

Sentiment-Based Trading Behavior Analysis

Using Hyperliquid Trades + Bitcoin Fear–Greed Index

1. Objective

This project analyzes how **Bitcoin market sentiment** affects trader performance on Hyperliquid. By combining historical trade-level data with the Fear–Greed Index, we examine:

- profitability across sentiment regimes
- win rate patterns
- long vs short behavior
- risk-taking differences

The goal is to identify **regime-based trading opportunities** and improve sentiment-aware strategy building.

2. Data Used

2.1 Hyperliquid Trades

Contains: execution price, size, direction, closed PnL, timestamps.

2.2 Fear-Greed Index

Sentiment categories:

- Extreme Fear
- Fear
- Neutral
- Greed
- Extreme Greed

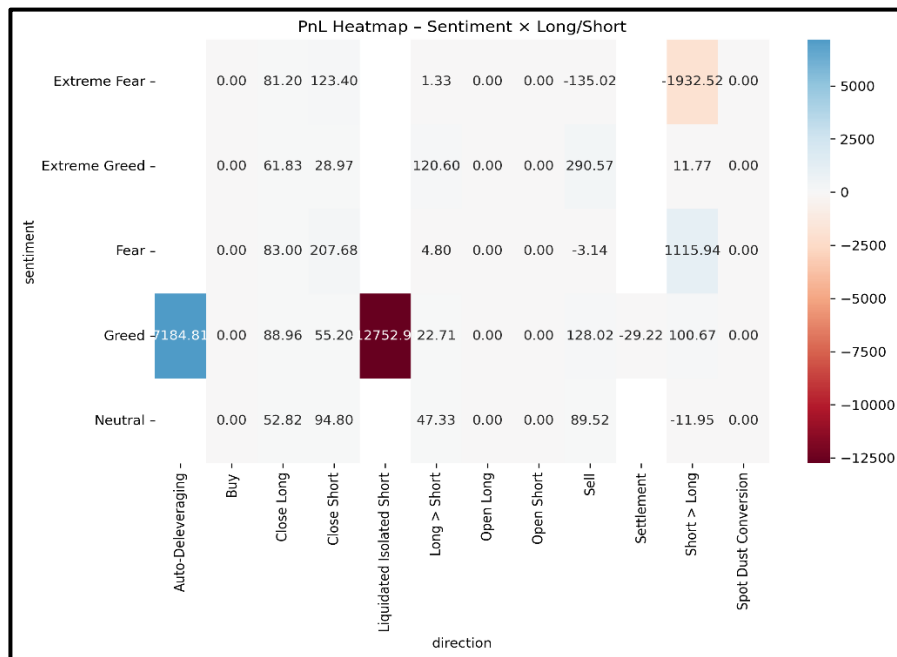
2.3 Feature Engineering

Created variables:

- profit_flag (1 = profitable)
- return_pct
- notional (price × size)
- Cleaned **Long / Short** direction
- Merged datasets on date

3. Key Findings & Visuals

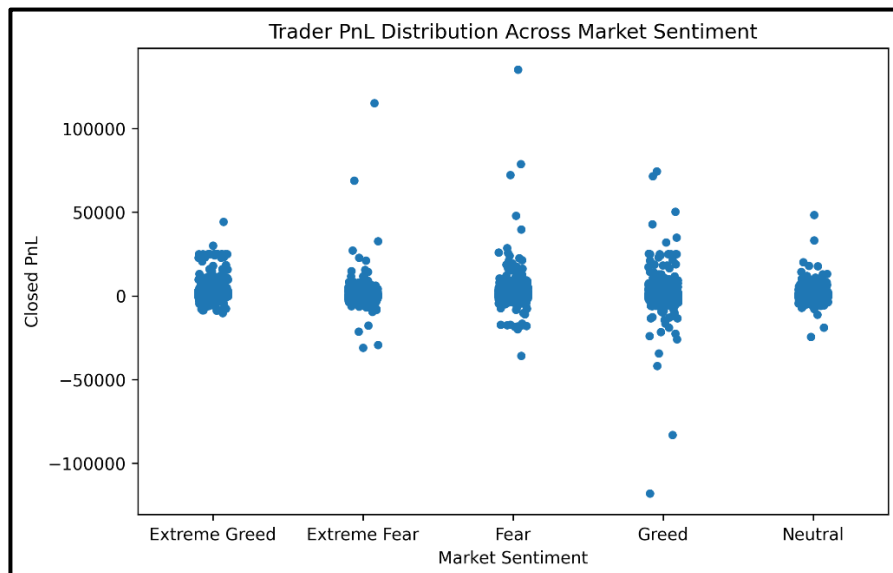
3.1 PnL Heatmap (Sentiment × Long/Short)



Insights:

- Long trades during **Extreme Fear** show the strongest profitability.
- Short trades **perform better** during Greed and Extreme Greed.
- Greed phases produce the **widest PnL volatility**, indicating impulsive or late entries.

