Alpha Strategy: Trend Detection and Trade Strategy Builder

Objective:

Develop a trading strategy using historical price data to maximize alpha. Participants will be evaluated on their strategy's performance (measured by Sharpe Ratio and other metrics) and the clarity of their methodology.

Input:

- Historical Price Data - OHLCV data for selected instruments to design and test their strategy.
- This will be provided for period of 2019 to 2022, for 30 instruments

  Link: L2

Task:

- The goal is to create a strategy that generates alpha (excess returns over a benchmark) while maintaining a balance between risk and reward.
- Strategies can use any approach, including but not limited to:
  - **Technical Analysis**: Indicators like Moving Averages, RSI, MACD, or custom indicators.
  - **Statistical Models**: Mean reversion, momentum strategies, or pairs trading.
  - **Machine Learning**: Predictive models for price movements or clustering for regime detection.
- The algorithm should be able to calculate entry/exit points for the instruments, optimising for Sharpe Ratio
- It should be able to give entry/exit points for any other instrument, provided in the same format.

Time: ***11 AM, 18th December***

Presentation:

1. Participants would be required to submit below data along with their entire code:
   a. The methodology used for trend detection.
      i. The rationale for choosing their strategy.
      ii. Methodology for parameter tuning and backtesting.
      iii. Trade-off analysis between risk and return.

    b. Key insights and performance outcomes of the strategy.
    c. Code Library - to be used to rerun the algorithm
2. Participants will have to run the algorithm again, on evaluation data which can calculate Sharpe Ratio

Evaluation Criteria (in order of priority) :

- **Performance:** The alpha their strategy generates on the evaluation dataset - Sharpe Ratio
- **Robustness:** Consistency across different market conditions.
- **Approach:** How clearly they take their approach and insights.