Title: Stock Price Predictor using LSTM and Streamlit

Introduction:

The Stock Price Predictor is a data science project that aims to forecast the future prices of stocks using historical stock data. The project utilizes the Yahoo Finance library to fetch stock data, LSTM (Long Short-Term Memory) neural networks for time series forecasting, and Streamlit for designing a user-friendly web interface to interact with the model.

Technologies Used:

Python

Yahoo Finance library

TensorFlow and Keras for implementing LSTM

Streamlit for web application development

Project Overview:

1. The Stock Price Predictor project consists of the following main components:
2. Data Collection: The historical stock data is collected using the Yahoo Finance library in Python. This includes fetching stock price data, such as open, high, low, and close prices, as well as volume and adjusted close prices, for a specified time period.
3. Data Preprocessing: The fetched stock data is then preprocessed to prepare it for input into the LSTM model. This involves handling missing values, normalizing the data, and splitting it into training and testing sets.
4. LSTM Model: The LSTM neural network is implemented using TensorFlow and Keras in Python. The model is trained on the training set of stock data to learn patterns and trends in the data. The LSTM architecture consists of input layers, LSTM layers with dropout for regularization, and output layers.
5. Prediction: Once the LSTM model is trained, it is used to make predictions on the testing set of stock data. The predicted stock prices are then denormalized to obtain the actual predicted stock prices.
6. Web Application: The Streamlit library is used to create a web application that allows users to input stock symbol and time period, and view the predicted stock prices. The Streamlit application is designed with a user-friendly interface that includes input fields, a button for submitting the input, and a plot to display the predicted stock prices.

How to Run the Project:

1. Install the necessary libraries, such as Yahoo Finance, TensorFlow, Keras, and Streamlit, in your Python environment.
2. Clone the project repository from GitHub and navigate to the project directory.
3. Run the data collection script to fetch historical stock data using the Yahoo Finance library.
4. Run the data preprocessing script to preprocess the fetched stock data, including handling missing values, normalizing the data, and splitting it into training and testing sets.
5. Run the LSTM model training script to train the LSTM model on the training set of stock data.
6. Run the prediction script to make predictions on the testing set of stock data using the trained LSTM model, and denormalize the predicted stock prices.
7. Run the Streamlit application script to start the web application locally.
8. Access the web application in your web browser by navigating to the specified local URL, enter the stock symbol and time period, and click the submit button to view the predicted stock prices.

Conclusion:

The Stock Price Predictor project demonstrates the application of data science techniques, including data collection, data preprocessing, LSTM modeling, and web application development using Streamlit. The project showcases your skills in data handling, time series forecasting, and web application development, and serves as a valuable addition to your data scientist portfolio.