Assignment Overview

You will have to work with two primary datasets:
1. Bitcoin Market Sentiment Dataset
o Columns: Date, Classification (Fear/Greed
2. Historical Trader Data from Hyperliquid
o Columns include: account, symbol, execution price, size, side, time,
start position, event, closedPnL, leverage, etc.
Your objective is to explore the relationship between trader performance and market sentiment, uncover hidden patterns, and deliver insights that can drive smarter trading strategies.

• Project Description

This project studies the connection between **Bitcoin market sentiment** (Fear or Greed) and **trader performance** using real trading data from Hyperliquid.
By combining sentiment trends with trader metrics like profit/loss, leverage, and position size, the goal is to discover **how emotions in the market influence trading outcomes**.

The analysis includes:

- Cleaning and merging sentiment and trading datasets
- Measuring performance per trader, per day, and per symbol
- Exploring patterns through visualizations and statistical analysis
- Building predictive models to estimate trader success from market sentiment
- Grouping traders based on similar behaviours or results

The final output is a **dashboard and report** that summarize insights and support **data-driven trading decisions**.

• Project Plan (Simplified)

1. **Load & Clean Data** – Fix missing values and format dates in both datasets.
2. **Merge Datasets** – Join trader data with market sentiment by date/time.
3. **Calculate Metrics** – Find each trader's profit/loss, daily performance, and leverage use.
4. **Analyse & Visualize** – Plot sentiment trends, trader results, and correlations.
5. **Model Insights** – Use regression/classification to predict performance from sentiment.
6. **Cluster Behaviour** – Group traders with similar trading styles or outcomes.
7. **Build Dashboard & Report** – Summarize insights in a simple visual dashboard.
8. **Validate & Document** – Check accuracy, note assumptions, and list limitations.

- ## Tools to use

- **Python** (Jupyter notebook or .py): primary scripting.
    - Libraries: pandas, numpy, matplotlib, seaborn, plotly (interactive), scipy, statsmodels, sklearn.
- **SQL** (optional) for very large data (Postgres, BigQuery).
- **Streamlit / Dash / Voila** for interactive dashboards.
- **Git** for version control, Docker optional.
- **Excel** (quick table checks), but keep analysis reproducible in Python.
- **Logging & notebook** for reproducibility (requirements.txt).

- Folder Hierarchy

```
sentiment_trader_analysis/
|
 ├── data/
|    ├── fear_greed_index.csv
|    ├── historical_data.csv
|
 ├── results/
|
 ├── src/
|    ├── __init__.py
|    ├── data_preprocessing.py
|    ├── sentiment_analysis.py
|    ├── trader_analysis.py
|    ├── correlation_model.py
|    └── visualization.py
|
 ├── main.py
 ├── requirements.txt
 └── README.md
```

- ## README.md

Purpose and instructions:

Bitcoin Market Sentiment vs Trader Performance

Objective
Explore how Bitcoin market sentiment (Fear/Greed) impacts trader performance on Hyperliquid.

- **Tools Used**

- Python (Pandas, Matplotlib, Scikit-learn)
- VS Code for development
- Data visualization with Seaborn

- Steps to Run

1. Clone or create this folder in VS Code.
2. Place CSV files in the data/folder.
3. Run:
   pip install -r requirements.txt
   python main.py

requirements.txt

pandas
numpy
matplotlib
seaborn
statsmodels
scikit-learn
joblib

Install with:

pip install -r requirements.txt

I created the project folder and files you requested and saved them to /sentiment_trader_analysis/.

outputs

Check results/ for outputs: merged CSV, PNG plots, and model summary

Streamlit Dashboard Version — turns your project into an interactive web dashboard

Features of the Streamlit Dashboard
Upload or load the two datasets
View summary statistics
Visualize Fear/Greed sentiment over time
Analyse trader performance metrics (P&L, leverage, win rate)
See the correlation between sentiment and performance
Run predictive model (optional toggle)
Display results interactively with plots and tables

Tools Required

Install Streamlit and dependencies:

pip install streamlit pandas numpy matplotlib seaborn scikit-learn joblib

Then, run the app:

streamlit run app.py→ get URL

```
PS D:\Priti_Data\Data_science_internship\sentiment_trader_analysis> streamlit run app.py

  You can now view your Streamlit app in your browser.

  Local URL: http://localhost:8501
  Network URL: http://192.168.1.5:8501
```

fear_greed_index.csv→ Upload file, fetch data from .csv files

Data Preview:

	timestamp	value	classification	date
0	1517463000	30	Fear	01-02-2018
1	1517549400	15	Extreme Fear	02-02-2018
2	1517635800	40	Fear	03-02-2018
3	1517722200	24	Extreme Fear	04-02-2018
4	1517808600	11	Extreme Fear	05-02-2018

Dataset Information:

Rows: 2644, Columns: 4

Column names:

[...]

Show summary statistics

Dataset Information:

Rows: 2644, Columns: 4

Column names:

▸ [...]

Show summary statistics

	timestamp	value
count	2644	2644
mean	1631898885.0227	46.9811
std	65979674.3222	21.8277
min	1517463000	5
25%	1574811000	28
50%	1631899800	46
75%	1688988600	66
max	1746163800	95

Show column data types

	0
timestamp	int64
value	int64
classification	object
date	object

Sentiment & Trader Analysis Dashboard

Upload your cleaned CSV

Drag and drop file here
Limit 200MB per file • CSV

Browse files

historical_data.csv 45.3MB

File uploaded successfully!

