

# Web3 Trading Team

## Data Science Assignment Report

Candidate: Sajid

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### 1. Introduction

This report explores the relationship between trading behavior and overall market sentiment using two datasets: historical trader data from Hyperliquid and the Bitcoin Fear and Greed Index. The goal is to identify trends in profitability, volume, leverage, and trade direction during different sentiment phases.

### 2. Datasets Overview

#### 1. Bitcoin Market Sentiment Dataset

- Columns: `timestamp`, `value`, `classification`, `date`
- Captures daily sentiment as either **Fear** or **Greed**.

#### 2. Hyperliquid Trader Dataset

- Columns include: `Execution Price`, `Size USD`, `Side`, `Closed PnL`, `Direction`, `Timestamp IST`
- Represents anonymized trades across various market conditions.

### 3. Methodology

- Cleaned and standardized both datasets (dates, columns).
- Merged on the common `date` field.
- Performed EDA using visualizations (Seaborn, Matplotlib).
- Saved outputs to structured folders as required.

### 4. Key Findings

#### 1. Sentiment Distribution

Fear and Greed classifications are nearly balanced, allowing unbiased analysis.

## 2. Profitability

- Greed periods had higher PnL variability.
- Fear periods exhibited tighter and more controlled profits/losses.

## 3. Trade Volume

- Traders exhibited higher activity (by size USD) during Fear.
- Possibly due to panic-driven or stop-loss-triggered trades.

## 4. Trade Direction

- Short positions dominated during Fear.
- Long positions were favored during Greed.

## 5. Strategic Insights

- Use Greed days cautiously — high volatility increases risk.
- Leverage and stop losses can be dynamically adjusted based on sentiment.
- Volume surges in Fear may signal reversal zones.

## 6. Project Deliverables

- `notebook_1.ipynb` – main Colab notebook
- `csv_files/` – cleaned and processed CSVs
- `outputs/` – sentiment plots and EDA charts
- `ds_report.pdf` – this report
- `README.md` – optional setup instructions
- GitHub + Colab links (shared with public view access)

## 7. Conclusion

Sentiment plays a crucial role in shaping trader behavior. While Greed increases risk appetite and volatility, Fear often correlates with heavier trading volume and more short positions. This insight can be used to refine strategy parameters like leverage, entry points, and stop-loss mechanisms.

**Prepared by:** Sajid

**Submitted to:** Web3 Trading Team