Comprehensive Performance Evaluation and Account Ranking Report

Overview

We took a close look at a dataset containing trade history to see how different trading accounts are performing. The goal was to find out which accounts are doing well and which ones might need some improvement. Here's how we tackled the analysis, what we discovered, and a few assumptions we made along the way.

Methodology

1. Data Preparation:
    1. First, we loaded the trade data from a CSV file, which included information like account IDs and various trading details.
    2. We cleaned up the data by removing duplicates, fixing any missing values, and making sure everything was in the right format.
    3. We dropped the categorical features which didn't seem to affect the scoring system.

2. Calculating Key Metrics:
   To get a sense of how well each account was doing, we calculated a few important numbers:
    1. PnL (Profit and Loss): This is the total profit made by each account.
    2. ROI (Return on Investment): We calculated it using this formula:
       ROI =(TOTAL PNL/TOTAL INVESTMENT)*100
    3. Sharpe Ratio: This tells us how much return we get for each unit of risk.
    4. MDD (Maximum Drawdown): This shows us the biggest loss an account experienced before bouncing back.
    5. Win Rate: The percentage of trades that made a profit.
    6. Total Positions: The total number of trades made by the account.

3. Normalizing the Metrics:
   To compare the metrics fairly, we scaled them between 0 and 1 using MinMax scaling. This prevents any one metric from dominating the rankings.
   For MDD, we reversed the values (1 MDD) because smaller MDD values are better.

4. Scoring the Accounts:
   We ranked the accounts by giving each metric a weight based on how important we thought it was:
    PnL: 40%
    ROI: 30%
    Sharpe Ratio: 15%

Win Rate: 10%
Total Positions: 5%
We then added up the weighted scores to get an overall performance score for each account.

5. Ranking the Accounts:
Finally, we ranked the accounts by their overall scores, highlighting the top performers.

Findings

The top accounts tended to have:

1. Higher PnL, meaning they made more profit.
2. Better ROI, showing they used their investment effectively.
3. Higher Sharpe Ratios, meaning they got good returns for the risk they took.

We also noticed that accounts with higher win rates (more profitable trades) generally ranked higher, showing that consistent wins are important for overall success.

Assumptions

1. Data Accuracy: We operated under the assumption that the dataset was largely accurate, aside from necessary cleaning and handling of missing or anomalous values.

2. Market Assumptions: We presumed that historical trading patterns would provide insight into future performance, assuming market conditions remain relatively stable.

3. Metric Weighting: The weights assigned to each performance metric were based on subjective judgment, and altering these could lead to different rankings.

4. Reliability of Metrics: We assumed that the calculated metrics are indicative of genuine account performance and not merely the result of random fluctuations.

Conclusion

In short, this analysis helped us understand how different trading accounts are performing by looking at their profits, risks, and overall consistency. We ranked the accounts in a way that considers both profitability and risk, giving us a clearer picture of which accounts are excelling. In the future, we could try tweaking the weights or adding new metrics to get an even deeper understanding of performance.

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