JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

Stock Market Prediction Using Machine Learning

Yennam Srikar[1], M Raj kumar[2], Manas Kumar Yogi[3]
[1]**PG Student,** Dept of CSE, Pragati Engineering College (Autonomous), Surampalem,AP
[2]**Associate Professor,** Dept of CSE, Pragati Engineering College (Autonomous), Surampalem,AP
[3]**AssistantProfessor,** Dept of CSE, Pragati Engineering College (Autonomous), Surampalem,AP
Email: yennamsrikar2798@gmail.com[1], rajakumar.M@pragati.ac.in[2], manaskumar.y@pragati.ac.in[3]

Abstract

In recent years, academics and practitioners alike have focused heavily on the study of the stock market. Individuals invest in the stock market at some point. Wall Streeters are constantly on the lookout for methods to increase their profits while simultaneously lowering their risk exposure, and this is no different. When it comes to stock trading, precise forecasting is essential. Using tried-and-true methods like fundamental and technical analysis may not provide the results you're looking for in certain circumstances. Using regression-based Machine learning, this study predicts the value of stocks. All aspects of openness, closure, low, high, and volume are considered..

Keywords: Stock Market, Financial Data Mining, Machine Learning, Fin-Tech

1. INTRODUCTION

In the event that a broker and a stock seller have a solid stock forecast, they might reap huge gains. However, even though forecasts are generally defined as chaotic rather than random, many individuals feel that they may be reliably predicted by looking at the relevant stock market's historical performance.. To explain these sorts of processes, machine learning is a useful tool. Predicting a market value that is quite close to the actual value increases the accuracy of the model." As a result of its speed and precision, machine learning in stock forecasting has captured the attention of researchers. To a large extent, machine learning depends on the data that is used to train it. Because of this, the dataset must be as precise as feasible. This project uses supervised machine learning to analyse Yahoo Finance data. Analyses were conducted using a wide range of information from a variety of datasets. When a stock's bid price is open, closed, low, and high, all of these words have essentially similar names. The number of shares that have changed hands between different owners over a period of time is what we refer to as the volume. Once the model is ready, it is tested using real-world data. Listed below are the choices you have: [1–2].

2. LITERATURE REVIEW:

To predict the direction of the stock market, machine learning techniques are becoming more used. There is a clear advantage to using machine learning over traditional prediction methods. Various studies have been carried out all around the world in this subject. Some of the most recent developments in machine learning have been investigated by scholars such as M. Usmani [1], S. H. Adil [2, 3, 4], K. Raza [1, 2], and S. Saeed Ali [1, 2], all of whom collaborated to carry out the research for this study [1]. H. Gunduz, Z. Cataltepe, and Y. Yaslan

[3] used deep neural network techniques to predict stock values. [3] To further enhance neural network stock forecasting, a strategy devised by researchers M. Billah, S. Waheed, and A. Hanifa [4] has been recommended. They [6] developed useful methods for dealing with anomalous events that can occur during system operation and create interruptions or erroneous predictions. Researchers G. Liao, Y. Liu, and Y. Dingc did similar research and constructed a model for stock prediction using LSTM with a lot of space to improve. K. A. Althelaya, E.M. El-Alfy, and S. Mohammed [9] performed experiments and simulations to explore whether deep learning approaches might be utilised to anticipate stock prices..

3. PROPOSED SYSTEM

Models are used in this project to anticipate the closing price using economic and financial theory that includes technical analysis, fundamental analysis, and time series analysis to examine the accuracy of predictions. Among the four steps of prediction that we used in this project were as follows:

Predicting the closing price utilising economic and financial theory that incorporates fundamental and technical analyses as well as time-series analysis is the goal of this study using Machine Learning Models. In this study, we used four steps of prediction, including:

- Problem domain understanding
- Sample collection
- Input preprocessing and
- Modeling and prediction.

Data-Set Description

For both fundamental and technical analysis, the dataset is a great place to begin. Machines are claimed to be responsible for 30 percent of stock market traffic; thus, trading might be completely automated. EDGAR SEC databases were used to supplement the data obtained from Nasdaq Financials (prices) and Yahoo Finance (fundamentals).

