



LIVE

SENTIMENTPULSE

By Team Spirit

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Team Member Roles and Responsibilities



Sandhya Reddy Kallem

Frontend developer



***Dhruv Maheshbhai
Ranpariya***

Frontend Developer



Yashwanth Thalla

Backend Developer

Team Member Roles and Responsibilities



Hema Durga Prasad Chittala
Backend Developer



Sravan Kumar Ganji
Machine Learning Engineer

Improvements

- Changing Team Agreement
- Retrospective action items
- Github icons proper align inside wikipage

Project Description

Project Name:	SentimentPulse
Team:	Team Spirit
Project Description:	<p>For stock market traders and investors who need to stay informed about stock market news, the SentimentPulse application is a news aggregator and sentiment analysis tool that pulls in stock market news from various sources and analyzes each article's sentiment (positive, negative, or neutral) using AI. Unlike traditional news platforms or manual research, our application allows users to filter news based on sentiment, relevance, and stock symbols, helping them make faster and more informed trading decisions.</p>
Benefit Outcomes:	<p>Faster decision-making by filtering news based on sentiment, relevance, and stock symbols.</p> <p>Improved accuracy in evaluating stock market news with AI-driven sentiment analysis.</p> <p>Time savings by centralizing stock market news from various sources.</p>
Github Link:	https://github.com/htmw/2024F-Team-Spirit/wiki

Team Agreement

Team Agreement

1. Meetings:

- The team will meet regularly every Wednesday and Thursday at 7:00 PM. These meetings will serve as checkpoints to review progress, discuss challenges, and plan upcoming tasks.
- The attendance of all team members will be expected to ensure that there is alignment and effective communication regarding the status of the projects.

2. Communication:

- Slack will be the main communication tool for updates, quick questions, or discussions day in and day out. All team members are expected to be active on Slack, ensuring that responses are issued in a timely manner.
- Github will be used for versioning, collaboration, and reviewing code. All pull requests should be reviewed and signed off by at least one other member of the team before being merged into the main branch.

3. Commitment and Deadlines:

- Each member is responsible for completion of tasks assigned to him/her within the time agreed on for its delivery. This helps the team stay right on schedule in the delivery of some of the milestones of the project.
- Issues that may be expected unexpectedly should be communicated to team members proactively in advance, and problems solved with necessary help so as not to delay the progress.

4. Work Submission:

- It is expected that in the project code, documentation, and other deliverables, all tasks should be up for review by the team at least 24 hours in advance of the actual deadline. This would have been enough time to do the reviewing and probably some revising.

5. Accountability:

- If any member of the team perceives that he will not be able to deliver a task, he should inform the team no less than 48 hours in advance. This will give the team sufficient room to perform any reassignment of tasks, seek out available help, or adjust priorities as appropriate.
- It is accountability that keeps up the trust and efficiency within the team.

6. Collaboration:

• Sravan Kumar Ganji

- Where any of the team members happen to finish earlier than planned, he or she is supposed to help others in case some of the colleagues have more difficult work or for any reason appear to fall behind. In this way, collaboration and mutual support will be assured to provide success to the whole project.
- Feedback is allowed, and knowledge is shared in the project continuously, helping each member to improve and grow.

7. Conflict Resolution:

- Any disputes and issues arising within the team should be discussed openly and resolved on a professional note.
- The team will first try to resolve conflicts in-house by openly discussing issues. If it cannot be resolved in-house, then the team can seek outside mediation or the Professor.
- Conflicts should be treated with respect, and every opinion of the team members matters.

8. Decision-Making Process:

- All decisions-technological the project will be made jointly.
- Decisions on major issues shall be discussed among the members in such a way that due consideration is given to all members having an opportunity to be heard. When no consensus is reached, it may be put to a majority vote.
- This would be left to the discretion of the team lead or designated representative in the event of a tie.

9. Roles and Responsibilities:

- Each team member will be assigned particular roles to perform, which are allocated in accordance with his or her skill and interest in general. Clearly defined roles ensure common understanding of the responsibility that everyone has in effectively contributing.
- While individual tasks will be assigned, the team will be flexible so each member can help another whenever the need arises.

