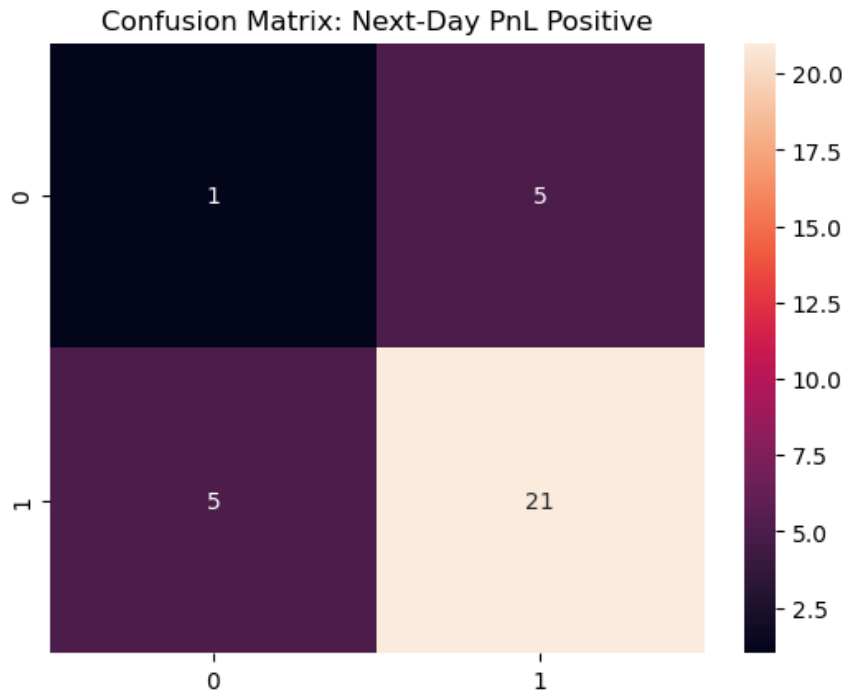
Trading Strategy Analysis Report

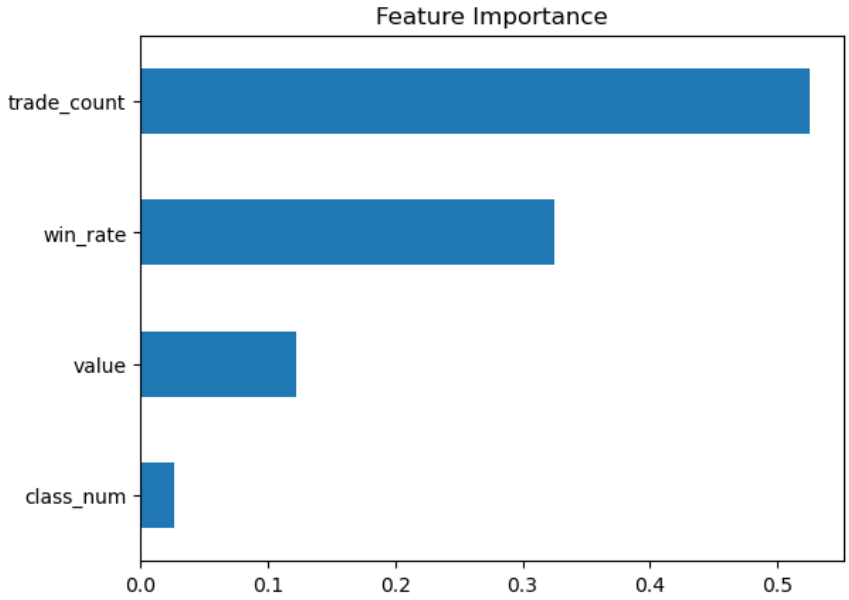
1. Classification Performance: Next-Day PnL Prediction

The confusion matrix reveals a model that performs reasonably well in identifying positive next-day PnL, correctly classifying 21 positive instances out of 26. However, it struggles with negative class predictions, with 5 false positives and 5 false negatives. This highlights an imbalance or lack of separation in the feature space.



