Trade Data Analysis and Ranking Report
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Overview

In this analysis, we dove into a dataset filled with trade history to evaluate and rank different trading accounts based on their performance. The goal was to uncover insights into which accounts are thriving and which might need some attention. Here's how we approached the task, what we found, and the assumptions we made along the way.

Methodology

1. Getting the Data Ready:

   A. We started by loading the trade data from a CSV file, which included various details like `Port_ID` and trading metrics.
   B. The first step involved cleaning the data—removing duplicates, addressing any missing values, and ensuring that all columns had the right data types.

2. Removing Categorical Columns:
   A. To streamline our calculations, we decided to exclude categorical columns that wouldn't contribute to our metric calculations. This included fields such as `symbol`, `feeAsset`, `quantityAsset`, `realizedProfitAsset`, `baseAsset`, `positionSide`, and `activeBuy`.
   B. By focusing on numeric data, we ensured that our analysis remained straightforward and that all metrics could be calculated effectively without the noise introduced by categorical variables.

3. Calculating Key Metrics:
   To understand account performance, we calculated several important metrics:
   A. PnL (Profit and Loss): This is the sum of realized profits for each account, giving us a clear picture of profitability.
   B. ROI (Return on Investment):

$$ROI = \left(\frac{Total\ PnL}{Total\ Investment} \right) \times 100\%$$

C Sharpe Ratio: This tells us how much return we're getting per unit of risk.

D MDD (Maximum Drawdown): We looked at the largest decline in profits, helping us understand risk exposure.

E Win Rate: This metric shows the percentage of trades that were profitable.

F Total Positions: Simply the total number of trades executed.

4. Normalizing the Metrics:

A. To make sure we could compare different metrics fairly, we applied MinMax scaling to normalize their values between 0 and 1. This helps to ensure that no single metric unfairly influences the rankings.

B. For MDD, we inverted the values (1 MDD) since lower values are better.

5. Creating a Weighted Scoring System:

To rank the accounts, we assigned weights to each metric based on their importance:

A. PnL: 30%

B. ROI: 25%

C. Sharpe Ratio: 25%

D. Win Rate: 15%

E. Total Positions: 5%

We then calculated an overall score for each account by combining the normalized metrics with their respective weights.

6. Ranking the Accounts:

Finally, we ranked the accounts based on their overall scores, identifying the top performers.

Findings

Our analysis revealed that the topranked accounts generally:

A. Achieved higher PnL, indicating they are more profitable.

B. Had impressive ROI values, showing they effectively utilized their capital.

C. Exhibited stronger Sharpe Ratios, suggesting better riskadjusted returns.

D. A trend emerged where accounts with higher win rates also tended to score better overall, emphasizing the importance of consistent, profitable trading.

Assumptions

1. Data Quality: We assumed that the data was largely accurate and reliable, aside from any issues we addressed during preprocessing.
2. Market Consistency: We believed that past trading patterns might reflect future performance under similar market conditions.
3. Weight Assignments: The weights assigned to each metric were based on our judgment of their importance and could significantly impact rankings.
4. Statistical Validity: We treated the results as statistically significant, meaning we believed the metrics truly reflected performance rather than random variations.

Conclusion

In summary, this analysis provided valuable insights into trading account performance by calculating and ranking various financial metrics. By removing categorical columns, we were able to focus on the numeric data essential for our calculations, ensuring our analysis remained clear and effective. Our methodology ensured that we considered both profitability and risk, creating a comprehensive overview of how each account is performing. Looking ahead, there's potential to explore different weighting strategies or add more metrics for an even deeper understanding of trading performance.