ISSN: 2454-9940

INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT

E-Mail :
editor.ijasem@gmail.com
editor@ijasem.org

www.ijasem.org

INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT

ISSN 2454-9940

www.ijasem.org

Vol 19, Issue 3, 2025

PREDICTING STOCK PRICE PREDICTION USING SVM

[1]ALLU NADIYA

PG Scholar, Department of Computer Science & Engineering, Holy Mary Institute of Technology & Science (Autonomous), Hyderabad, India.

[2]MRS.G. SHRUTHI

Assistant Professor, Department of Computer Science & Engineering, Holy Mary Institute of Technology & Science (Autonomous), Hyderabad, India.

ABSTRACT

In the era of data-driven decision-making, accurate forecasting is critical in supply chain management and financial markets. This study investigates two key predictive tasks: inventory demand forecasting in retail and stock price direction prediction. In the first segment, machine learning models—such as Random Forest, Gradient Boosting, and Long Short-Term Memory (LSTM) networks—are employed to forecast inventory demand, drawing on historical sales data, seasonal patterns, and economic indicators. The analysis focuses on improving demand accuracy to optimize stock levels, reduce costs, and enhance customer satisfaction. The second

1. INTRODUCTION

The Importance of Stock Price Prediction in Financial Markets

The stock market is an integral part of the global economy, playing a critical role in resource allocation and wealth creation. Predicting the direction of stock prices has long been a subject of interest for traders, investors, and researchers alike. An accurate prediction of stock price movements can result in substantial financial gains, enhanced portfolio management, and minimized risks. However, the inherent volatility and c

omplexity of the stock market make such predictions a challenging endeavor. Influenced by factors such as economic indicators, geopolitical events, and investor sentiment, stock prices exhibit non-linear patterns that are difficult to forecast using traditional approaches.

1.1 Scope of the Study

This research focuses on predicting the directional movement of stock prices (upward or downward) using historical price data and technical indicators. The study does not aim to predict specific price values or account for external factors like news events or macroeconomic variables. While the methodology is demonstrated using selected stocks, the approach can be generalized to other securities and markets with appropriate modifications

ISSN 2454-9940
www.ijasem.org
Vol 19, Issue 3, 2025

2. LITERATURE SURVEY

The financial market has always been a challenging domain for predicting future trends due to its dynamic, volatile, and often unpredictable nature. Among various methodologies, machine learning models such as Support Vector Machines (SVMs) have gained significant traction for predicting stock price direction. However, before delving into the utility of SVMs, it is imperative to understand the foundation laid by classical statistical methods like ARIMA and traditional time-series forecasting approaches. These methods have been pivotal in shaping quantitative financial analysis and serve as benchmarks for newer techniques.

3. SYSTEM ANALYSIS

3.1 EXISTING SYSTEM

The existing system contains the following drawbacks:

- All the segmentations are search based
- Difficult to gather the data and segment them accordingly
- The results are not really accurate as the clustering is not close enough to
- determine accurate centroids

3.2 PROPOSED SYSTEM

Our proposed system has the following features:

- Develop the system to get easy visualization techniques
- Increase the data set to accommodate many data points so that results will
- be more accurate
- Segment the products directly according to the customer group
- Use different methods to collect the customer data instead of physical forms

4. Data Preprocessing Techniques

Data preprocessing is a crucial step in any machine learning project, including predicting stock price direction using Support Vector Machine (SVM). The raw stock market data, which typically includes historical prices, trading volumes, and other market indicators, needs to be carefully processed before it can be fed into the SVM model. The preprocessing techniques ensure that the data is clean, relevant, and in a format suitable for machine learning. Below are the key preprocessing techniques involved in the stock price prediction project:

INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT
ISSN 2454-9940
www.ijasem.org
Vol 19, Issue 3, 2025

4.1 Handling Missing Data

1. Importance of Handling Missing Data

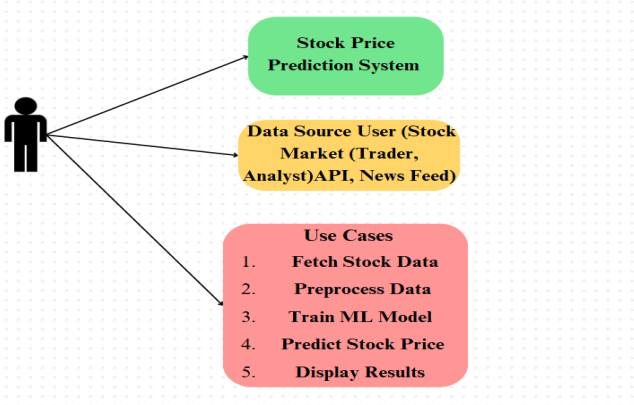
Stock market data, like any other real-world financial data, is often incomplete or has missing values due to various reasons such as errors in data collection, issues with the data source, or irregularities in market activity (e.g., weekends or holidays). Missing values in the dataset can lead to:

