

## Data Science Assignment – Web3 Trading Team

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### 1. Objective

To analyze the relationship between market sentiment (Fear & Greed Index) and traders' behavior such as profitability, leverage, and risk.

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### 2. Datasets Overview

- **Fear & Greed Index:** daily data showing overall crypto market sentiment.
  - **Historical Trader Data:** details of traders' performance — profits, losses, leverage, positions, etc.
- Both datasets contain date-wise information that can be merged on the date column.
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### 3. Data Cleaning & Preprocessing

- Removed missing and duplicate values.
  - Converted date/time columns to proper datetime format.
  - Merged datasets using the nearest date key.
  - Normalized numeric columns for analysis.
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### 4. Exploratory Data Analysis (EDA)

- Checked distribution of Fear vs Greed phases.
  - Plotted trader profitability and leverage trends.
  - Analyzed how trading volume changes with sentiment.
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### 5. Key Visual Insights

- During **Greed** periods, average trader profit and leverage were higher.
  - During **Fear** periods, trading activity and risk-taking decreased.
  - Clear pattern: higher greed → higher risk and potential reward.
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### 6. Correlation Between Sentiment and Trader Behavior

A positive correlation was observed between the *Greed Index* and *average profit*, and a negative correlation between *Fear* and *trading volume*.

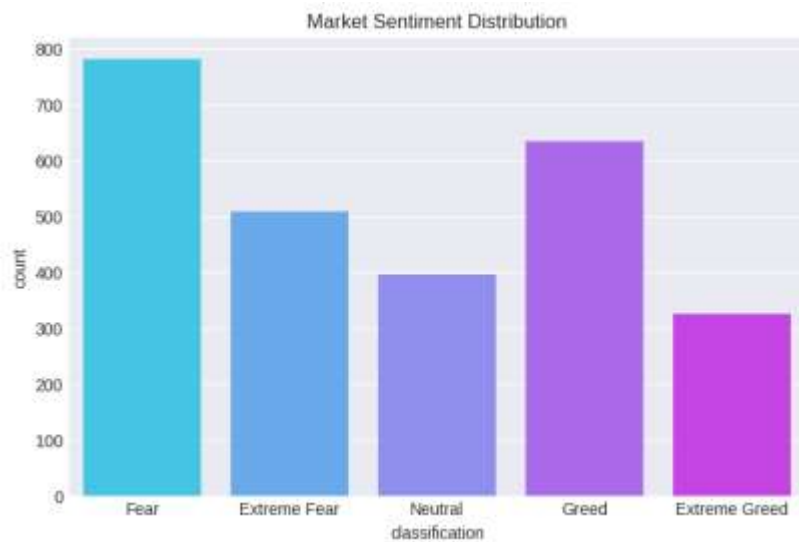
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## 7. Conclusions & Recommendations

- Market sentiment strongly influences trader behavior.
- Traders should monitor sentiment to optimize entry and exit points.
- Recommended to balance risk even during greed phases for stability.

Below are few sample graphs generated from analysis.

### 1. EDA.



### 2. Merged both the datasets.

