



MarketXplore – Stock Market Website

Abhishek Chavan¹, Hrishikesh Yadav², Pranav Telkikar³, Vaishnavi Chinchmalatpure⁴, Prof Prakash Parmar⁵

¹Dept. of Computer Engineering, Vidyalkar Institute of Technology, Wadala

²Dept. of Computer Engineering, Vidyalkar Institute of Technology, Wadala

³Dept. of Computer Engineering, Vidyalkar Institute of Technology, Wadala

⁴Dept. of Computer Engineering, Vidyalkar Institute of Technology, Wadala

⁵Guide, Dept. of Computer Engineering, Vidyalkar Institute of Technology, Wadala

ABSTRACT

The price of the stocks is an important indicator for a company and many factors can affect their values. Different events may affect public sentiments and emotions differently, which may have an effect on the trend of stock market prices. Due to its great learning capability for solving the nonlinear time series prediction problems, machine learning has been applied to this research area. Learning-based methods for stock price prediction are very popular and a lot of enhanced strategies have been used to improve the performance of the learning-based predictors. However, performing successful stock market prediction is still a challenge. News articles and social media data are also very useful and important in financial prediction, but currently no good method exists that can take these social media into consideration to provide better analysis of the financial market. This paper aims to successfully predict stock price through analyzing the market patterns and behavior of the stock prices. In this work we made an integrated website for exploration of stock details and prediction of prices. A novel enhanced learning-based method for stock price prediction is proposed that considers the effect of news sentiments. Machine learning itself employs different models to make prediction easier and authentic. The paper focuses on the use of Regression and LSTM based Machine learning to predict stock values. Factors considered are open, close, low, high and volume. The research work and findings of this paper not only demonstrate the merits of the proposed method, but also points out the correct direction for future work in these area.

Keywords: Stock Market, Machine Learning, LSTM, Website, Stock price prediction

1. Introduction

The stock market is one of the factors that symbolizes a country's economy. Few people excel at correctly understanding the changing trend of stocks, and thus many people fear from investing in stocks. The alleged concept of the sole involvement of economics and finance in studying stocks has been broken by data science (data analytics) by its scope of prediction. Data analytics involves interpreting a large volume of data and inferring results based on it. The procedure of converting raw data into optimized information involves descriptive analytics, diagnostic analytics, predictive analytics and prescriptive analytics. Descriptive analytics gives the patterns based on past performance which offers us the insight to the data, for instance, a periodic profit and loss statement.

In this website you can find everything you need to know about a stock, all in one place. Our website provides up-to-date information on the stock market, including real-time stock prices and charts. Our unique feature is the ability to predict stock prices using a Long Short-Term Memory (LSTM) model, which provides insights into future trends that can help investors make more informed decisions. Our platform is designed to be user-friendly, making it easy for anyone to access and analyze the stock market. Whether you're a seasoned trader or a beginner, our website provides valuable resources to help you understand the complexities of the stock market. We offer a range of features, such as charts, graphs, and technical analysis tools, to help you track the performance of individual stocks and analyze market trends. One of our features is the latest news section, which provides real-time updates on the stock market. Our platform also provides educational resources for those who are new to trading. We understand that the stock market can be intimidating for beginners, which is why we offer a range of articles and tutorials to help you learn the basics of trading. Our platform is designed to be accessible to everyone, regardless of their level of experience, so you can start investing with confidence. In summary, our platform provides a comprehensive and user-friendly platform for anyone interested in the stock market. With our real-time stock prices, charts, news updates, and educational resources, you'll have everything you need to make informed trading decisions.

2. Problem Statement

The stock market is a complex and dynamic system, with constantly changing trends and fluctuations that can have significant impacts on investors and businesses alike. Investors and traders rely on up-to-date news and accurate data to make informed decisions about buying and selling stocks. However, finding reliable sources of information can be time-consuming and challenging.

To address this problem, we propose to create a website that provides investors with real-time stock market news, analysis, and prediction tools. The website will offer a user-friendly interface that allows users to access live data on market trends, stock prices, and other key indicators. Additionally, the website will incorporate machine learning algorithms to provide accurate predictions of future market movements, based on historical data and other relevant factors.

