Title: Analysis of Trader Behavior vs Market Sentiment
Author: Yash Yadav
Role: Data Science Intern Applicant
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1. Objective

The goal of this project is to understand how trader behavior—specifically in terms of trade volume, profit & loss, and direction—correlates with overall market sentiment (Fear vs Greed), using two datasets: historical trader data and the Bitcoin Fear & Greed Index.

2. Datasets Used

- **Historical Trader Data** from Hyperliquid
    - Key fields: `Execution Price`, `Size USD`, `Side`, `Closed PnL`, `Timestamp IST`
- **Fear & Greed Index**
    - Key fields: `Date`, `Classification` (Fear, Greed, Neutral)

3. Methodology

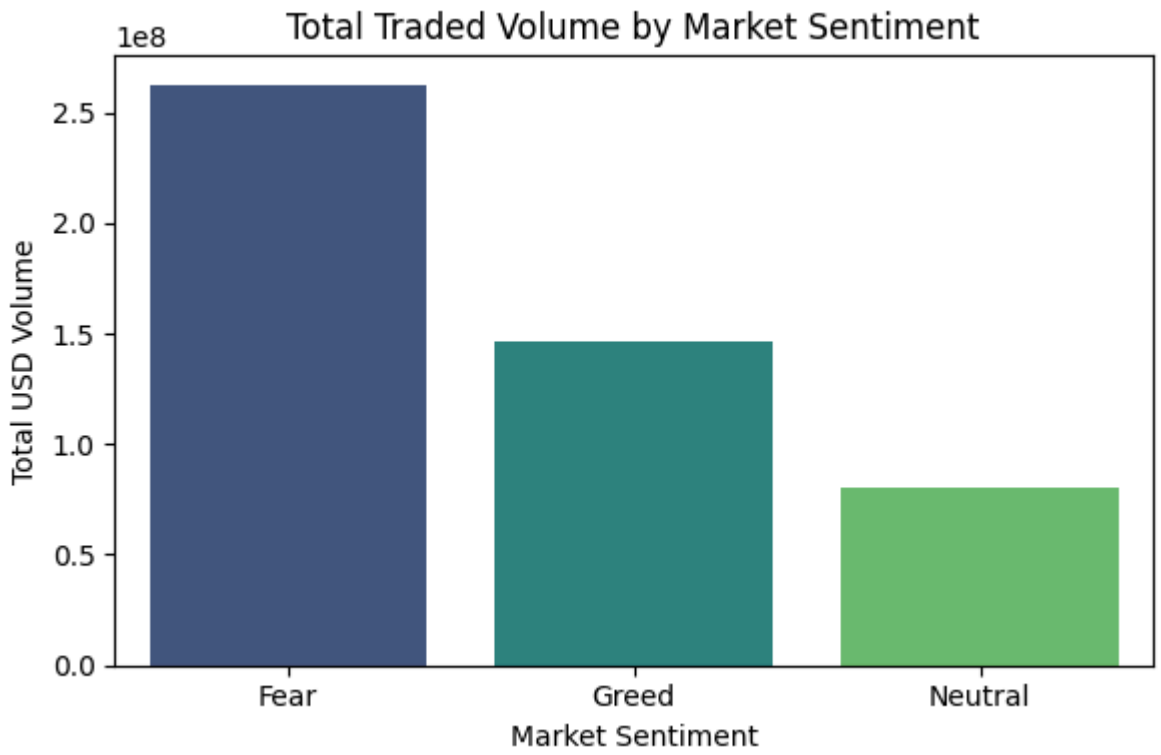
- Parsed and cleaned both datasets
- Merged them on date for alignment
- Simplified classifications (`Extreme Fear` → `Fear`, `Extreme Greed` → `Greed`)
- Conducted EDA using Python (Pandas, Seaborn, Matplotlib)
- Analyzed:
    - Trade Volume
    - Profitability (Closed PnL)
    - Buy/Sell Side Distribution

4. Key Findings

📊 Trade Volume by Sentiment

- **Highest volume during Fear**, suggesting reactive or panic-driven trading behavior
- Volume during Greed is lower, and lowest in Neutral conditions