Data Preview:

	Account	Coin	Execution Price	Size Tokens	Size USD	Side
0	0xae5eacaf9c6b9111fd53034a602c192a04e082ed	@107	7.9769	986.87	7872.16	BUY
1	0xae5eacaf9c6b9111fd53034a602c192a04e082ed	@107	7.98	16	127.68	BUY
2	0xae5eacaf9c6b9111fd53034a602c192a04e082ed	@107	7.9855	144.09	1150.63	BUY
3	0xae5eacaf9c6b9111fd53034a602c192a04e082ed	@107	7.9874	142.98	1142.04	BUY
4	0xae5eacaf9c6b9111fd53034a602c192a04e082ed	@107	7.9894	8.73	69.75	BUY

📈 Dataset Information:

Rows: 211224, Columns: 16

Column names:

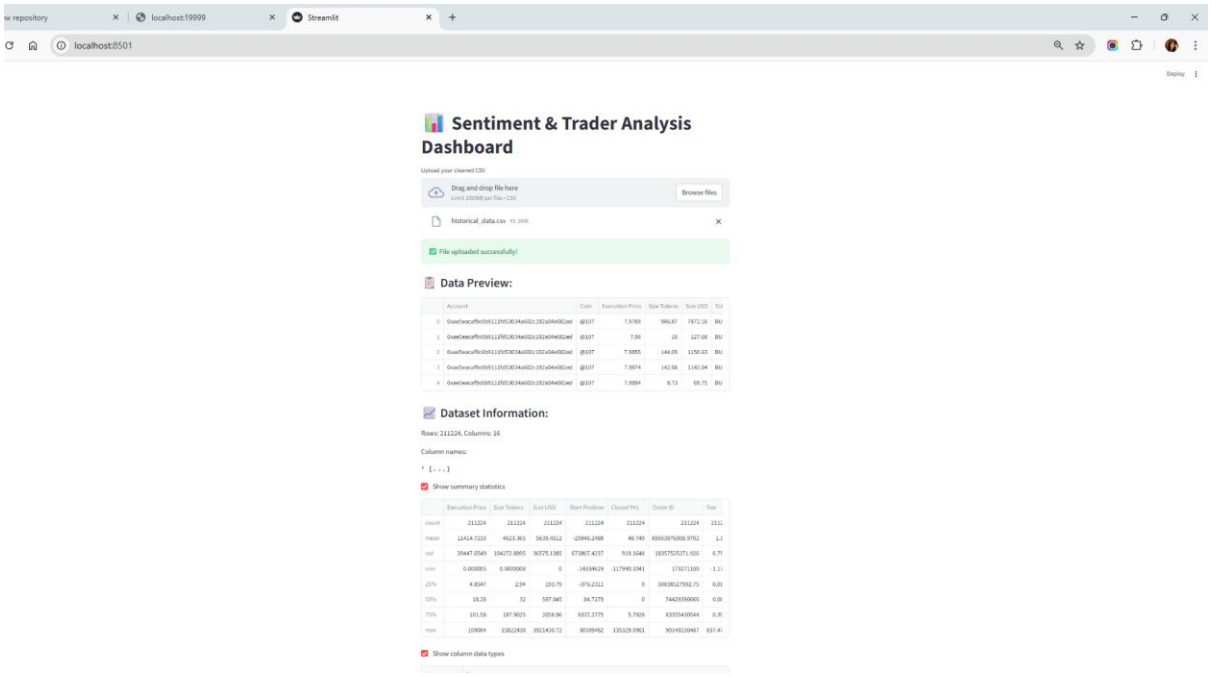
▸ [...]

☑ Show summary statistics

	Execution Price	Size Tokens	Size USD	Start Position	Closed PnL	Order ID	Fee
count	211224	211224	211224	211224	211224	211224	211
mean	11414.7233	4623.365	5639.4512	-29946.2488	48.749	69653876008.9702	1.1
std	29447.6549	104272.8895	36575.1385	673807.4237	919.1648	18357525271.926	6.75
min	0.000005	0.0000008	0	-14334629	-117990.1041	173271100	-1.17
25%	4.8547	2.94	193.79	-376.2311	0	59838527992.75	0.01
50%	18.28	32	597.045	84.7279	0	74429390066	0.08
75%	101.58	187.9025	2058.96	9337.2775	5.7928	83355430544	0.35
max	109004	15822438	3921430.72	30509482	135329.0901	90149230487	837.41

☑ Show column data types

	0
Account	object
Coin	object
Execution Price	float64
Size Tokens	float64
Size USD	float64
Side	object
Timestamp IST	object
Start Position	float64
Direction	object
Closed PnL	float64


repository
localhost:19999
Streamlit
localhost:8501
Deploy
Sentiment & Trader Analysis Dashboard
Upload your cleaned CSV
Drag and drop file here
Limit 200MB per file • CSV
Browse files
historical_data.csv
File uploaded successfully!
Data Preview:
Dataset Information:
Rows: 211224, Columns: 16
Column names:
Show summary statistics
Show column data types