Trader Behavior vs Market Sentiment
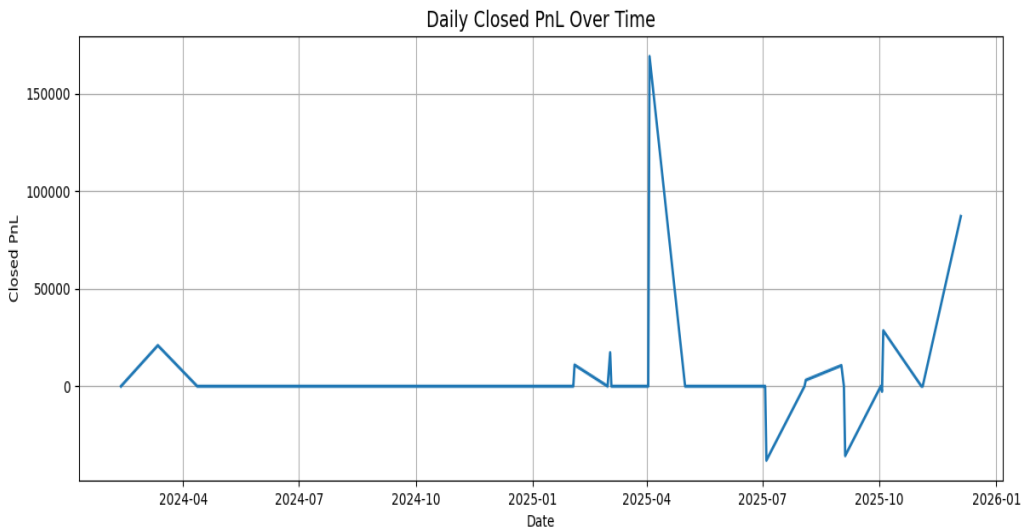# Short Analysis Report
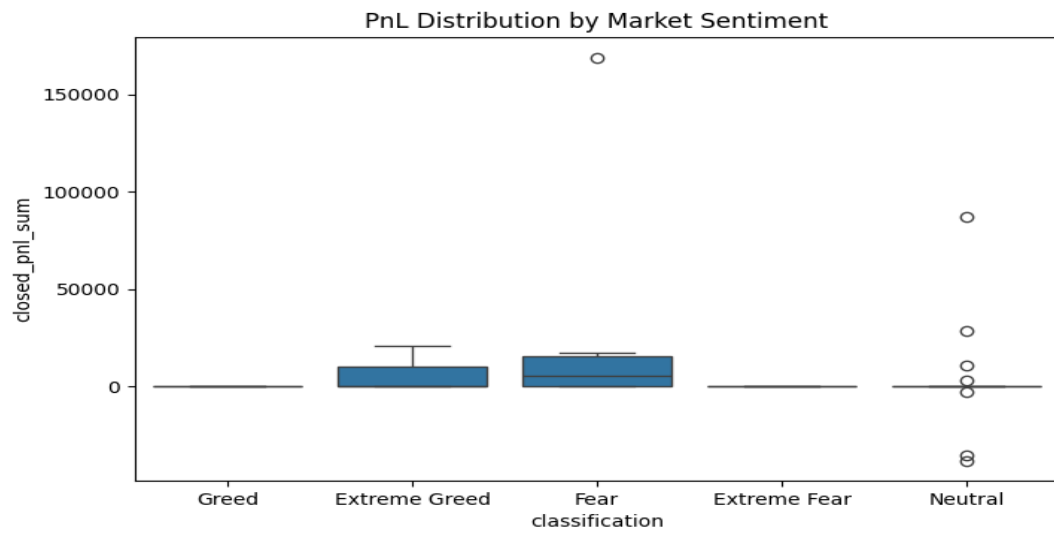
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1. Overview

This short report provides a concise analysis of the relationship between Hyperliquid trader behavior and market sentiment derived from the Fear & Greed Index. The study covers key EDA insights, model behavior, and a brief trader clustering summary.
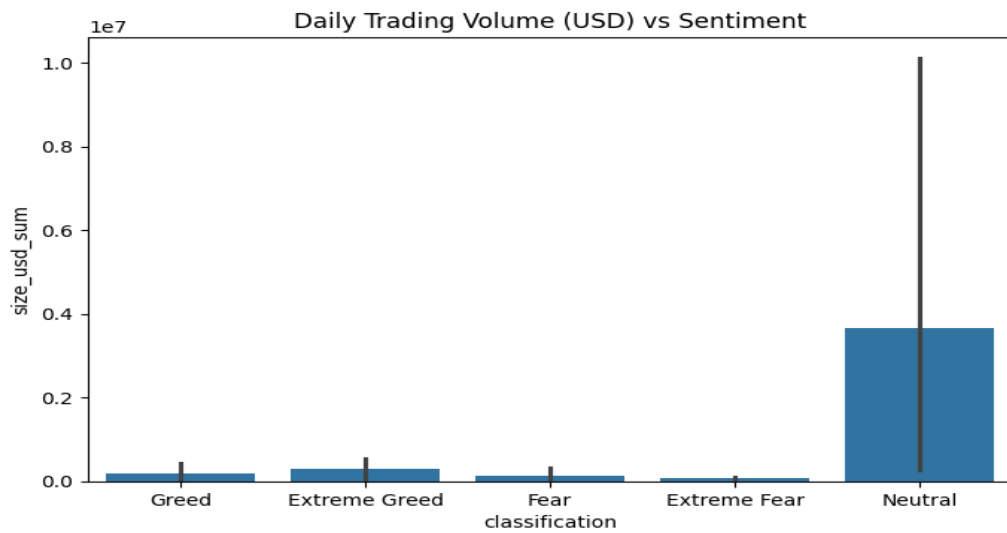
2. Exploratory Data Analysis

