Application for AI Inter position

amit garg <amitgarg87@gmail.com>   Tue, Mar 5, 2024 at 6:27 AM
To: Prabhjeet Singh <singhprabhjeetk95@gmail.com>

Hi Prabhjeet,

Here is the test task for you. Please let me know if you have any questions.

Task for Round 1: Detailed Time Series Analysis of a Single Stock

Objective: To evaluate your ability to conduct a thorough time series analysis, including data preparation, analysis, modeling, and interpretation on a chosen stock's historical data.

Task Details:

1. **Data Preparation and Exploration**:
   - **Goal**: Clean, preprocess, and conduct an exploratory analysis of the historical price data for the stock provided.
   - **Expectations**: Document the steps taken for data cleaning and preprocessing. Provide initial observations about trends, seasonality, and any anomalies in the data.
2. **Time Series Decomposition**:
   - **Goal**: Decompose the time series data to understand underlying patterns.
   - **Expectations**: Apply time series decomposition techniques to identify and interpret trend, seasonality, and residuals in the stock price data.
3. **Stationarity and Testing**:
   - **Goal**: Test the time series data for stationarity and apply necessary transformations to achieve stationarity.
   - **Expectations**: Use statistical tests (e.g., ADF test) to check for stationarity, and justify the choice of any differencing or transformations applied.
4. **Forecasting Model Development**:
   - **Goal**: Build and validate forecasting models for the stock price.
   - **Expectations**: Choose appropriate time series models (e.g., ARIMA, SARIMA, Prophet, LSTM) based on the data characteristics. Explain your model choice, parameter tuning, and validation approach. Discuss the model's performance and any limitations.
5. **Insightful Reporting**:
   - **Goal**: Create a report detailing your analysis, findings, and model forecasts.
   - **Expectations**: The report should include a comprehensive overview of your analysis process, justification for methodological choices, model performance evaluation, and insights into the stock's future price movements.

Thanks and Regards.

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