

Stock Market Analysis Report (Tesla Inc.)

1. Introduction

Stock market analysis is essential for investors and financial analysts to make informed decisions. This report focuses on analyzing Tesla Inc.'s stock market trends and predicting future stock prices using a Linear Regression model.

2. Data Collection and Preprocessing

- Tesla Inc.'s stock market data is fetched from Yahoo Finance.
- The dataset includes features like Open, High, Low, Close, Volume, and Adjusted Close.
- Missing values are handled, and irrelevant data is removed for efficient processing.

3. Exploratory Data Analysis (EDA)

- Historical stock price trends are visualized using line graphs.
- Daily return percentages are calculated to observe volatility.
- Statistical analysis is conducted to measure market trends.

4. Stock Price Prediction Using Linear Regression

- Features and target variables are selected based on correlation analysis.
- Data is split into training and testing sets.
- A Linear Regression model is trained and evaluated.

5. Forecast Results

- The model predicts Tesla's future stock prices based on past trends.
- Performance evaluation metrics include Mean Absolute Error (MAE) and Root Mean Squared Error (RMSE).
- Graphical representation compares predicted vs. actual stock prices.

6. Conclusion

Stock price analysis and prediction using machine learning provide investors with insights into market behavior, aiding in investment decision-making.

7. Future Enhancements

- Implementing advanced models like LSTMs and Random Forest for better accuracy.
- Considering macroeconomic factors, news sentiment analysis, and investor behavior to refine predictions.