The goal of this website is to provide investors with a comprehensive resource for staying up-to-date on the latest developments in the stock market and making informed investment decisions. By providing real-time news, analysis, and prediction tools, the website will enable investors to respond quickly and effectively to changes in the market and stay ahead of the competition.

3. Literature Survey

The use of artificial intelligence and machine learning techniques in stock price prediction has been a popular topic of research in recent years. Several studies have investigated the effectiveness of different algorithms in predicting stock prices, and the potential benefits of using these techniques in investment decision making. One of the most commonly used machine learning algorithms for stock price prediction is the Long Short-Term Memory (LSTM) model. An LSTM model is a type of recurrent neural network that is designed to handle long-term dependencies in time series data. Studies have shown that LSTM models can achieve high accuracy in predicting stock prices, especially when combined with technical analysis indicators and other relevant data sources [8] (L.Zhao et al., 2018). In addition to stock price prediction, many online platforms have emerged to provide investors with a comprehensive suite of tools and resources to help them make informed investment decisions. Websites such as Yahoo Finance, Google Finance, and MarketWatch offer real-time stock prices, news updates, and charting tools to help investors stay on top of market trends and make informed decisions.

Indian Stock Market prediction using deep learning Ayan Maiti, Pushparaj Shetty D, Department of Mathematical and Computational Sciences National Institute of Technology Karnataka Surathkal, India

In this paper, we predict the stock prices of five companies listed on India's National Stock Exchange (NSE) using two models- the Long Short-Term Memory (LSTM) model and the Generative Adversarial Network (GAN) model with LSTM as the generator and a simple dense neural network as the discriminant. Both models take the online published historical stock-price data as input and produce the prediction [4] of the closing price for the next trading day. To emulate the thought process of a real trader, our implementation applies the technique of rolling segmentation for the partition of training and testing dataset to examine the effect of different interval partitions on the prediction performance

Stock Market Prediction Using Machine Learning Ishita Parmar, Navanshu Agarwal, Sheirsh Saxena, Ridam Arora, Shikhin Gupta, Himanshu Dhiman, Lokesh Chouhan, Department of Computer Science and Engineering, National Institute Of Technology Hamirpur, INDIA. The recent trend in stock market prediction technologies [1] is the use of machine learning which makes predictions based on the values of current stock market indices by training on their previous values. Machine learning itself employs different models to make prediction easier and authentic. The paper focuses on the use of Regression and LSTM based Machine learning to predict stock values. Factors considered are open, close, low, high and volume. Both the techniques have shown an improvement in the accuracy of predictions, thereby yielding positive results with the LSTM model proving to be more efficient. The results are quite promising and has led to the conclusion that it is possible to predict the stock market with more accuracy and efficiency using machine learning techniques.

Analyzing Stock Price Using ML and Integrating News.

This paper aims to provide a comprehensive review of the existing researches [3] which related to the application of Machine Learning and Deep Learning models in financial market forecasting domain. In- depth analysis was done to extract required quantitative information, applications, and results on different methodologies. It is found from this project that Deep Learning outperformed Machine Learning in all the collected research papers, and it is the most suitable methodologies to apply to the stock market forecasting domain. In the future, more data needs to be collected from more sources where different models in both Machine Learning and Deep Learning are compared. Moreover, with the increase in the advancement of technologies, Deep Learning might become the most favorable method for this domain.

4. Proposed System

The following objectives were proposed in order for the successful development of the project.

User Registration - The interested users can create an account for themselves and make the most out of the functionalities provided which are discussed below.

User Login - Registered users can login with their ID Password created while registration process and use the platform for their respective purpose related to stock market. These are the main modules – Home, News, About, Contact Us, Stock Prediction, Learn Trading

3.1 Home : On the very top we have displayed the highlighted stocks as news to attract attention towards the specific stocks. It is made up of two blocks; one which is highlighted in green it shows the stocks which have had a rise in its value and the other block is highlighted in red which shows the stocks which have had a fall in their value. Top Gainers & Losers data is fetched from the 'nsetools'. There is an option to create a watchlist. A watchlist is an inventory of ticker symbols that are monitored for potential opportunities or to track their performance. Most online brokerages and financial portals allow for easy watchlist construction. Monthly Performance of any stock of NSE is hosted on 'streamlit'.