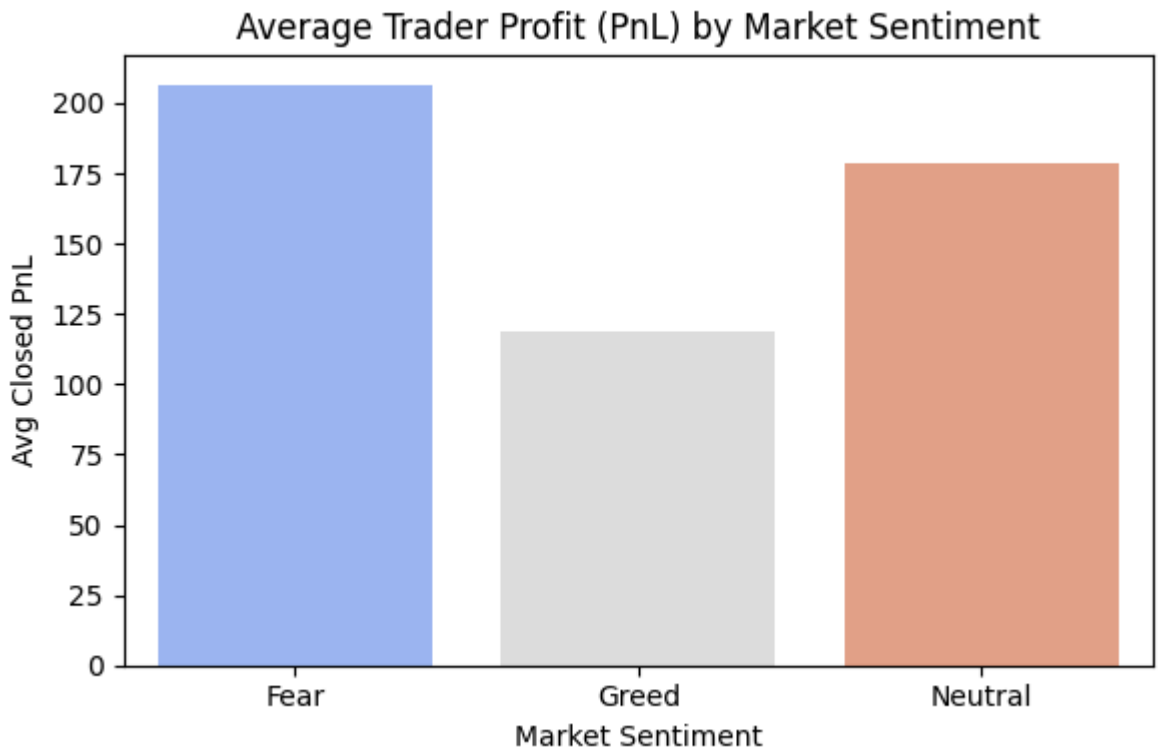
See: `volume_by_sentiment.png`



💰 **Profitability (PnL) by Sentiment**

- **Fear periods had highest average profit per trade** (~206 units)
- **Greed periods saw lowest profitability** (~118 units), suggesting riskier or overconfident behavior

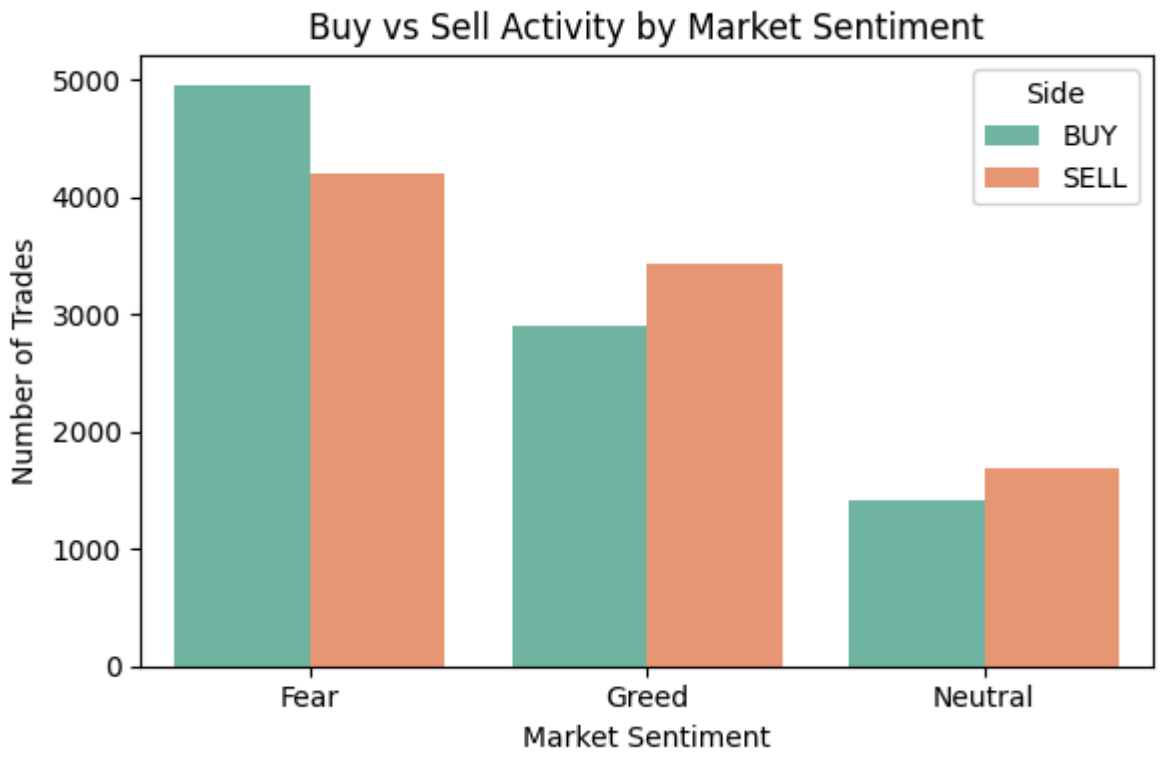
See: `avg_pnl_by_sentiment.png`



🔄 **Buy vs Sell Activity**

- **BUY trades dominate during Fear**
- **SELL trades dominate during Greed**, indicating profit-taking

See: `side_by_sentiment.png`



5. Limitations

- The dataset lacked `leverage` or `risk` indicators
- Assumed sentiment classification applies uniformly to all traders on a given date

6. Conclusion

This analysis shows that:

- Traders tend to be **more active and profitable during Fear**
- **Greed may lead to less disciplined trading**
- Sentiment-driven analysis could inform better timing and risk management in trading strategies

7. Tools Used

- Google Colab, Python 3
- Libraries: Pandas, Seaborn, Matplotlib