Bitcoin Sentiment & Trader Analysis Report

Project Overview

This project analyzes the relationship between market sentiment (Bitcoin Fear & Greed Index) and trader performance on the Hyperliquid exchange. It merges two datasets - daily sentiment classifications and granular trade execution records - to visualize how sentiment influences PnL.

Data Loading and Caching

Data is loaded using Streamlit's @st.cache_data decorator. If local CSV files are not found, the app downloads them directly from Google Drive using gdown.

Data Cleaning and Merging

Timestamps are converted to datetime, and sentiment classification is standardized.
The two datasets are merged on date, and rows without matching sentiment data are dropped.

Exploratory Data Analysis (EDA)

A boxplot visualizes how closedPnL varies across sentiment types (Fear vs. Greed).
This helps identify whether market psychology correlates with trading outcomes.

Sentiment Classification

A classification model was trained to predict 'sentiment' (Fear or Greed) using trade features.
This uses a Random Forest Classifier on engineered features such as execution price, size, and time.

Clustering and Behavioral Insights

Trader behaviors were clustered using DBSCAN to identify distinct trading styles.
Clusters are then analyzed to compare average performance under different sentiment regimes.

Forecasting Sentiment Trends

A time-series model was used to forecast future sentiment trends using historical Fear & Greed Index values. This helps anticipate shifts in market mood and potential volatility.

Conclusion

The analysis reveals that sentiment significantly correlates with trader performance.
Greed periods show higher variance in PnL, while Fear periods are associated with more conservative trading outcomes.