Title: Stock Price Trend Prediction using LSTM

Introduction:

Stock market prediction is a process of trying to determine the future value of a stock based on its historical performance. Accurate stock forecasting can help investors make better decisions. In this project, we use an LSTM (Long Short-Term Memory) neural network — a powerful type of recurrent neural network — to predict stock prices.

Abstract:

This project predicts stock price trends using past closing price data. We used the Yahoo Finance API to fetch historical stock data (TATASTEEL). After preprocessing and scaling the data, we built an LSTM model using TensorFlow/Keras. The model was trained to understand trends and forecast the next day's closing price. Finally, we visualized actual vs predicted values.

Tools Used:

Python

yfinance

Pandas

NumPy

Matplotlib

Scikit-learn

TensorFlow / Keras

Steps Involved:

1. Collected stock data using yfinance

2. Extracted and scaled the ‘Close’ price column

3. Created sequences of 60 previous days as input

4. Built and trained LSTM model

5. Predicted and visualized actual vs predicted prices

Conclusion:

The LSTM model was able to learn from historical trends and give reasonably accurate predictions for future stock prices. This project gave practical exposure to time-series analysis, deep learning, and stock market applications. In the future, more features like volume, RSI, or moving average can improve model performance.