Detailed Project Summary

Objective

The main objective of this project is to examine whether market sentiment, as measured by the Fear & Greed Index, has any correlation with trader performance data. Understanding this relationship can potentially reveal how emotional market conditions affect trading outcomes.

Data Sources

1. Fear & Greed Index Data: Captures market sentiment on a daily basis, expressed as a numerical index.
2. Historical Trading Data: Contains performance-related information such as trading volume, positions, and timestamps of trader activities.

Data Preparation

Both datasets required timestamp conversion for consistency. The Fear & Greed Index timestamps were converted successfully into standard datetime objects and then reduced to the 'date' format. However, the Historical Trading Data encountered challenges: its 'Timestamp' column did not convert properly, producing NaT (Not a Time) values. Cleaning was performed to remove invalid dates, but most of the historical dataset remained unusable.

Data Merging

The next step was to merge both datasets on their respective 'date' columns. An inner join was attempted. Unfortunately, this resulted in an empty merged DataFrame, revealing that no overlapping dates existed between the datasets after conversion. Investigation confirmed that the historical dataset timestamps were either incompatible or represented a non-overlapping timeframe with the Fear & Greed Index.

Challenges

1. Timestamp Conversion Errors: The historical data's timestamps could not be reliably parsed into valid dates.
2. No Date Overlap: Even after cleaning, the datasets had no common time ranges, preventing meaningful merging.

Visual Insight

A timeline comparison was generated to visualize the issue. The Fear & Greed Index data covered early 2021, while the trader performance data spanned 2020. As a result, there was no overlap in dates, hence the failed merge.

Recommendations & Next Steps

1. Re-examine the 'Timestamp' column in the historical trading data to confirm its true format (seconds, milliseconds, string format, or timezone differences).
2. Align datasets by ensuring they cover the same timeframe or by sourcing new data that overlaps with sentiment data.
3. Once merged successfully, proceed to analyze correlations using:
- Statistical correlation tests (Pearson, Spearman).
- Regression analysis.
- Time-series analysis and visualization of sentiment vs. trader performance.
4. Integrate results into dashboards, reports, and predictive models.

Conclusion

The notebook demonstrates a well-structured approach to cleaning, preparing, and attempting to merge market sentiment with trader performance data. While the merge was unsuccessful due to date misalignment and timestamp conversion issues, the outlined next steps provide a clear roadmap for resolving these challenges and moving forward with meaningful analysis.

Dataset Timeline Comparison