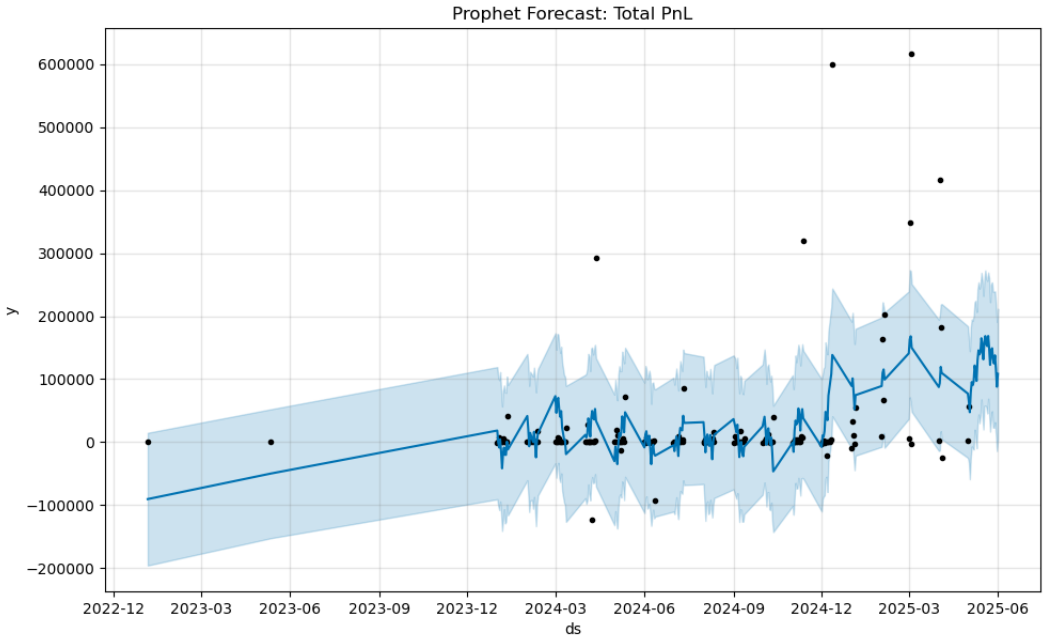
2. Feature Importance Analysis

Among all the features used for classification, 'trade_count' is the most influential, followed by 'win_rate'. Features like 'value' and 'class_num' contribute relatively less to the model. This suggests that trading volume and consistency are stronger predictors of next-day PnL.



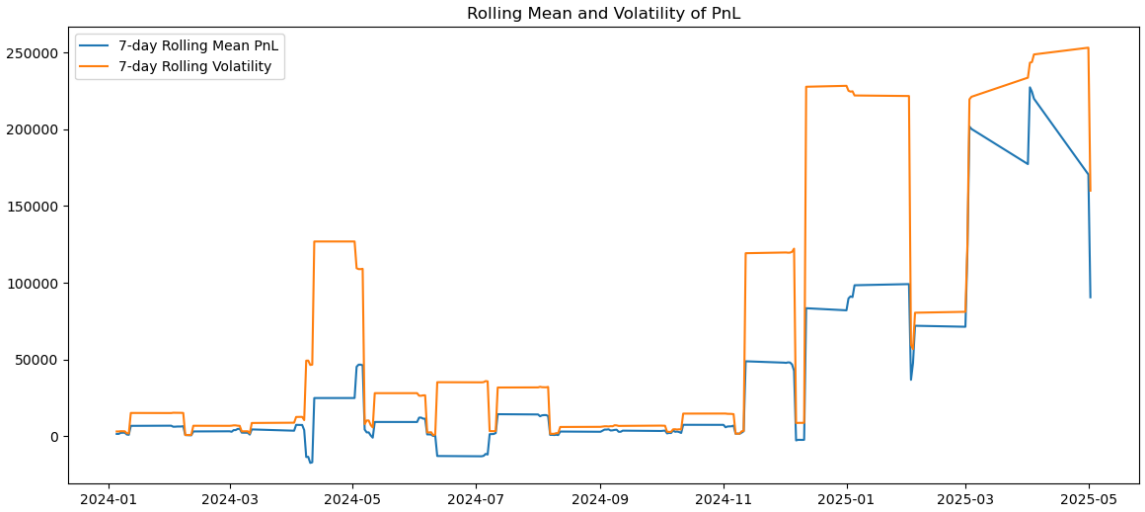
3. Forecasting Total PnL Using Prophet

The Prophet forecast model shows a general upward trend in total PnL with increasing variability over time. The confidence intervals widen as we move into the future, suggesting higher uncertainty, possibly due to market volatility or inconsistent trader behavior.



