Bitcoin Market Sentiment vs Trader Performance

Goal: Analyze how Bitcoin market sentiment (Fear & Greed Index) impacts trader behavior and profitability using real sentiment data and Hyperliquid trading history.

Datasets

- **Fear & Greed Index**
    - Columns: date, classification, value
    - Shows daily market sentiment (Extreme Fear → Extreme Greed)
- **Hyperliquid Trader Data**
    - Includes: account, trade size, side, execution price, timestamp, closed PnL, etc.
    - Represents actual executed trades

Methodology

1. Data Preparation

- Cleaned and merged datasets on date
- Encoded sentiment levels (Extreme Fear=0 → Extreme Greed=4)
- Filtered relevant trade metrics

2. Feature Engineering

- Trade-Level Features:
    - PnL_bin (Profit/Loss class)
    - Side_Binary (Buy=1, Sell=0)
    - Normalized PnL (PnL divided by trade size)
- Account-Level Daily Aggregations:
    - Total PnL, Profit Rate, Buy Ratio, Avg Trade Size, and more

3. Analysis & Visualization

- Used Seaborn/Matplotlib for trend and variance analysis
- Compared trader behavior and performance across sentiment levels

key Insights

- **Trader Performance Depends on Sentiment**
    - Higher profitability during *Greed* and *Extreme Greed*
    - More losses during *Fear* periods
- **Trade Direction Shifts with Sentiment**
    - Buying activity rises in *Greed*

    - Selling/shorting increases in *Fear*
- **Risk Appetite Changes**
    - Bigger positions and more trades during *Greed*
    - Cautious, smaller trades during *Fear*

Conclusion

- Market sentiment has a **strong influence on trader behavior and profitability**. By integrating sentiment data, traders and systems can make more informed, context-aware decisions, improve risk control, and enhance trading outcomes in volatile crypto markets.