

Model Comparison for the Prediction of Stock Prices in the National Stock Exchange by Data Science Techniques

Sumbul S.K¹, Hemanth Kumar Molapata², G. Madhu Sudan^{3*}, Nagendra Kumar Kalaparthi⁴, Sreesaketh Karri⁵

¹Department of Statistics, University of Allahabad, Prayagraj, U.P.-211002 India.

²Asst Professor, Department of Statistics, Hindu College, UoD, New Delhi India.

³Asst Professor, Department of Statistics, University of Allahabad, Prayagraj-211002 India,
Email: gmadhusudan7@gmail.com

⁴Asst Professor, Department of Statistics, S.V.College, UoD, New Delhi India.

⁵Asst Professor, Department of Statistics, Delhi Public School, Bangalore East India.

*Corresponding Author

Received: 12.07.2024

Revised: 16.08.2024

Accepted: 22.09.2024

ABSTRACT

One of the most intricate machine learning techniques is the share value prediction. It depends on a variety of factors that affect supply and demand. This paper analyses different strategies for forecasting future stock price and provides an example using a pre-built model that is adapted to the Indian stock market. This research work explains the systematics of machine learning-based approaches for stock market prediction based on the deployment of a generic framework. The aim of this work is to explore and identify the models and compare them for five National Stock Exchange (NSE) Index, 50 listed Indian companies and also analysed the best prediction model for each company accordingly.

Keywords: Machine Learning, Deep Learning, Regression Techniques, Evaluation Metrics.

INTRODUCTION

Predicting stock prices is a critical task in financial markets, and it has garnered significant attention from researchers and practitioners alike. In the context of the National Stock Exchange (NSE), which is one of the largest and most liquid stock exchanges globally, accurate stock price prediction can offer substantial advantages for investors and traders. This introduction outlines the importance of model comparison in stock price prediction and the methodologies typically employed to evaluate and compare these predictive models.

The NSE holds the fourteenth (14th) position in the top forty (40) future exchanges in the world. The stock market index of NSE was launched in 1996 by the name of S&P CNX Nifty (Nifty= national 50) which represents 50 stocks of 25 different economic sectors and is largely a diversified index. The NSE set the standards for many other exchanges by bringing innovative changes in products, trading, clearing, settlement, and regulations. All these made the NSE a market leader which helped set international standards for the Indian stock markets. A majority of the developments in Indian stock markets like the 19 corporatized, demutualized and fully automated Indian stock exchanges owe their origin to NSE. Thus the establishment of the NSE was a landmark in the Indian stock market scenario. Another feather to its cap is that NSE was the first stock exchange in the world to use satellite communication technology for trading. All these collectively resulted in better transparency and efficiency of Indian stock markets. Here in this report, we are going to use.

Objectives

1. To investigate the best prediction model for stocks of five companies in the National Stock Exchange Index 50 through machine learning techniques
2. To analyse the efficiency of each model evaluation metrics and features.
3. To model comparison of stock prices of five companies like TATA Steels, TCS, TATA Motors, SUN Pharma.

Motivation

Financial gain is the most fundamental motivation for predicting stock market prices. The ability to uncover a mathematical model that can consistently predict the direction of future stock prices would