Stock market prediction(Nifty-50) using Machine Learning algorithms

Abstract

This project focuses on developing a predictive system for stock market trends with an emphasis on the Nifty 50 index, leveraging advanced machine learning algorithms such as Random Forest and Long Short-Term Memory (LSTM) networks. The data pipeline is built using real-time stock data retrieved from Yahoo Finance via the `yfinance` library, which is pre-processed for accuracy, consistency, and suitability for machine learning tasks. Random Forest, a supervised learning algorithm, combines multiple decision trees for robust and ensemble-based predictions, while LSTM networks, designed for sequential data, capture temporal dependencies to enhance prediction quality. Additionally, feature engineering techniques are employed to optimize the relevance of input variables, further improving model accuracy. Metrics such as Mean Absolute Error (MAE) and Root Mean Square Error (RMSE) are used to evaluate the performance of the models, ensuring their reliability in predicting stock prices.