Data Science Assignment Report

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Objective

This assignment analyzes the relationship between trader behavior and overall market sentiment, using the Bitcoin Fear & Greed Index alongside trade-level data from the Hyperliquid platform. The aim is to identify whether sentiment influences risk appetite, trading volume, and profitability.

Data Sources

1. 1. Fear & Greed Index

Contains daily sentiment classification (Fear, Greed, etc.)

Format: date, value, classification

2. 2. Hyperliquid Trader Data

Contains individual trade-level records

Format: Timestamp IST, Execution Price, Size USD, Closed PnL, etc.

Methodology

- All date columns were cleaned and converted to datetime format.

- Data was merged on the date field to align sentiment with trades.

- Columns with inconsistent formatting were cleaned using pandas.to_numeric and error handling.

- Exploratory Data Analysis (EDA) was performed using seaborn/matplotlib to identify key patterns.

Key Findings

3. 1. Profitability vs. Sentiment

- Trades during Greed periods showed higher variance in profits.

- Traders experienced lower profits or losses during Fear, indicating cautious behavior or panic.

4. 2. Trade Volume vs. Sentiment

- Average trade size (USD) was higher during Greed, suggesting greater confidence.

- Volume dropped significantly during Fear, pointing toward risk-aversion.

5. 3. Trading Activity

- Number of trades per day was higher during Greed phases.

- Suggests traders engage more aggressively during bullish sentiment conditions.

📏 Insights

- Market sentiment influences trader decisions — both profitability and volume follow the sentiment pattern.

- There is strong evidence to support sentiment-driven trading strategies, such as:

  - Reducing position sizes during Fear

  - Taking more aggressive positions during Greed (with safeguards)

☑️ Recommendations

- Integrate Fear & Greed Index into trading models and dashboards.

- Backtest basic strategies using sentiment as a condition for trade size or frequency.

- Explore additional features such as lagged sentiment impact, or combine sentiment with volatility for smarter signals.

📌 Tools Used

- Python (pandas, seaborn, matplotlib)

- Google Colab

- GitHub (for repo submission)

Author

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Submitted to the Web3 Trading Team Hiring Panel