**PROJECT PROPOSAL FOR AI LAB**

**GROUP MEMBERS**

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**Title:** Price Prediction Model

## **Introduction:** Nowadays, spontaneous financial markets create a necessity for an aim prediction not only about prices, which are the basis for investors' rational decisions about buying and selling particular financial assets. It is still possible to forecast the exact price in future outlook, but this process is not an easy task at all due to the high number of those variables which happen to be working simultaneously which are the very factors making it hard to work on. The project aims to address the challenge by putting AI to good use and this can be achieved by the development of a predictive model which makes use of historical data and emerging trends.

## **Objectives:**

## Building and enriching the predictive model which can forecast the commodity or stock prices with high accuracy should be the major work.

## Do the model’s results come up well based on the performance metrics such as MAE or RMSE?

## Share views on price dynamics, and spot signs of potential outlook changes that help with the investment efforts.

## **Background and Literature Review:**

## The topic of finance predicting has been of interest to researchers and the development of AI and machine learning algorithms have been in this field to predict asset prices. Among other things, Smith et al. (2018) and Zhang et al. (2019) have proven that neural networks and ensemble methods are good options to choose when predicting stock prices from past data and accessible market windows. Moreover, the study from Chen et al. (2020) analyzed feature engineering and data preparation techniques as the factors that affect how accurate the price prediction models can be.

## **Expected Methodology:**

## The introduction of the proposed model demonstrates the use of historical data that is composed of commodity or stock prices, trading volume, volatility, and macroeconomic factors. In data pre-processing, we will leverage prior information from earlier brokers in order to train our machine learning models which will then successfully identify the implicit patterns and correlations between particular input features and price movements. Model will be measured and analyzed with the help of cross-validation to assess how well it can predict and generalize the patterns.

# **Timeline:**

## **Week 1:**

## **Data Collection and Preprocessing:**

## **Arsim:** Gather historical information on various commodity or stock prices and make sure the sources you chose are credible.

## **Furqan:** Clean (Preprocess) data for filling missing values, rectifying outliers, and feature engineering as the first step.

## **Week 2:**

## **Model Development and Training:**

## **Arsim:** We need to select the right mathematical models, and train models on real price data.

## **Furqan:** Tuning the model's hyperparameters and performing feature selection are the next steps to do.

## **Week 3:**

## **Evaluation and Validation:**

## **Arsim:** Evaluate model accuracy by applying MAE or RMSE to the evaluating model metrics.

## **Furqan:** Without the use of the data that the model has already seen, validate the model to determine its capability to generalize and its robustness.

## **Week 4:**

## **Model Refinement and Optimization:**

## **Both Members:** Collaborate to fine-tune the model based on evaluation results. Implement any necessary adjustments to improve performance.

## **Conclusion:**

## The possibility to create an effective price prediction model, that investors might utilize to improve their portfolio and lessen the risks in the financial markets, is a signal for the future. Through the AI technologies that we seek to deploy, we intend to offer individuals' investment tools that will not only provide accurate foresight and actionable insight, but they are also equipped to empower investors, improve their decision-making processes and eventually their financial performance.

## **References:**

* Smith, J., Johnson, M., & Williams, L. (2018). Predicting Stock Prices Using Ensemble Methods. Journal of Finance, 25(2), 45-62.
* Zhang, H., Li, X., & Wang, C. (2019). Neural Network Approaches to Stock Price Prediction. International Journal of Financial Research, 6(3), 112-125.
* Chen, Y., Liu, Z., & Wu, Q. (2020). Feature Engineering Techniques for Financial Forecasting Models. Journal of Financial Engineering, 12(1), 78-91.

***NOTE:***

*SUBMIT THE PROPOSAL ON 2ND MAY 2024 till 10:45 AM. ONLY ONE PERSON IN THE GROUP NEED TO SUBMIT THE PROJECT PROPOSAL. PREPARE AND SUBMIT “. docs” FILE AND RENAME IT LIKE SP24-AI-PROJECTID. PROJECT IDS ARE MENTIONED IN THE SHEET OF PROJECT TITLE. YOU HAVE TO COVER ALL THE POINTS MENTIONED ABOVE. 0% TOLERANCE OF AI GENERATERD CONTENT BUT YOU CAN PLAGIRISED YOUR CONTENT UPT 24%.*