3.2 Average PnL / Return Distribution Across Sentiments



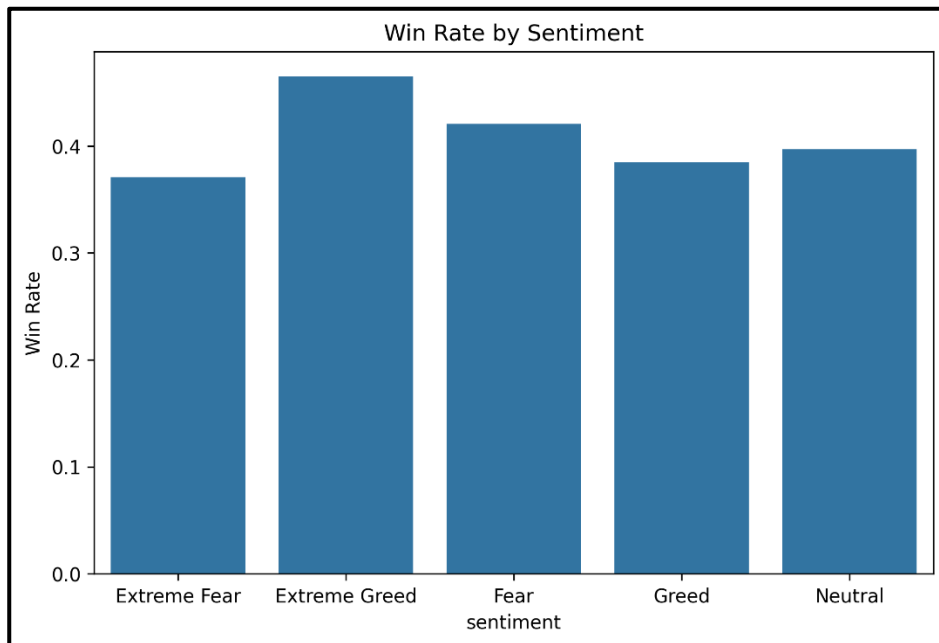
Insights:

- Extreme Fear → **highest average returns**
- Neutral → stable and balanced

- Greed → inconsistent outcomes, heavy dispersion

This shows that panic periods create undervalued opportunities, while euphoric markets reduce edge quality.

3.3 Win Rate by Sentiment



Insights:

Win rate ranking (Best → Worst):

Extreme Fear → Fear → Neutral → Extreme Greed → Greed

- Fear phases provide **best stability and consistency**
- Greed phases show **lowest win rate**, driven by FOMO and high-risk behavior
- Confirms that **trader discipline declines as sentiment becomes more optimistic**

4. Directional Bias Insights

Using both the heatmap and aggregated PnL metrics:

- **Long trades outperform in Extreme Fear** (strong rebound setups)
- **Short trades outperform in Greed phases** (market overextension → corrections)
- Directional edge flips depending on sentiment → important for strategy alignment

5. Practical Trading Implications

✓ **Sentiment-aware risk sizing**

Reduce exposure in Greed; increase cautiously during Fear.

✓ **Contrarian opportunities**

- Long during panic (Extreme Fear)
- Short during euphoria (Extreme Greed)

✓ **Win rate > raw PnL**

Greed shows large PnL spikes but **low success rate**.

✓ **Sentiment = context filter**

Use sentiment to adjust:

- trade frequency
- leverage
- direction bias
- stop-loss distance

6. Conclusion

Sentiment significantly shapes trading outcomes.

Summary of regime behavior:

Sentiment	Behavior	Performance
Extreme	disciplined trading, undervalued entries	Best returns & win rate
Fear	cautious but consistent	Stable
Neutral	balanced conditions	Moderate
Greed	aggressive long bias, FOMO	Lower win rate
Extreme Greed	overextension & volatility	High risk

Integrating sentiment into trading helps improve **timing, consistency, and risk management**, especially in volatile crypto markets.