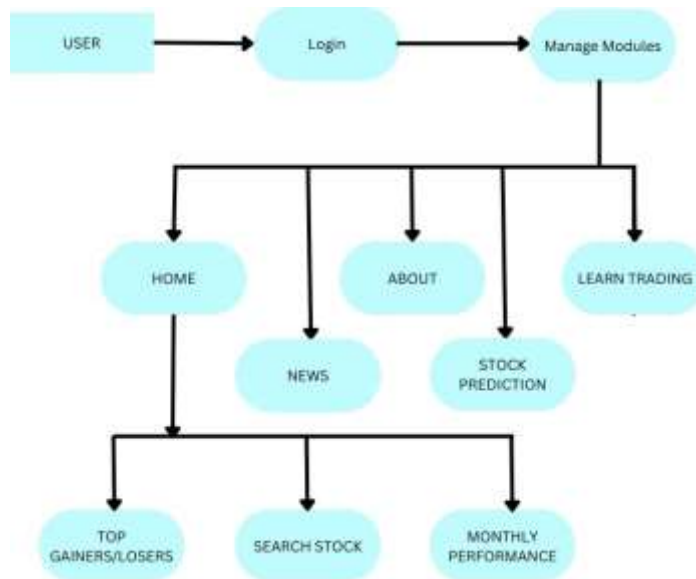
3.2 News : A News category which fetches the latest stock market centric news and displays on our platform. Live News is fetched from 'ixapi'

3.3 Contact us : We have provided a contact us page where the user can send their queries to us using their name, email address and phone number. Contact page is connected with database 'sqlite'

3.4 Learn Trading: Investing ensures financial security, and the Stock market plays a pivotal role in this domain, it is a place where people buy/sell shares of publicly listed companies. In this module, you will learn about the fundamentals of the stock market, how to get started, how it functions and the various intermediaries that appertain it.

3.5 Stock Prediction: the ability to predict stock prices using a Long Short-Term Memory (LSTM) model, which provides insights into future trends that can help investors make more informed decisions.

System Design:

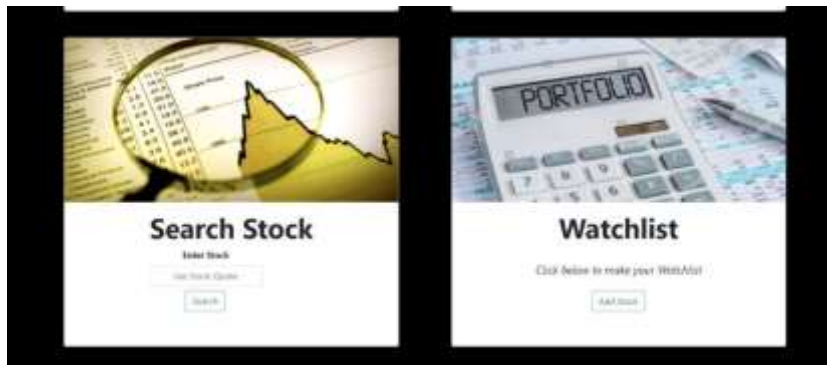


Top Gainers and Losers

| NIFTY 50 | NIFTY BANK | NIFTY IT | NIFTY NEXT 50 |
|----------------|----------------|-------------------|----------------|
| 17,599.15 | 41,041.00 | 28,764.55 | 38,187.05 |
| 42.24 0.24% | 41.04 0.10% | -209.59 -0.73% | 91.65 0.24% |

| Top Gainers | | | | Top LOSERS | | | |
|--------------|--------------|----------|----------|--------------|--------------|----------|----------|
| Company Name | ₹ Last Price | ₹ Change | % Change | Company Name | ₹ Last Price | ₹ Change | % Change |
| DIKIM | 80.179 | +1.021 | +12.8% | SMART | 1493.218 | -100.021 | -6.7% |
| VADANALU | 16.171 | +2.311 | +14.3% | VBL | 1,192.711 | -61.021 | -5.1% |
| BARHQA | 66.827 | +6.827 | +11.3% | ODDENTLAC | 231.107 | -6.221 | -2.7% |
| IBB | 70.827 | +18.218 | +25.7% | DARWIN | 523.811 | -22.111 | -4.2% |
| ARVKA | 91.171 | +7.021 | +7.7% | NIFTY | 1,277.228 | -61.111 | -4.8% |

Watchlist



Heatmap



Home Page



5. Feasibility Study

it is important to conduct a feasibility study to assess the viability and potential success of the project. In this section, we will examine the various aspects of the proposed website and evaluate its feasibility.

