Data Science Assignment Report

❖ Introduction

This analysis explores the relationship between trader behavior (profitability, risk, volume, and trade direction) and market sentiment (Fear vs Greed). Two datasets were used: Historical Trader Data and the Bitcoin Fear & Greed Index.

❖ Methodology

1. Cleaned and standardized both datasets. 2. Converted timestamps into comparable daily dates. 3. Merged trader data with sentiment labels. 4. Performed exploratory data analysis (EDA) including PnL, trade size, risk (volatility), and side distribution. 5. Generated visualizations and summarized insights.

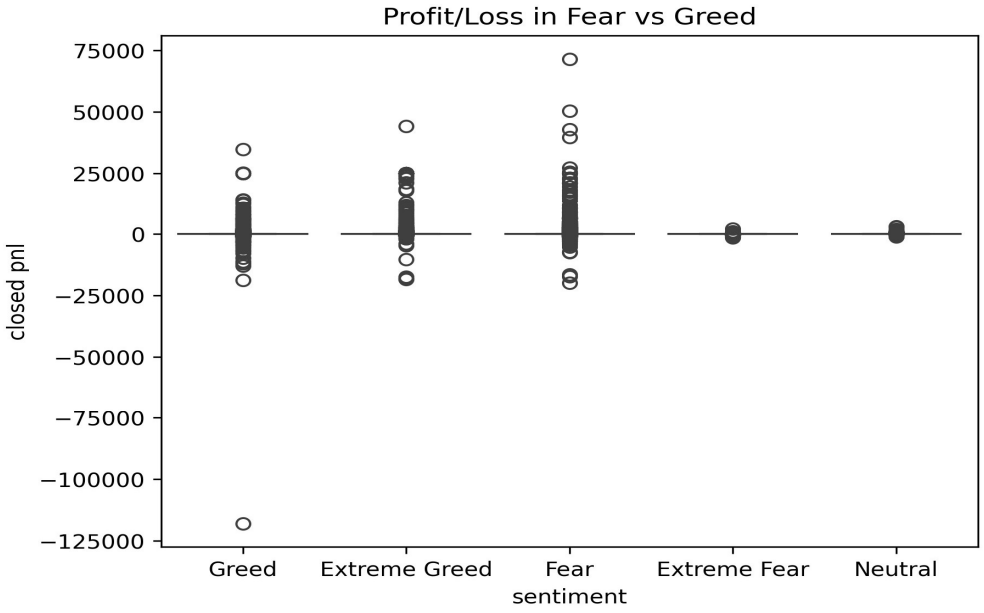
❖ Findings

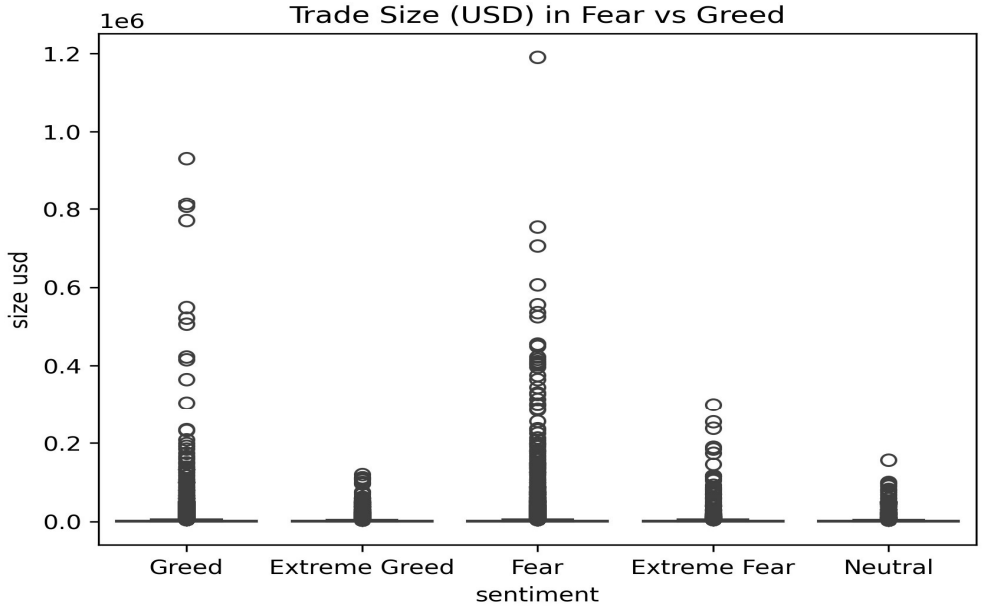
Average Profit/Loss by Sentiment:

Extreme Fear: 1.89
Extreme Greed: 205.82
Fear: 128.29
Greed: 53.99
Neutral: 27.09

Risk (Volatility of PnL) by Sentiment:

Extreme Fear: 76.73
Extreme Greed: 1861.56
Fear: 1342.35
Greed: 1399.47
Neutral: 142.95


Profit/Loss in Fear vs Greed
75000
50000
25000
0
−25000
−50000
−75000
−100000
−125000
closed pnl
Greed
Extreme Greed
Fear
Extreme Fear
Neutral
sentiment


Trade Size (USD) in Fear vs Greed
1e6
1.2
1.0
0.8
0.6
0.4
0.2
0.0
size usd
Greed
Extreme Greed
Fear
Extreme Fear
Neutral
sentiment

❖ Conclusion

The analysis indicates that trading behaviour varies with market sentiment. PnL distributions shift across Fear vs Greed, trade sizes are often larger during periods of Greed, and direction (long/short) preferences also change. Volatility (risk) tends to increase in more extreme sentiment conditions. These insights suggest that sentiment can be a valuable input in developing smarter trading strategies.

Note - The provided historical trader dataset did not include a leverage column, so leverage analysis could not be performed. Analysis focused on profitability, risk, trade volume, and trade direction.