Daily Closed PnL Over Time

PnL Distribution by Sentiment

PnL Distribution by Market Sentiment

Trading Volume vs Sentiment

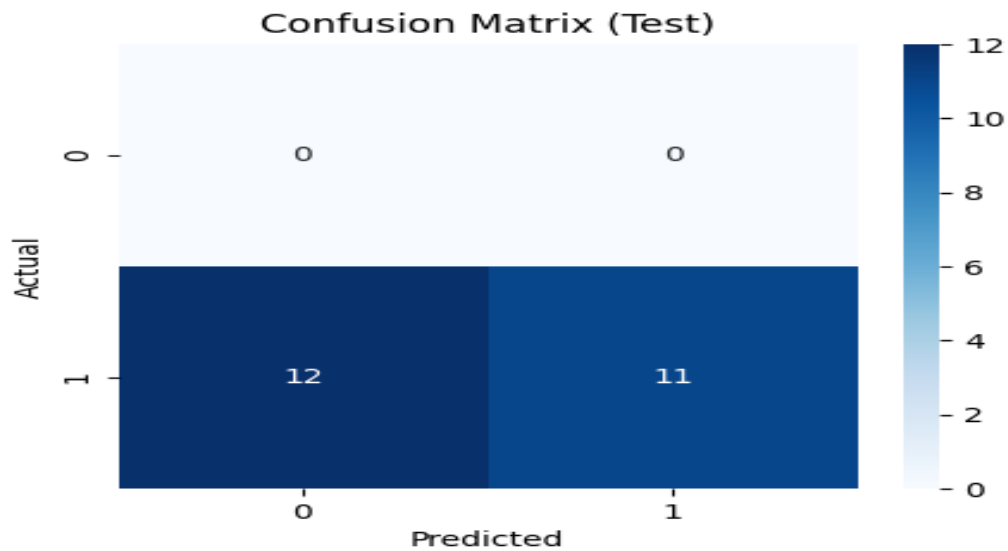Daily Trading Volume (USD) vs Sentiment

Fear days observed the largest PnL spikes, while Neutral days generated unusually high trading volume. Greed-related phases showed lower volatility overall.
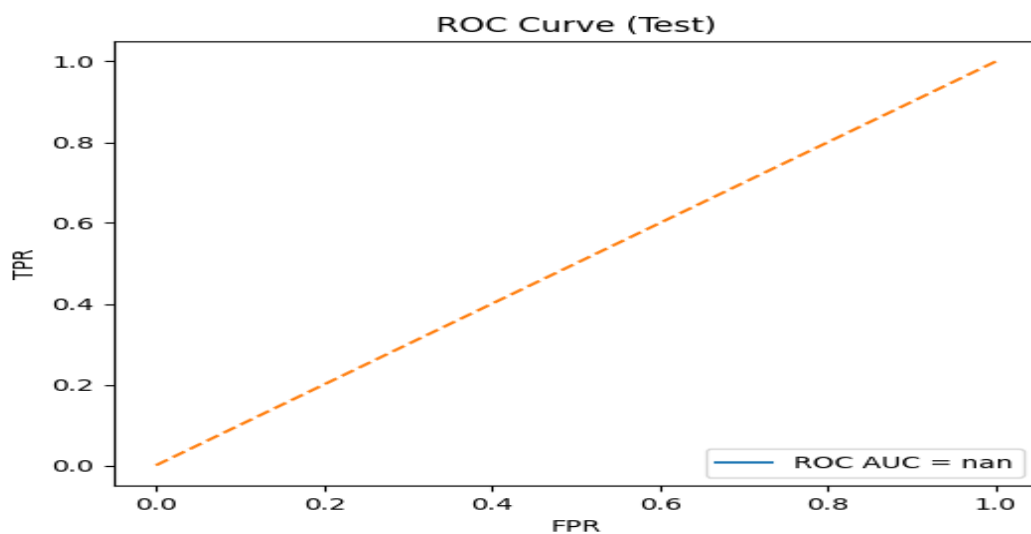
3. Predictive Modeling Summary

