Investment Insights through Data-Driven Decision Making

Enhancing Client Investment Strategies with Data Analytics

Project Overview

1) Objective:
   a) Develop an interactive stock analytics dashboard
   b) Provide portfolio insights, risk metrics, and stock correlations
   c) Enable clients to make data-driven investment decisions

2) Tools Used:
   a) Python (Flask, Pandas, Plotly, yFinance)
   b) Web Framework: Flask for backend processing
   c) Bootstrap & HTML: Interactive UI

Key Client Benefits

The dashboard allows clients to analyze stock trends, correlations, and portfolio performance, enabling data-driven investment decisions. The platform fetches market data, processes it using statistical techniques, and presents it in a visually appealing and interactive format.

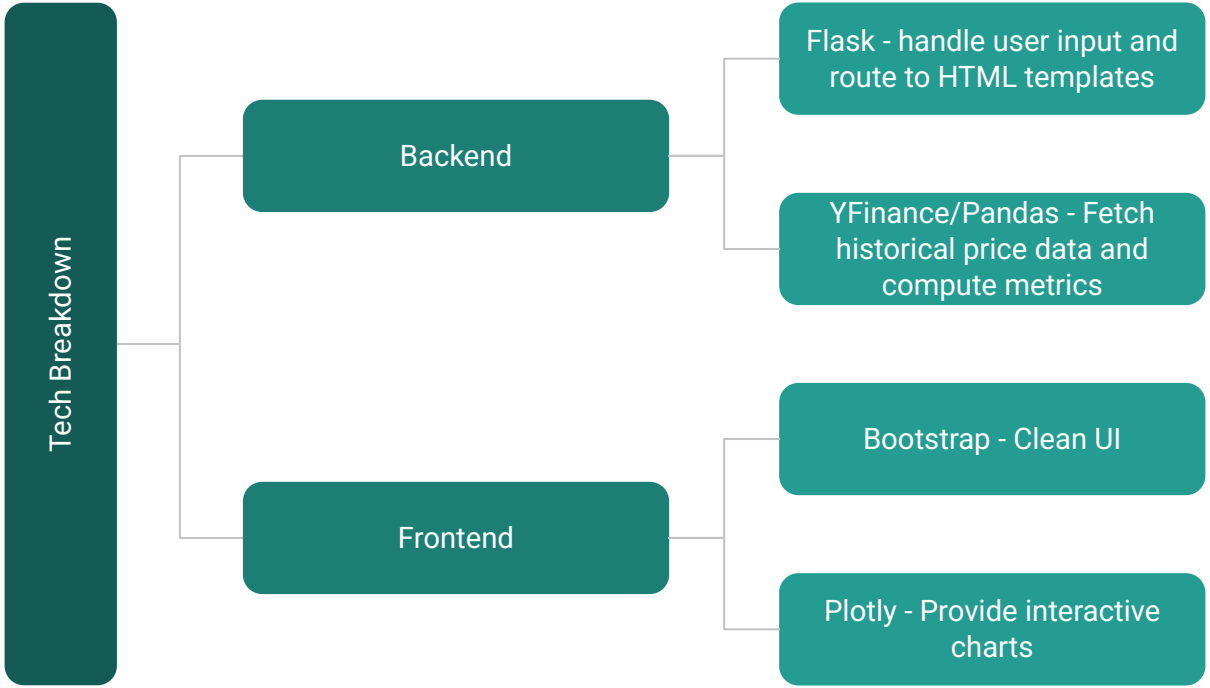
How This Helps Clients:

- Stock Selection: Users can analyze stock price trends before making investment decisions.
- Portfolio Optimization: Investors can construct a diversified portfolio based on historical returns and risk metrics.
- Risk Management: The correlation heatmap helps users understand the diversification benefits.
- Performance Tracking: The platform provides a Sharpe ratio, annualized returns, and cumulative returns to measure portfolio effectiveness.