Date	Symbol	Open	Close	Low	High	Volume
1/5/2016 0:00	WLTW	123.43	125.84	122.31	126.25	2163600
1/6/2016 0:00	WLTW	125.24	119.98	119.94	125.54	2386400
1/7/2016 0:00	WLTW	116.38	114.95	114.93	119.74	2489500
1/8/2016 0:00	WLTW	115.48	116.62	113.5	117.44	2006300

Table: **Prices**

4. ALGORITHM

- Moving Average
- Linear Regression
- k-Nearest Neighbors
- Decision Tree
- Naive Bayes
- Random Forest

Fundamental analysis

Analysis of the company's core operations is the primary focus of fundamental analysts. They assess a company's previous performance and the credibility of its financial statements. Fundamental analysts use performance ratios like the P/E to assess if a potential investment is worthwhile in terms of both time and money. A stock's true value may then be compared to its market value to see whether the stock is overpriced or undervalued, and fundamental analysis is used to do this. Real value may be discovered using a variety of methods based on the same core principle.. A company's worth is based on its current valuation, as well as its expected future profits. The present value of these prospective future profits must be discounted to account for this. A company's primary focus should be on increasing shareholder value, which is in line with this ideology. Unlike technical analysis, fundamental analysis is a long-term strategy. According to fundamental analysts, the advancement of human civilization is predicated on the availability of sufficient financial resources, and so a company's financial success should be rewarded with an increase in its stock price. Most fund managers utilise basic research because it is reasonable, unbiased, and relies on publicly available information like financial statements. An study that starts with an evaluation of the global economy before narrowing down on individual nations, industries, or sectors is known as "fundamental," or "top-down," analysis.

Technical Analysis

Neither technical analysts nor chartists are concerned with the fundamentals of a company. A stock's future worth is predicted only on the basis of historical price movements (a form of time series analysis). The cup and saucer and the head and shoulders are two examples of common designs. Pattern identification is used in combination with tools like the exponential moving average (EMA), oscillators, levels of support and resistance, and momentum and volume indicators. Japanese rice merchants, according to legend, devised candlestick patterns, which technical analysts today routinely apply. When making short-term plans, technical analysis is employed more frequently than when making long-term ones Most of the time, short-term price swings are focused on commodities and foreign currency markets. All important information about a company is thought to already be reflected in the stock price, the price moves in a trend, and that history (of pricing) tends to repeat itself, which is mostly attributable to market psychology.

5. PROPOSED SYSTEM ARCHITECTURE

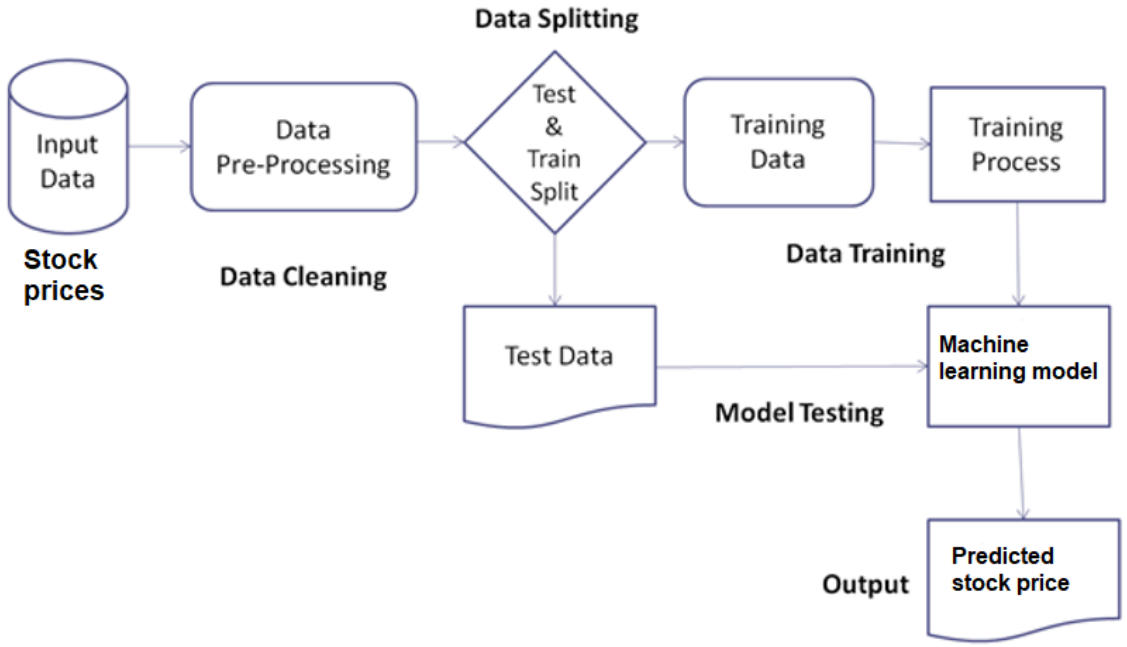
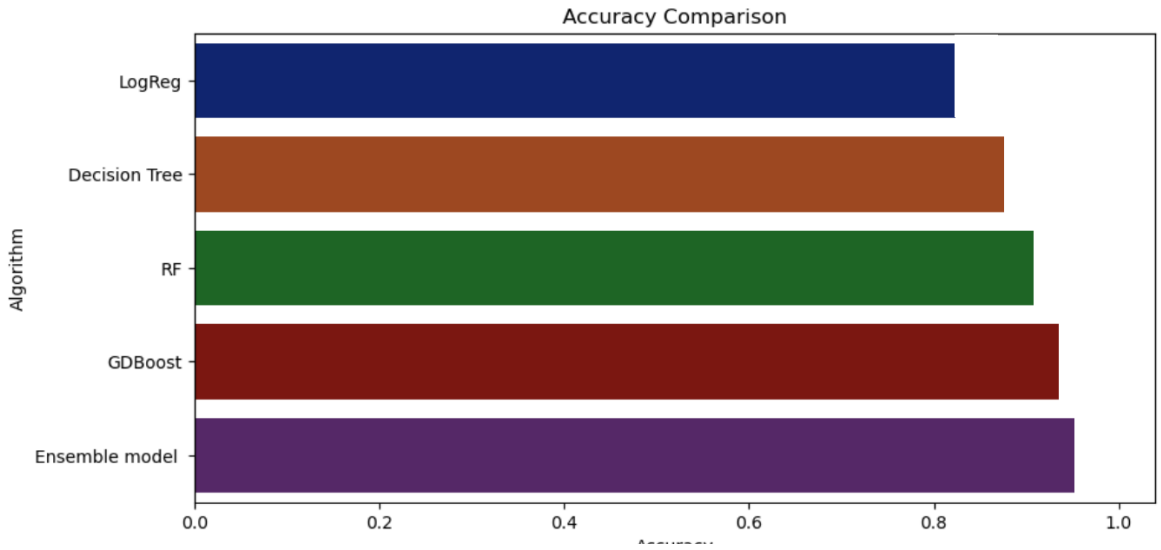


