Predicting Stock Market Price

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# Introduction / Problem Statement:

Stock markets are inherently volatile and unpredictable, making it challenging for investors to make informed decisions. Traditional approaches often fail to capture complex price movement patterns. This project addresses the need for a data-driven solution by leveraging Machine Learning techniques to predict short-term stock prices. The aim is to support investors in making informed decisions and to potentially maximize profitability.

# Objectives:

* To collect and preprocess stock market data using Python packages.
* To implement and apply suitable Machine Learning algorithms for short-term price prediction.
* To analyze the results and suggest the best investment action (Buy, Sell, or Hold).

# Scope of the Project:

The project focuses on short-term stock price prediction using historical data. It is limited to analyzing recent price trends with machine learning models. While the system provides actionable insights, absolute accuracy cannot be guaranteed due to the dynamic and uncertain nature of financial markets.

# Methodology:

1. Collect historical stock data using Python libraries such as yfinance or pandas\_datareader.  
2. Preprocess the data by cleaning and selecting attributes such as Open, High, Low, Close, and Volume.  
3. Create simple features like moving averages and price trends.  
4. Build predictive models using algorithms such as Linear Regression, Decision Tree, or LSTM.  
5. Use the trained models to forecast stock prices.  
6. Suggest appropriate actions (Buy, Sell, Hold) based on the prediction.  
7. Evaluate the model performance using metrics like Mean Absolute Error (MAE) or accuracy.

# Expected Outcome:

The project is expected to develop a profit-oriented Machine Learning model that can predict short-term stock market prices with reasonable accuracy. In addition to forecasting, the model will recommend whether to buy, sell, or hold, thereby improving decision-making and profitability in trading.

# Tools and Technologies:

1. Python (core programming language)
2. yfinance / pandas\_datareader (data collection)
3. Pandas, NumPy (data preprocessing and feature engineering)
4. Scikit-learn (machine learning models)
5. TensorFlow/Keras (optional for deep learning models like LSTM)
6. Matplotlib, Seaborn (data visualization)
7. Jupyter Notebook / Google Colab (development environment)

# Conclusion:

This project demonstrates how Machine Learning can be applied to financial data for short-term stock price prediction. By combining historical data, technical indicators, and predictive modeling, the system provides actionable insights that support investment decisions. Although market uncertainty limits absolute accuracy, the project highlights the practical potential of ML in guiding profitable trading strategies.

# Keywords:

Stock Market, Machine Learning, Price Prediction, Buy-Sell-Hold, Data Analysis

