Web3 Trading Team – Data Science Assignment

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Introduction

Cryptocurrency markets are highly volatile and strongly influenced by trader psychology. Market sentiment, particularly phases of **fear** and **greed**, plays a critical role in shaping trading behavior. Understanding how traders behave during different sentiment phases can help improve risk management and trading strategies.

This project analyzes the relationship between **Bitcoin market sentiment (Fear vs Greed)** and **trader behavior** using historical trading data from the Hyperliquid platform.

Datasets Used

Bitcoin Market Sentiment Dataset:

This dataset provides daily sentiment classification of the Bitcoin market.

Key Columns:

- Date

- Classification (Fear / Greed

Hyperliquid Historical Trader Data:

This dataset contains detailed trade-level information.

Key Columns Used:

- Timestamp IST

- Size USD

- Closed PnL

Methodology

1. **Data Cleaning**

   o Converted timestamp and date columns into datetime format.

   o Handled inconsistent date formats during parsing.

2. **Data Integration**

   o Merged trader data with sentiment data using trade date as the common key.

3. **Feature Engineering**

   o Created a profitability indicator (is_profitable).

   o Used USD trade size as a proxy for trading volume.

   o Calculated absolute profit and loss values.

4. **Exploratory Data Analysis**

   o Compared profitability, trading volume, and win rate across fear and greed peri

Trading Volume Behavior

- Trading volume is generally higher during greed phases.

- During fear phases, traders tend to reduce exposure and trade more cautiously.

Win Rate Analysis

- The percentage of profitable trades differs across sentiment phases.

- Increased trading activity during greed does not always result in higher success rates, suggesting possible overtrading.

Trading Implications

- **Risk Awareness:** Traders should be cautious during greed phases due to increased risk-taking.

- **Contrarian Strategy:** Fear-driven markets may present opportunities for disciplined traders.

- **Sentiment-Based Signals:** Combining sentiment indicators with technical strategies can improve trading decisions.

Limitations

- Market sentiment is simplified into binary categories (fear/greed).

- External factors such as macroeconomic news are not included in the analysis.

Conclusion

The analysis highlights a clear relationship between market sentiment and trader behavior. By incorporating sentiment-aware insights, traders can better manage risk and avoid emotionally driven decisions. This study demonstrates how sentiment analysis can enhance trading strategy design in crypto markets.