A RandomForest model was used to predict next■day sentiment. Due to strong class imbalance and limited data, the model predicted only the majority class (Greed), resulting in poor classification performance.
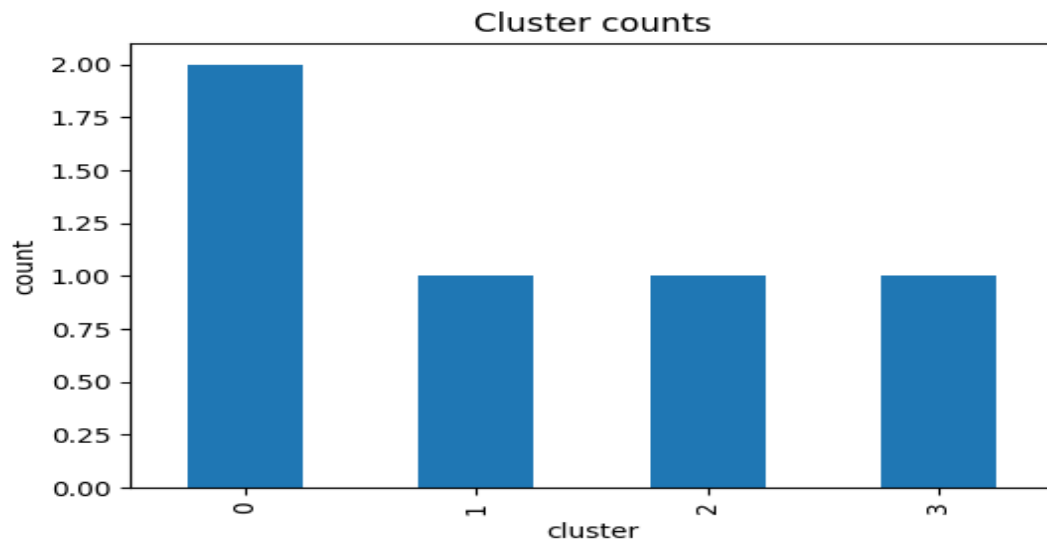
Confusion Matrix

ROC Curve

The ROC curve shows no separation capability because the model outputs only one class. Better results require additional features such as price volatility, market depth, and longer historical data.
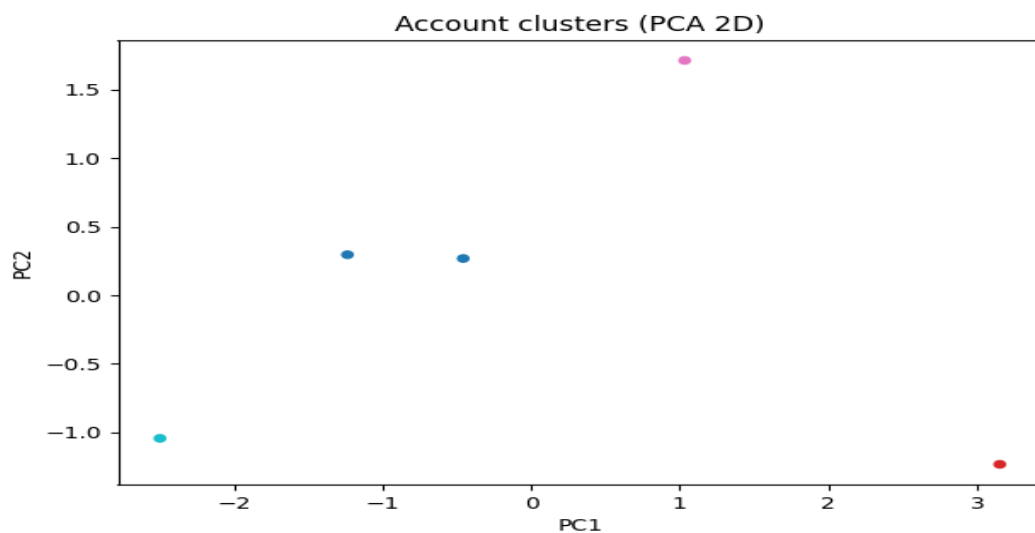
4. Trader Clustering Summary

KMeans clustering was used to segment trader accounts based on activity levels, volume, and profitability. Although the dataset is small, clusters displayed distinct trading styles.

Cluster Counts

PCA Cluster Visualization

Cluster separation highlights that each trader follows a unique behavior pattern, especially in such a small sample. Larger datasets would provide deeper insights.

5. Conclusion

The analysis shows that sentiment influences trading behavior, especially volume and profitability spikes. However, trading metrics alone are insufficient to predict sentiment reliably. Enhanced datasets and market signals are recommended for future work.