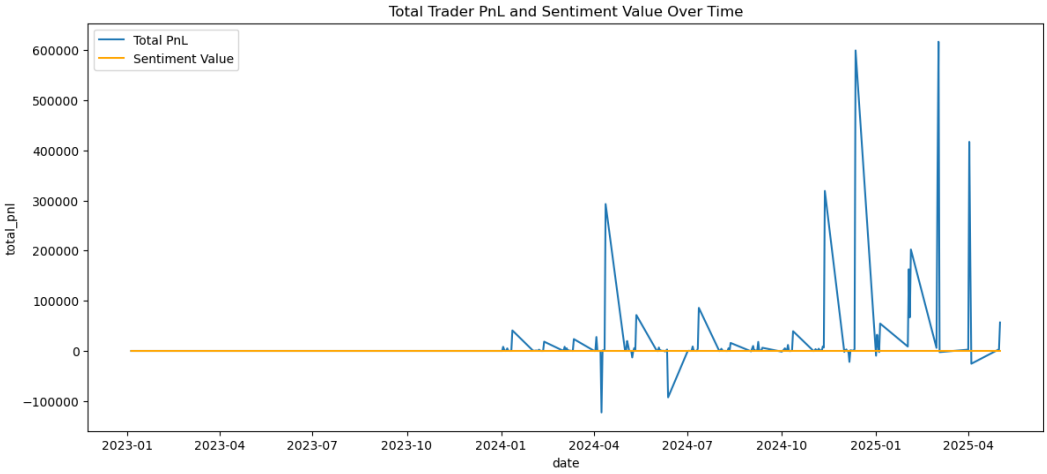
4. Rolling Mean and Volatility of PnL

The 7-day rolling mean and volatility of PnL show periods of sharp fluctuations, particularly in Q1 and Q2 of 2025. These spikes indicate trading anomalies or heightened market reactions. Periods of low volatility align with stable PnL trends.



