as to maximize their chances of gaining a profit. The entire system would be implemented in python. Hence it will effectively be a zero cost system.

1.2 Literature Survey:

- The first is Efficient Market Hypothesis (EMH). In EMH, it is assumed that the price of a security reflects all of the information available and that everyone has some degree of access to the information.
- A different perspective on prediction comes from Random Walk Theory. In this theory, Stock Market prediction is believed to be impossible where prices are determined randomly and outperforming the market is infeasible.
- In one model that tested trading philosophies; LeBaron et. al. posited that much can be learned from a simulated stock market with simulated traders. In their work, simulated traders mimicked human trading activity.
- Within this period of time, Gidofalvi demonstrated that there exists a weak ability to predict the direction of a security before the market corrects itself.

2. EXISTING SYSTEM:

The existing system use data mining techniques. Data mining techniques are less accurate and time consuming to analyze big data. The system does not allow the import of raw data directly. The existing system cannot be used to analyze multi-variate time series. Lastly, the system does not have a user-interface which can be distributed as a GUI app to users for personal use Stock Market Prediction. The dataframe features were date and the closing price for a particular day. We used all these features to train the machine on random forest model and predicted the object variable, which is the

price for a given day. We also quantified the accuracy by using the predictions for the test set and the actual values.

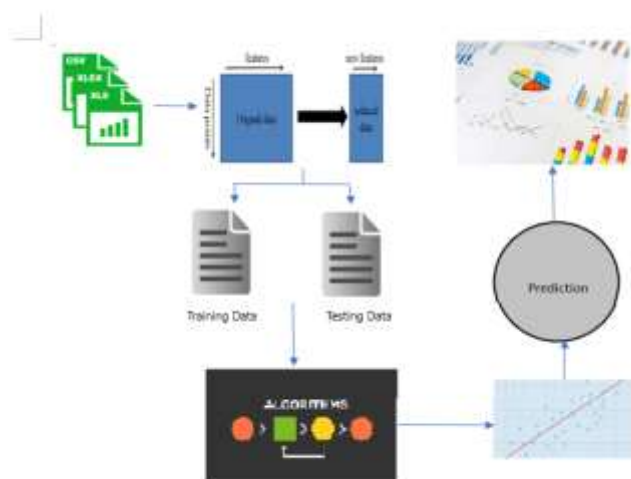
3. PROPOSED SYSTEM:

Stock Market price movements are believed to derive from a security's relative data. Fundamentalists use numeric information such as earnings, ratios, and management effectiveness to determine future forecasts. In Technical analysis, it is believed that market timing is key. Technicians utilize charts and modeling techniques to identify trends in price and volume. These later individuals rely on historical data in order to predict future outcome.

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Software project estimation is form of problem solving. The complex software is hard to estimate hence it is divided into smaller of piceses. The estimation of project will be correct only when the estimation of size of the project is correct. In the context of project planning size refers to qualifiable outcome of project. Here,the direct approach is chooesn and hence , the size is estimated in Line of Codes.

4. SYSTEM ARCHITECTURE:



5. IMPLEMENTATION PLAN

An implementation methodology is a collection of practices, procedures and rules that must be applied to perform a specific operation to provide deliverables at the end of each stage. The eight principles listed below is built from a collection of procedures to establish an effective implementation methodology framework. This framework

provides flexibility to react and adapt to the unique requirements of every project, incorporating the principles of:

1. Project Management & Planning
2. Scope & Requirements Specification
3. Risk & Issues Management
4. Communication & Training
5. Quality Management
6. Post-Implementation Review
7. Documentation G
8. Experience

6. Mathematical Model:

Let 'S' be the system

Where,

$$S=\{I,O,P,Fs,Ss\}$$

Where,

I= Set of input

O= Set of output

P= Set of technical processes

Fs= Set of failure set

Ss= Set of success set

Identify the input data I1, I2.....In

$$I= \{(Stock\ data)\}$$

Identify the output

Applications as

$$O= \{(Stock\ market\ prediction)\}$$

Identify the process as P

$$P= \{(data\ pre-processing,\ Data\ processing,\ Regression\ analysis,\ prediction)\}$$

Identify the failure state as Fs

$$Fs= \{(If\ not\ predicted,\ if\ more\ time\ required\ to\ predict)\}$$

Identify the success set as Ss

$$P=\{(correct\ prediction)\}$$

7. FUTURE SCOPE:

Financial analysts, investors can use this prediction model to take trading decision by observing market behavior. More work on refining key phrases extraction will definitely produce better results. Enhancements in the preprocessor unit of this system will help in improving more accurate predictability in stock market. Future research includes using other machine learning techniques such as Relevance Vector Regression, which promises to have better accuracy and fewer vectors in classification. Another worthwhile approach would be to test a model based on article terms and percentage of stock price change. While our models relied on fixed stock prices that traded within a consistent range, penny stocks with wild fluctuations may prove worthy of further research.

CONCLUSION

Thus, as we can see above in our proposed method, we train the data using existing stock dataset that is available. We use this data to predict and forecast the stock price of n-days into the future. The average performance of the model decreases with increase in number of days, due to unpredictable changes in trend. The current system can update its training set as each day passes so as to detect newer trends and behave like an online-learning system that predicts stock in real-time.

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