Project Proposal:Topic: Stock Price Prediction Analysis

Team members: Caila Hanus, Dani Bar-lavi, Kayode Ayenioye, Paulette PetraccoMain

Research Questions:

* Predict stock market movement
* Where it's going to be tomorrow? Next week? Next year?
* Assessing volatility/risk of stocks over the last year
* Sort stocks into high, low, medium volatility
* Sentiment analysis of financial news and social media impact on stock price prediction

Dataset: <https://www.kaggle.com/datasets/hchsmost/test-dataset>

Project Description:  
Our project will focus on the dynamic and volatile nature of the stock market, which presents both opportunities and risks. We will aim to predict the movement of stock prices and assess the associated risk levels. With utilization of machine learning techniques to enhance stock market prediction accuracy.

Your project description might look something like this:

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\*\*Title: Predictive Analysis of Stock Market Movement and Risk Assessment\*\*

\*\*Introduction:\*\*

The stock market is characterized by its dynamic and volatile nature, presenting both opportunities and risks for investors. Predicting the movement of stock prices and assessing the associated risk levels are crucial tasks for making informed investment decisions. This project aims to leverage machine learning techniques to forecast stock market movements and evaluate the level of risk involved.

\*\*Research Questions:\*\*

1. Can machine learning models accurately predict the movement of stock prices?

2. How can we quantify and categorize the level of risk associated with different stocks?

3. What factors contribute to low volatility in stock prices, and how can they be identified and utilized for risk mitigation?

4. Conversely, what factors contribute to high volatility in stock prices, and how can investors adapt their strategies to manage heightened risk levels?

\*\*Methodology:\*\*

- Data Collection: Gather historical stock price data along with relevant financial indicators and market sentiment data.

- Feature Engineering: Extract meaningful features from the collected data, including technical indicators, fundamental ratios, and sentiment scores.

- Model Selection: Experiment with various machine learning algorithms such as regression, classification, and time series forecasting models.

- Evaluation Metrics: Assess the performance of models using metrics such as accuracy, precision, recall, and F1-score for classification tasks, and Mean Absolute Error (MAE) or Root Mean Squared Error (RMSE) for regression tasks.

- Risk Assessment: Develop a risk assessment framework based on volatility measures, beta coefficients, and other relevant risk indicators.

\*\*Expected Outcome:\*\*

By the end of this project, we anticipate building predictive models capable of forecasting stock market movements with a reasonable degree of accuracy. Additionally, we aim to develop a comprehensive risk assessment methodology that can help investors gauge the level of risk associated with different stocks and adapt their investment strategies accordingly.

\*\*Significance:\*\*

The outcomes of this project can have significant implications for investors, financial institutions, and policymakers. Accurate stock market predictions and robust risk assessment tools can assist investors in making more informed decisions, optimize portfolio management strategies, and mitigate potential losses during periods of market volatility.

\*\*Limitations and Future Directions:\*\*

- The accuracy of stock market predictions may be influenced by various external factors such as macroeconomic trends, geopolitical events, and unforeseen market shocks.

- Future research could explore the integration of alternative data sources, such as social media sentiment analysis and satellite imagery, to enhance the predictive power of models.

- Continuous refinement and validation of predictive models are essential to adapt to evolving market conditions and improve overall performance.

\*\*Conclusion:\*\*

In conclusion, this project endeavors to apply machine learning techniques to address the challenges of predicting stock market movements and assessing associated risk levels. By leveraging historical data and advanced analytics, we aim to provide valuable insights and tools to navigate the complex landscape of financial markets.

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This project description outlines the main research questions, methodology, expected outcomes, significance, and potential limitations of your proposed machine learning project on stock price prediction and risk analysis.