Machine Learning Engineer Assignment

Objective
The goal of this assignment is to evaluate your technical skills, problem-solving abilities, and understanding of machine learning concepts, particularly in the financial domain.

Task Description
You are required to develop a predictive model for forecasting stock price movements using historical financial data. The task includes data preprocessing, feature engineering, model development, and performance evaluation.

Requirements
1. Data:
   - Use publicly available stock market data (e.g., Yahoo Finance, Alpha Vantage API, or Kaggle datasets).
   - Include at least the following features: Open, High, Low, Close, Volume.

2. Feature Engineering:
   - Incorporate technical indicators such as RSI, MACD, and Bollinger Bands into your feature set.
   - Add additional features that you believe could improve model performance.

3. Model Development:
   - Choose an appropriate predictive modeling approach (e.g., regression, LSTM, or another deep learning model).
   - Train the model to predict the next day's closing price of a stock.

4. Evaluation:
   - Use appropriate evaluation metrics (e.g., RMSE, MAPE, or R-squared) to assess your model's performance.
   - Provide a detailed explanation of why you selected the chosen metric(s).

5. Documentation:
   - Prepare a concise report explaining:
     - The steps you followed in data preprocessing.
     - The technical indicators and features you used, with reasons for their inclusion.
     - The model selection process, including hyperparameter tuning.
     - The evaluation results and any insights from your analysis.
   - The report should be written in Markdown or PDF format.

6. Code:
   - Provide clean, well-documented Python code.
   - Use libraries like Pandas, Scikit-learn, TensorFlow/PyTorch, or similar

frameworks.
  - Ensure your code is modular and easy to follow.

Submission Guidelines
- Email your code as a GitHub repository link to hr@dataguess.com with the subject "Machine Learning Engineer Position Assignment Done".
- The repository should include the following:
  1. A `README.md` file explaining how to run the code and any dependencies.
  2. The data preprocessing, feature engineering, and model development scripts.
  3. The evaluation report in Markdown or PDF format.

Deadline
- You must complete and submit the task within 14 days of receiving it.

Evaluation Criteria
- Data preprocessing and feature engineering quality.
- Model selection and performance.
- Code readability and documentation.
- Analytical thinking and explanation in the report.