**1. Introduction**

This project explores the relationship between Bitcoin Market Sentiment (Fear/Greed Index) and trader performance using real trading data.The objective is to determine whether market sentiment can help explain or even predict trader outcomes, with the ultimate goal of deriving actionable insights for smarter trading strategies.

**2. Data Preparation**

**Datasets Used:**

* Bitcoin Market Sentiment Dataset
* Historical Trader Data

**Cleaning & Merging:**

* Parsed and standardized timestamp formats.
* Merged the two datasets by aligning trader transaction dates with daily sentiment index values.
* Mapped numerical sentiment scores into categorical classes (Extreme Fear, Fear, Neutral, Greed, Extreme Greed).
* Removed null or inconsistent entries from both datasets.

**3. Data Analysis**

Several visualizations were created to understand the correlation between sentiment and trader performance:

**Boxplot:**

* Displays distribution of closedPnL (Profit and Loss) by each Sentiment Class.
* Shows that traders earn more in Greed periods, but also take higher risks.

**Line Chart:**

* Time series of Sentiment Index vs. Average Daily Trader PnL.
* Indicates that spikes in sentiment often align with profitable or loss-heavy trading days.

**Bar Chart:**

* Average PnL by Sentiment Class.
* Greed and Extreme Greed periods show higher mean PnL than Fear.

**Heatmap:**

* Correlation matrix between closedPnL, leverage, execution price, and sentiment index.
* Highlights strong associations between leverage and PnL, and moderate links with sentiment.

**4. Conclusion**

This study confirms that market sentiment is a powerful indicator of trader behavior and profitability.  
By incorporating sentiment data:

* Traders and algorithms can better time entries/exits.
* Risk management protocols can be enhanced during high-volatility sentiment phases.
* Data-driven insights improve strategy formulation.