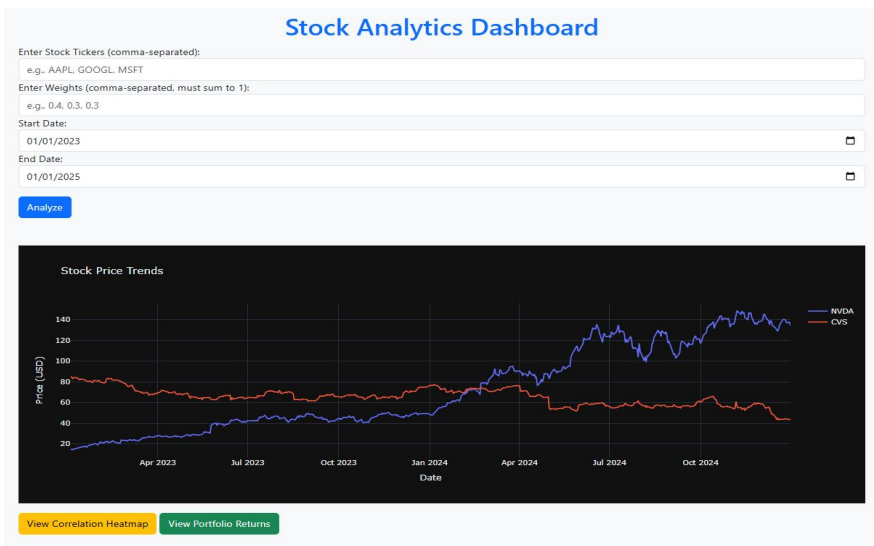
How It Works

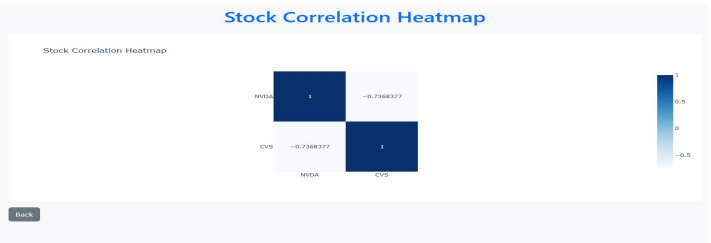
Step 1	Step 2	Step 3	Step 4	Step 5
Client enters stock tickers, weights, and date range	System fetches stock data from Yahoo Finance API	Python code computes key financial metrics: returns, volatility, Sharpe ratio	Generates interactive charts for trend analysis	Clients can explore correlation heatmaps & portfolio performance

Tech Breakdown (High-Level)



Demo


Stock Analytics Dashboard
Enter Stock Tickers (comma-separated):
e.g., AAPL, GOOGL, MSFT
Enter Weights (comma-separated, must sum to 1):
e.g., 0.4, 0.3, 0.3
Start Date:
01/01/2023
End Date:
01/01/2025
Analyze
Stock Price Trends
NVDA
CVS
Price (USD)
140
120
100
80
60
40
20
Apr 2023
Jul 2023
Oct 2023
Jan 2024
Apr 2024
Jul 2024
Oct 2024
Date
View Correlation Heatmap
View Portfolio Returns


Stock Correlation Heatmap
Stock Correlation Heatmap
NVDA
CVS
1
−0.7368377
−0.7368377
1
NVDA
CVS
1
0.5
0
−0.5
Back

Portfolio Performance
Cumulative Return: 180.59%
Annualized Return: 33.3%
Annualized Volatility: 26.64%
Sharpe Ratio: 1.25
Portfolio Cumulative Return Over Time
Cumulative Return
220
200
180
160
140
120
100
Apr 2023
Jul 2023
Oct 2023
Jan 2024
Apr 2024
Jul 2024
Oct 2024
Date

Opportunities of Improvement

AI-Powered Insights:

- Implement ML models for predictive stock analysis
- Use sentiment analysis (leveraging LLMs) from financial news

Client-Focused Dashboard:

- Integrate personalized recommendations based on user history
- Enhance the design further - make it more user-friendly.