- **Bias in Model**: SVMs require complete data to find an optimal hyperplane. Missing data might result in an inaccurate model.
- **Data Integrity Issues**: If the missing values are not handled properly, the model might learn from incomplete or misleading patterns.

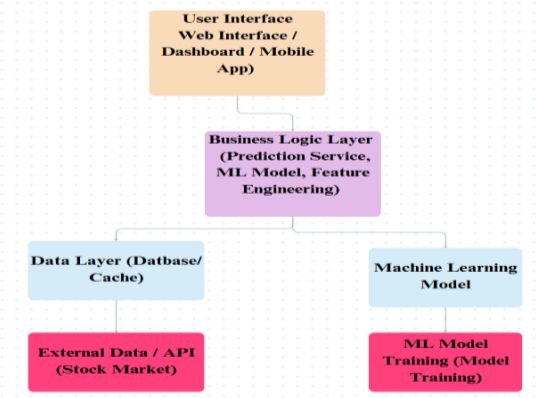
  Reduced Model Accuracy: Handling missing data incorrectly may lead to overfitting, underfitting, or poor performance on unseen data

5. System Design

5.1 Use Case Diagram

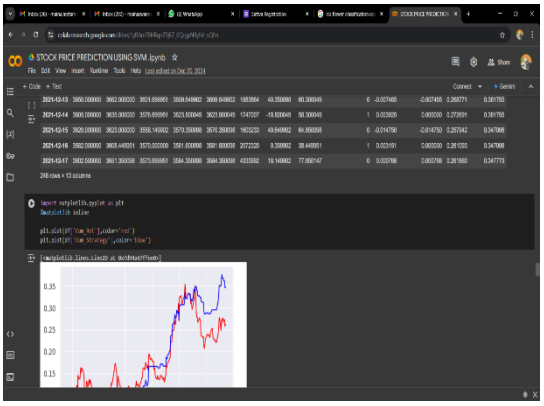


5.2 Architecture Diagram



INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT
ISSN 2454-9940
www.ijasem.org
Vol 19, Issue 3, 2025

6. Output Screenshots



7. Conclusion

Predicting stock price direction is a complex yet intriguing challenge in financial analysis, given the volatile and dynamic nature of stock markets. The use of Support Vector Machines (SVM) in this domain represents a significant step toward leveraging machine learning techniques for enhanced accuracy and reliability. Throughout this project, we explored how SVM, as a supervised machine learning algorithm, can effectively classify the direction of stock price movements by analysing historical data and engineered features. This conclusion reflects on the project's outcomes, challenges, and the implications of our findings.

In conclusion, the application of Support Vector Machines for predicting stock price direction offers a compelling blend of mathematical rigor and practical utility. While challenges such as data noise and market unpredictability persist, SVM provides a solid foundation for further exploration and innovation in financial forecasting. By carefully addressing its limitations and integrating additional data sources and methodologies, machine learning models like SVM have the potential to revolutionize stock market analysis and empower investors with data-driven insights. This project underscores the importance of continuous experimentation and refinement in the quest for more reliable and accurate financial prediction systems.

8. References

1. Cortes, C., & Vapnik, V. (1995). *Support-Vector Networks*. Machine Learning, 20(3), 273-297.
2. Bishop, C. M. (2006). *Pattern Recognition and Machine Learning*. Springer.

ISSN 2454-9940
www.ijasem.org
Vol 19, Issue 3, 2025

3. Murphy, K. P. (2012). *Machine Learning: A Probabilistic Perspective*. MIT Press.
4. Hastie, T., Tibshirani, R., & Friedman, J. (2009). *The Elements of Statistical Learning: Data Mining, Inference, and Prediction*. Springer.
5. Goodfellow, I., Bengio, Y., & Courville, A. (2016). *Deep Learning*. MIT Press.