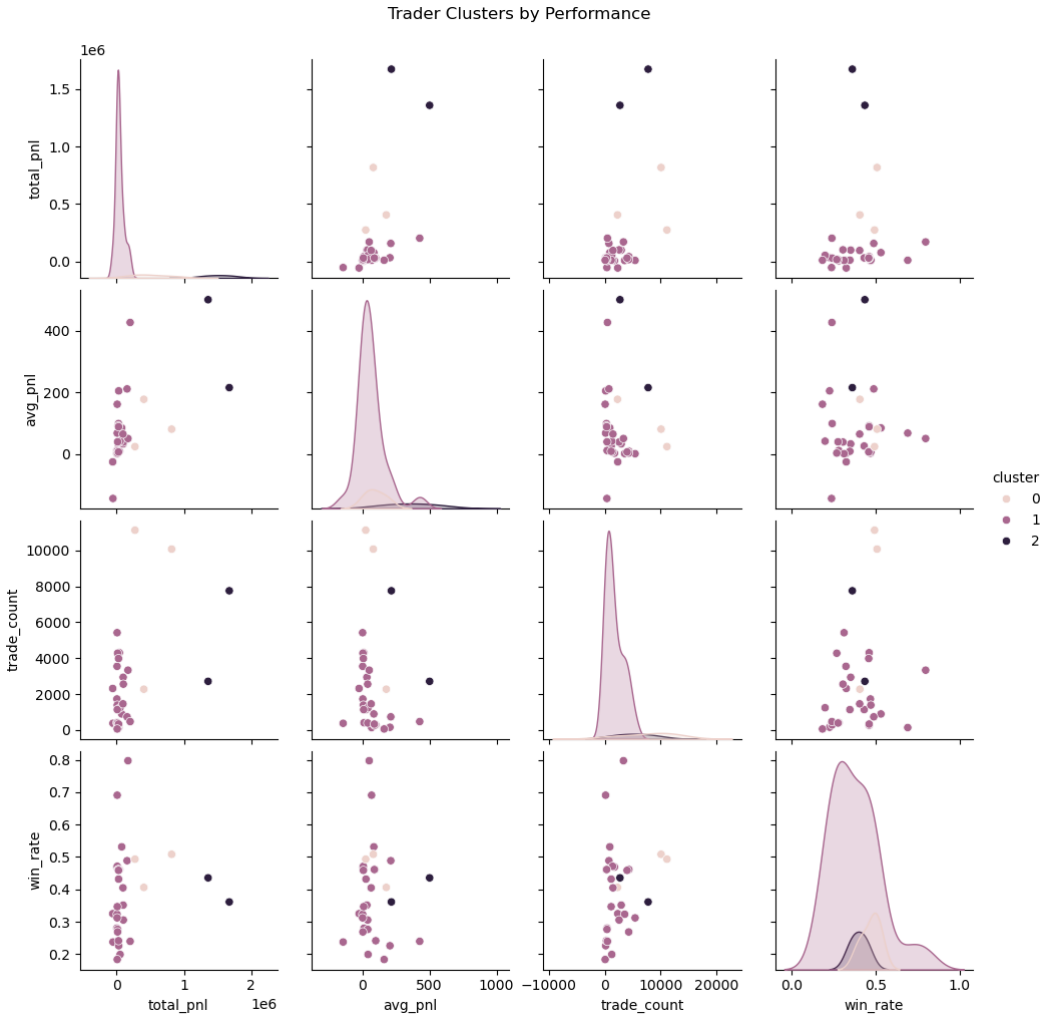
5. Sentiment and Total PnL Correlation Over Time

While sentiment value remains largely flat, total PnL exhibits significant variability, indicating weak correlation over time. This implies that trader PnL is not strongly driven by sentiment score trends alone and may depend more on behavioral or strategy-based factors.



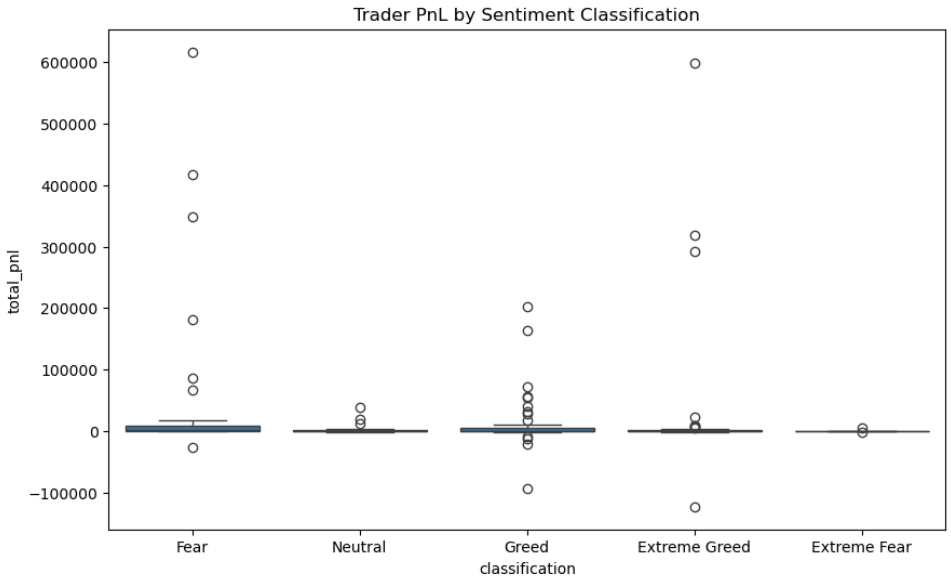
6. Clustering Traders by Performance

Traders can be grouped into three performance clusters based on total PnL, trade count, average PnL, and win rate. The high-performing cluster is distinct in both total and average PnL, while lower-performing clusters overlap significantly.



