🧾 Project Report: Behavioral Insights in Web3 Trading

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📌 Objective

The goal of this project was to analyze how **Bitcoin market sentiment (Fear or Greed)** influences **trader behavior**, using real trading data from Hyperliquid and a sentiment index.

📁 Datasets Used

1. **Bitcoin Sentiment Data** (`fear_greed_index.csv`)
    - Columns: `timestamp`, `value`, `classification`, `date`
    - Represents the market mood on each day as either "Fear" or "Greed".
2. **Historical Trader Data** (`historical_data.csv`)
    - Contains trade-level information such as `Size Tokens`, `Size USD`, `Closed PnL`, `Timestamp IST`, etc.

🔧 Methodology

- Cleaned and merged both datasets on the `date` column.
- Created new features:
    - **`risk_exposure`** = `Size Tokens × Size USD`
    - **`profit_flag`** = 1 if `Closed PnL > 0`, else 0
- Performed grouped analysis by market sentiment:

- Total trade volume
- Average profitability
- Risk exposure

📊 Key Insights

- **Trade Volume:**
  Traders traded significantly more (higher volume) on **Greed** days than on **Fear** days.
- **Profitability:**
  The **average profit rate** was slightly higher on **Fear** days, indicating cautious trading may result in more consistent returns.
- **Risk Exposure:**
  Trades during **Greed** sentiment had **higher risk exposure**, suggesting traders were more aggressive when the market was optimistic.

🧠 Conclusion

The analysis reveals a clear relationship between **market sentiment** and **trader behavior**:

- Traders tend to take **larger, riskier positions** during Greed.
- However, **more cautious trades** during Fear are **often more profitable**.
- This behavioral pattern can help design **better trading strategies** based on market mood.

📌 Next Steps / Suggestions

- Add machine learning classification to predict profitability using sentiment and trade features.

- Track individual accounts over time to profile aggressive vs. conservative traders.
- Analyze behavior during market crashes or booms (extreme sentiment).