



Trader Behavior vs Market Sentiment Analysis

Junior Data Scientist Assignment - Web3 Trading Team



Candidate Information

- **Name:** [Your Full Name]
 - **Email:** [Your Email]
 - **Date:** October 28, 2025
 - **Position:** Junior Data Scientist – Trader Behavior Insights
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Project Overview

This assignment analyzes the relationship between **cryptocurrency trader performance** and **Bitcoin market sentiment** using:

1. Historical trader data from Hyperliquid (execution prices, PnL, leverage, positions)
2. Bitcoin Fear & Greed Index (market sentiment classification)

Objective: Uncover hidden patterns that can drive smarter trading strategies by understanding how trader behavior aligns or diverges from market sentiment.



Repository Structure

```
ds_[your_name]/
├── notebook_1.ipynb      # Main analysis notebook (Google Colab)
├── notebook_2.ipynb      # (Optional) Additional exploratory work
├── csv_files/            # Processed data and results
│   ├── pnl_by_sentiment.csv
│   ├── win_rate_by_sentiment.csv
│   ├── trader_profiles.csv
│   └── daily_metrics.csv
├── outputs/              # Visualizations and charts
│   ├── eda_overview.png
│   ├── sentiment_distribution.png
│   ├── pnl_by_sentiment.png
│   └── leverage_by_sentiment.png
```

```
| |— winrate_by_sentiment.png
| |— trader_clustering.png
| |— timeseries_analysis.png
|— ds_report.pdf          # Final report with insights
|— README.md             # This file
```

Links

Google Colab Notebooks

- **Main Analysis:** [Colab Link - notebook_1.ipynb]
- **Supplementary Work:** [Colab Link - notebook_2.ipynb]

GitHub Repository

- **Code Repository:** [GitHub Link]

Datasets

- **Historical Trader Data:** [Google Drive Link](#)
 - **Fear & Greed Index:** [Google Drive Link](#)
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Analysis Summary

Key Questions Explored

1. How does trader performance (PnL) differ between Fear and Greed markets?
2. Do traders use different leverage strategies based on sentiment?
3. What is the win rate correlation with market sentiment?
4. Can we identify distinct trader personas based on behavior patterns?
5. Are there temporal trends in trading volume and sentiment?

Methodology

1. **Data Cleaning & Preprocessing**
 - Converted timestamps to datetime
 - Handled missing values in critical columns
 - Removed duplicates

- Merged datasets on date