

**Project Title:**

**Macro Indicators and Web-Scraped Market Sentiment Analysis for NASDAQ Trends**

**Team Member:**

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**■ What problem are you trying to solve?**

Financial markets are shaped by both long-term macroeconomic conditions and short-term investor sentiment.

This project investigates:

1. **How macro-economic indicators (GDP, CPI, FEDFUNDS, etc.) correlate with NASDAQ index movements.**
  2. **How can market sentiment extracted from web-scraped financial news helps explain short-term NASDAQ behavior.**
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**■ How will you collect data and from where?****(A) Macro-economic data — FRED API**

Using Python requests, I will retrieve several key indicators (GDP, CPIAUCSL, FEDFUNDS, UNRATE, HOUST, DGS3MO, etc.).

**(B) Market data — NASDAQ index via Yahoo Finance (yfinance)**

Used to represent market performance and synchronize with macro indicators.

**(C) Web-scraped news titles — Yahoo Finance News**

Using requests + BeautifulSoup, I will scrape:

- Latest financial news titles
  - Timestamps (if available)
  - Page navigation and HTML parsing
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**■ What analysis will you do and what visualizations will you create?****(A) Macro—NASDAQ Correlation Analysis**

- Merge macro APIs and index series
- Compute Pearson correlations
- Study trends across time

**(B) Logistic Regression**

A lightweight model tests whether macro indicators can classify NASDAQ into high-risk vs. stable periods.

**(C) Market Sentiment Analysis**

- Clean scraped news titles
- Tokenize and classify sentiment

- Compare sentiment distribution with recent NASDAQ movements

## ■ Visualizations

### Macro + Market

- Correlation heatmap
- Macro vs. NASDAQ time-series plots
- ROC curve & confusion matrix (logistic regression)

### Web-scraped Sentiment

- Pie chart of sentiment categories
- WordCloud of news titles