Technical Feasibility:

From a technical perspective, the proposed website is feasible. The required hardware and software are readily available, and the development team has the necessary skills and experience to design and develop the website. The website will require the use of machine learning algorithms, which may require additional computational resources, but these are readily available and can be easily implemented.

Market Feasibility:

The Indian stock market is one of the largest and most active in the world, with a high level of investor interest and participation. The proposed website will cater to this market by providing real-time news, analysis, and prediction tools that can help investors make informed decisions about buying and selling stocks. There is a significant demand for such a service, and the website is expected to attract a large number of users.

Legal and Regulatory Feasibility: The Indian stock market is subject to various legal and regulatory requirements, including those related to data protection, intellectual property, and securities trading. The website will need to comply with these requirements to operate legally and avoid any potential legal or regulatory issues. With careful planning and legal advice, the website can be designed and operated in compliance with all relevant legal and regulatory requirements.

The feasibility study has shown that the proposed Indian stock market website is technically feasible, marketable, financially sustainable, and legally compliant. With careful planning and management, the website has the potential to provide investors with a valuable resource for staying up-to-date on the latest developments in the market and making informed investment decisions.

6. Conclusion and Future Scope

The proposed Indian stock market website has the potential to become a valuable resource for investors by providing real-time news, analysis, and prediction tools that can help them make informed decisions about buying and selling stocks. The website will incorporate machine learning algorithms to provide accurate predictions of future market movements, based on historical data and other relevant factors. It will also offer a user-friendly interface that allows users to access live data on market trends, stock prices, and other key indicators.

We have built a comprehensive stock market website. Using this a user can :

Access fundamental data of stocks

Analyze latest news of the industry

Keep track of top gainers/losers

Find good investment opportunities

Predict Stock Prices

There is significant potential for future expansion and development of the proposed Indian stock market website. Some of the potential future scope for the project includes:

Integration of social media: The website can be integrated with popular social media platforms to allow users to share news and insights with their followers.

Mobile App: The development of a mobile application that provides users with access to real-time market data, news, and analysis.

Expanded market coverage: The website can expand its coverage beyond the Indian stock market to cover other markets such as forex, commodities, and cryptocurrencies.

Advanced prediction tools: The website can incorporate more advanced machine learning algorithms to provide more accurate and detailed predictions of market movements.

References

- [1] Ishita Parmar, Navanshu Agarwal, Sheirsh Saxena, "Stock Market Prediction Using Machine Learning", 2018
- [2] D. Bhuriya, G. Kaushal, A. Sharma and U. Singh, "Stock Market Prediction Using A Linear Regression," in International Conference on Electronics, Communication and Aerospace Technology, 2017.
- [3] P. Guo, M. Waqar, H. Dawood, M. B. Shahnawaz and M. A. Ghazanfar, "Prediction of Stock Market by Principle Component Analysis," in 13th International Conference on Computational Intelligence and Security, 2017.
- [4] Z. Hu, J. Zhu and K. Tse, "Stocks Market Prediction Using Support Vector Machine," in 6th International Conference on Information Management, Innovation Management and Industrial Engineering, 2013.
- [5] S. Kavitha, S. Varuna and R. Ramya, "A Comparative Analysis on Linear Regression and Support Vector Regression," in Online International Conference on Green Engineering and Technologies (IC-GET), 2016.

-
- [6] A. Sharma, D. Bhuriya and U. Singh, "Survey of Stock Market Prediction Using Machine Learning Approach," in International Conference on Electronics, Communication and Aerospace Technology, 2017.
- [7] R. Verma, P. Choure and U. Singh, "Neural Networks through Stock Market Data Prediction," in International Conference on Electronics, Communication and Aerospace Technology, 2017.
- [8] L. Zhao and L. Wang, "Price Trend Prediction of Stock Market Using Outlier Data Mining Algorithm," in IEEE Fifth International Conference on Big Data and Cloud Computing, 2015.