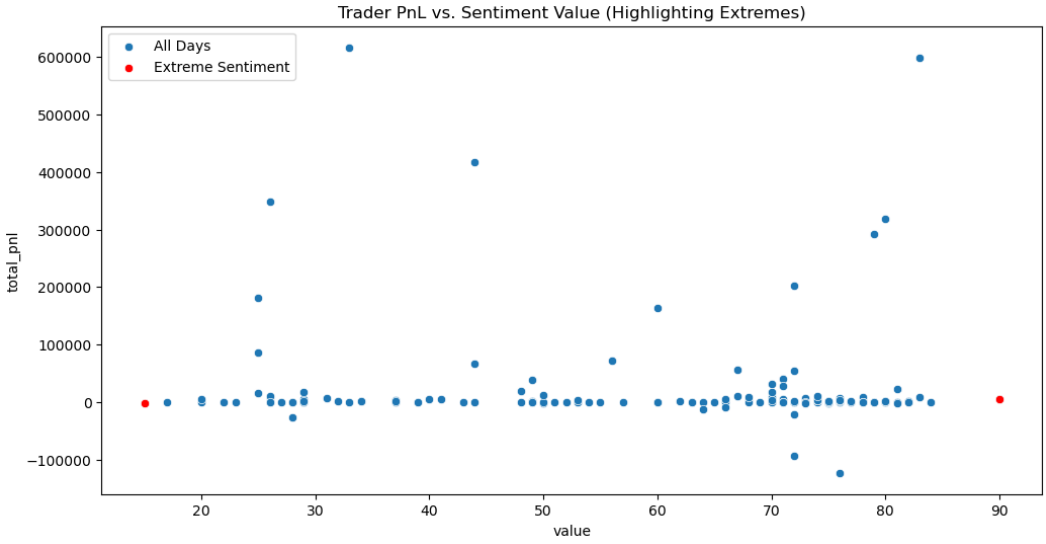
7. Trader PnL by Sentiment Classification

The box plot reveals that 'Fear' and 'Greed' classifications associate with a wider range of trader PnL values. Extreme sentiment states like 'Extreme Greed' and 'Extreme Fear' generally correlate with low or negative PnL.



8. Trader PnL vs. Sentiment Value (with Extremes Highlighted)

Red dots indicate days with extreme sentiment. There is no strong concentration of high PnL on these days, reinforcing the observation that extreme sentiment does not significantly correlate with higher profitability.



9. Trader Win Rate by Sentiment Classification

Median win rates are relatively similar across all sentiment categories, with slightly lower medians under 'Extreme Fear'. Overall, this suggests limited predictive power of sentiment classification for win rates.

10. Insights & Next Steps

1. Key Findings from Your Analysis Weak Correlation: The correlation between sentiment and trader PnL is weak (as shown in your correlation matrix). No Significant Difference: ANOVA suggests no significant difference in mean PnL between sentiment classes. Predictive Power: Random Forest models show low predictive power (negative R^2 for regression, moderate accuracy for classification). Trader Clusters: KMeans reveals distinct trader performance groups, which could be further profiled. Rolling Analysis: Rolling mean and volatility plots help identify periods of high/low performance and risk.

2. Suggestions to Uncover Hidden Patterns Lagged Sentiment Effects: Test if sentiment values from previous days (lags) better predict trader performance. Nonlinear Relationships: Try more advanced models (e.g., XGBoost, LSTM) or feature engineering (e.g., sentiment momentum). Segmented Analysis: Analyze by trader type, coin, or market regime (bull/bear). Extreme Sentiment: Focus on periods of extreme fear/greed to see if they correspond to outsized trader gains/losses. Event Analysis: Overlay major market events/news with sentiment and performance.

3. Actionable Insights for Smarter Trading Risk Management: Use rolling volatility to adjust position sizing during high-risk periods. Contrarian Strategies: If extreme sentiment occasionally precedes reversals, consider contrarian trades. Cluster-Based Strategies: Tailor strategies for different trader clusters (e.g., high win-rate vs. high volume).