Fig: Proposed Architecture

6. EXPERIMENTAL RESULTS

Traditional methods like logistic regression are not as effective as ensemble models and tree-based machine learning models. On the test dataset, we achieve a 90% accuracy rate with the ensemble model.



7. CONCLUSION

This research aims to increase the accuracy and reliability of stock price predictions using machine learning methods. The important contribution of the researcher is the deployment of the unique machine learning Model as a method of computing stock values. The Random forest model proved to be the most effective of all the machine learning algorithms, resulting in higher prediction accuracy and better results. This suggests that machine learning methods may be used effectively to anticipate stock market fluctuations.

REFERENCES

[1] M. Usmani, S. H. Adil, K. Raza and S. S. A. Ali, "Stock market prediction using machine learning techniques," 2016 3rd International Conference on Computer and Information Sciences (ICCOINS), Kuala Lumpur, 2016, pp. 322-327.

[2] K. Raza, "Prediction of Stock Market performance by using machine learning techniques," 2017 International Conference on Innovations in Electrical Engineering and Computational Technologies (ICIEECT), Karachi, 2017, pp. 1-1.

[3] H. Gunduz, Z. Cataltepe and Y. Yaslan, "Stock market direction prediction using deep neural networks," 2017 25th Signal Processing and Communications Applications Conference (SIU), Antalya, 2017, pp. 1-4.

[4] M. Billah, S. Waheed and A. Hanifa, "Stock market prediction using an improved training algorithm of neural network," 2016 2nd International Conference on Electrical, Computer & Telecommunication Engineering (ICECTE), Rajshahi, 2016, pp. 1-4.

[5] H. L. Siew and M. J. Nordin, "Regression techniques for the prediction of stock price trend," 2012 International Conference on Statistics in Science, Business and Engineering (ICSSBE), Langkawi, 2012, pp. 1-5.

[6] K. V. Sujatha and S. M. Sundaram, "Stock index prediction using regression and neural network models under non normal conditions," INTERACT-2010, Chennai, 2010, pp. 59-63.

[7] S. Liu, G. Liao and Y. Ding, "Stock transaction prediction modeling and analysis based on LSTM," 2018 13th IEEE Conference on Industrial Electronics and Applications (ICIEA), Wuhan, 2018, pp. 2787-2790.

[8] T. Gao, Y. Chai and Y. Liu, "Applying long short term memory neural networks for predicting stock closing price," 2017 8th IEEE International Conference on Software Engineering and Service Science (ICSESS), Beijing, 2017, pp. 575-578.

[9] K. A. Althelaya, E. M. El-Alfy and S. Mohammed, "Evaluation of bidirectional LSTM for short-and long-term stock market prediction," 2018 9th International Conference on Information and Communication Systems (ICICS), Irbid, 2018, pp. 151-156