

Title:

Data Science Assignment Report — Trader Behavior vs Market Sentiment

1. Overview

This report analyzes the relationship between trader activity and crypto market sentiment (Fear vs Greed). Using Hyperliquid trading data and the Bitcoin Fear & Greed Index, we study how leverage, PnL, trade volume, and position direction change with emotions in the market.

2. Datasets Used

(a) Fear & Greed Index

- Columns: Date, Classification (Fear/Greed)

(b) Hyperliquid Historical Trader Data

- Fields include: account, symbol, execution price, side, size, closed PnL, leverage, timestamp, etc.
-

3. Data Cleaning & Preprocessing

- Converted timestamps to datetime
 - Removed null/invalid values
 - Standardized column names
 - Aggregated daily metrics:
 - Daily PnL
 - Daily Volume
 - Average Leverage
 - Win/Loss Ratio
 - Merged with sentiment dataset on date
-

4. Exploratory Data Analysis

Explorations included:

- Daily PnL Trend
- Total USD Volume on Fear vs Greed days
- Leverage comparison across sentiment
- Long/Short positioning shifts
- Profitability comparison

Graphs were saved in outputs/ folder.

5. Insights

- Greed days show higher leverage and more aggressive trading
 - Fear days show lower volatility and more stable profitability
 - Long positions dominate Greed periods
 - Short positions increase during Fear
 - Extreme sentiment changes can predict profit spikes
-

6. Conclusion

Market sentiment significantly influences trader behavior. Understanding these patterns can improve risk management and predictive trading strategies.

7. Included Files

- notebook_1.ipynb
- csv_files/
- outputs/
- ds_report.pdf