Machine Learning

Report

Submitted to : Sir Waheed Ahmad

Submitted by : M Salman Afaq (24775)

Usman Afaq (24779)

Rafaqat Ahmad (24784)

Abdul Rehman (26027)

Section : CS 7-1

1.Introduction

Our Project is related to Stock Market Using Time Series. We will identify patterns and trends within the data. Also will enable the creation of models for forecasting the future price movements. Techniques like ARIMA or machine learning algorithms which are more advanced are commonly used in this domain. Factors that are influencing stock prices are countless and complex including the market sentiment and economic indicators.

Therefore, creating accurate predictive models involves not only understanding the fundamental time series patterns but also the integrating relevant external factors that may impact the stock movements. The dynamic nature of financial markets, developing a robust and a reliable stock price predictors that requires a combination of data related expertise and continuous refinement of models to adapt to changing market conditions. The Researchers and data scientists sometimes explore an innovative approaches and integrate the latest advancements in time series analysis to enhance he accuracy of stock price predictions.

2. Requirements:

Functional Requirements:

- Data input
- Model training
- Feature Selection
- Testing
- Prediction

- Evaluation
- Visualization

Non- Functional Requirements:

- Performance
- Scalability
- Accuracy
- Reliability
- Security
- Maintainability

3. Technologies Used:

- Python
- Libraries
- Data Analysis
- Machine Learning

4. Methodologies:

- Data Acquisition
- Data Preprocessing
- Model Development
- Evaluation
- Visualization

5. Results:

The results will be according to the following steps:

- Evaluate Performance Metric
- Visualize Predictions
- Consider Basic Impact

To analyze the changes in the results over time, you would need the historical stock price data for Tesla spanning multiple years. By comparing the model's performance on data from different years, we could assess that how well the model generalizes to various market conditions. We might need to consider any changes in the dataset, market dynamics or the economic factors that could impact the model's effectiveness over time.

6. Future Work:

Future work according to our regression model for stock price predictions, here are some suggestions for the Future Work:

1. Future Engineering
2. Time Series Analysis
3. Advanced Modeling Techniques
4. Data Augmentation
5. Risk Assessment
6. Real-time Prediction
7. Evaluate Metrics Enhancement
8. User Interface and Accessibility
9. External Validation

7. References:

https://medium.com/@avikumart_/time-series-analysis-and-stock-price-forecast-modeling-all-you-need-to-know-fe66c06e50ae

https://www.analyticsvidhya.com/blog/2020/11/stock-market-price-trend-prediction-using-time-series-forecasting/