STOCK PRICE PREDICTION

Abstract :

This project focuses on the development of a predictive model aimed at forecasting stock prices by leveraging historical market data. The primary objective is to provide investors with a valuable tool to aid in making well-informed decisions and optimizing their investment strategies. The project encompasses a comprehensive workflow, including data collection, data preprocessing, feature engineering, model selection, training, and evaluation.

Data Collection: We gather historical stock market data, encompassing crucial attributes such as date, open price, close price, volume, and other relevant indicators. This dataset forms the foundation for our predictive modeling efforts.

Data Preprocessing: A critical step involves cleaning and preprocessing the collected data. This includes addressing missing values, handling outliers, and converting categorical features into numerical representations, ensuring data quality and consistency.

Feature Engineering: To enhance the predictive capabilities of our model, we employ feature engineering techniques. This includes creating new features, such as moving averages, technical indicators, and lagged variables, which can capture underlying patterns and trends in the stock market.

Model Selection: We carefully choose appropriate algorithms for time series forecasting, such as ARIMA (AutoRegressive Integrated Moving Average) and LSTM (Long Short-Term Memory), to predict stock prices effectively. Model selection is a critical decision in ensuring accurate and reliable predictions.

Model Training: With a selected model in place, we proceed to train it using the preprocessed dataset. The training phase involves learning from historical data, enabling the model to capture patterns and relationships that influence stock price movements.

Evaluation: The performance of our predictive model is rigorously assessed using suitable time series forecasting metrics, such as Mean Absolute Error (MAE) and Root Mean Squared Error (RMSE). This evaluation ensures that the model's predictions align with actual stock price movements and provides an indication of its reliability.

Ultimately, this project strives to empower investors with a robust tool for making informed decisions in the dynamic and complex world of stock market investing. By leveraging historical data, preprocessing techniques, feature engineering, and advanced forecasting models, we aim to create a valuable asset for optimizing investment strategies and enhancing financial decision-making.