

Project Report: Sentiment Analysis and Market Behaviour Insights

Project Overview

This project analyzes historical trading data along with market sentiment indicators to understand how trader behavior changes with market moods. By combining trader transaction data and the Fear & Greed Index, the project provides actionable insights for trading strategies and risk management.

Data Sources

- **Historical Trader Data:** historical_trader_data.csv
- **Sentiment Index Data:** fear_greed_index.csv
- **Summary Data:** summary_by_sentiment.csv
- **Visual Outputs:** Stored in outputs/ folder (.png images of charts)

Analysis Steps

1. **Data Cleaning and Preparation:**
 - Handled missing values and formatted data.
 - Combined trader data with sentiment indicators for analysis.
2. **Sentiment Categorization:**
 - Market sentiment classified as **Fear**, **Neutral**, or **Greed**.
3. **Exploratory Data Analysis (EDA):**
 - Analyzed average profit/loss by sentiment.
 - Visualized trading volume in USD for different sentiment categories.
 - Studied buy/sell activity trends according to market mood.
4. **Visualizations:**
 - **Average PnL by Sentiment:** Shows trader performance during fear, neutral, and greed periods.

- **Volume USD by Sentiment:** Highlights market participation during different sentiment states.
- **Buy/Sell Sentiment Chart:** Demonstrates how traders adjust their actions according to market sentiment.

Key Insights

- **Trader behavior is sentiment-driven:** Extreme sentiment (Fear or Greed) strongly influences trading volume and profit/loss.
- **Profitability trends:** Traders tend to incur losses during Fear periods and earn more during Greed periods.
- **Trading strategy implications:** Integrating sentiment analysis into trading models may improve timing of buy/sell decisions.
- **Risk management:** High-risk periods (Fear) indicate the need for cautious strategies to protect capital.

Conclusion

This project demonstrates the importance of market sentiment in influencing trader behavior. The analysis provides insights that can help develop sentiment-aware trading strategies, optimize trading decisions, and manage risk more effectively.