Team Members:

- Sandhya Reddy Kallen
- Dhruv Maheshbhai Ranpariya
- Yashwanth Thalla
- Hema Durga Prasad Chittala

Rajesh Verma (India)



- **Age:** 35
- **Occupation:** Software Engineer
- **Experience with Investing:** 5 years
- **Location:** Bengaluru, India
- **Investment Strategy:** Rajesh focuses on Indian stocks with occasional investments in U.S. tech stocks. He uses fundamental analysis and stays updated through financial news. However, he struggles to keep up with the sheer volume of news and seeks AI-driven tools to help quickly evaluate relevant stock-related information.
- **Goal:** To make faster, data-driven decisions on stock purchases or sales, particularly for his tech-heavy portfolio, while balancing his work schedule.

Elsa Thompson (United States)



Age: 28

Occupation: Financial Analyst

Experience with Investing: 7 years

Location: New York, USA

- **Investment Strategy:** Elsa tracks market trends, particularly in the energy and healthcare sectors. She relies on research and sentiment data to make informed decisions but finds it challenging to manually sift through a large volume of news. She needs an AI-driven platform to prioritize relevant news efficiently.
- **Goal:** To improve her efficiency in analyzing news to make informed recommendations to clients and colleagues, while staying ahead of fast-moving market trends.

Lucas Müller (Germany, Europe)



Age: 45

Occupation: Independent Investor & Trader

Experience with Investing: 15 years

Location: Munich, Germany

- Investment Strategy:** Lucas focuses on European and U.S. stock markets, relying on global news to inform his decisions. He's interested in using AI tools to assess the impact of international news on specific stocks, aiming to automate part of his decision-making process and reduce emotional trading.
- Goal:** To leverage AI-driven sentiment analysis to enhance his stock trading strategies and make faster, more informed decisions, particularly when reacting to international news.

Minimum Viable Product

- **News Aggregation**

Fetch and display financial news articles from reputable sources through APIs.

- **Sentiment Analysis**

Analyze the sentiment of each news article (positive, neutral, negative) using a sentiment analysis tool.

- **Company Mention Detection**

Identify and highlight companies referenced in the news articles.

- **User Interface**

Present the news articles, sentiment scores, and impacted companies in a clean, intuitive interface.

Technologies



Backend

Flask, Express JS

Frontend

ReactJS

Database

MongoDB

Machine Learning

PyTorch, Huggingface

API

NewsAPI

Cloud Hosting

GCP

Backend

What is it?

Flask is a lightweight Python web framework, and Express JS is a fast and minimalist web framework for Node.js.



How is it used?

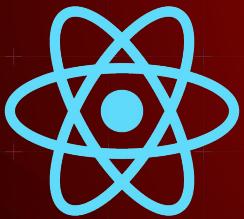
Flask or Express JS will be used to handle backend logic, manage API requests, and serve data between the frontend and the database, enabling communication between the sentiment analysis AI and the stock market news aggregator.

A large, bold, black, sans-serif font where the letters 'e' and 'x' are joined together, forming a single continuous shape. The letter 'e' is on the left, curving upwards and to the right, and the letter 'x' is on the right, extending downwards from the top of the 'e'. The entire character is rendered in a thick, solid black.

Frontend

What is it?

ReactJS is a popular JavaScript library for building interactive user interfaces.



How is it used?

ReactJS will be used to build the web application's dynamic and responsive frontend, allowing users to interact with the platform, view stock market news, and access AI-driven sentiment insights.

DATABASE

What is it?

MongoDB is a NoSQL database designed for flexibility and scalability, storing data in JSON-like documents.



How is it used?

MongoDB will store news articles, user preferences, and AI-generated sentiment analysis, enabling fast retrieval and updates as new data comes in from the API.

Machine learning

What is it?

PyTorch is a machine learning framework, and Huggingface is a platform that provides pre-trained models and tools for NLP tasks.



How is it used?

PyTorch and Huggingface will be used to develop and deploy sentiment analysis models that process stock market news and classify the sentiment of each article (positive, neutral, or negative).

API

What is it?

NewsAPI is a service that provides access to news articles from various sources around the world.

How is it used?

NewsAPI will be integrated into the backend to pull relevant stock market news articles, which will be processed by the sentiment analysis model before being displayed to users.

Cloud Hosting

What is it?

Google Cloud Platform is a suite of cloud computing services that provides infrastructure for hosting applications.



How is it used?

GCP will host the web application, manage the backend servers, store data, and provide the resources necessary for running the machine learning models and API integrations efficiently.

Algorithm

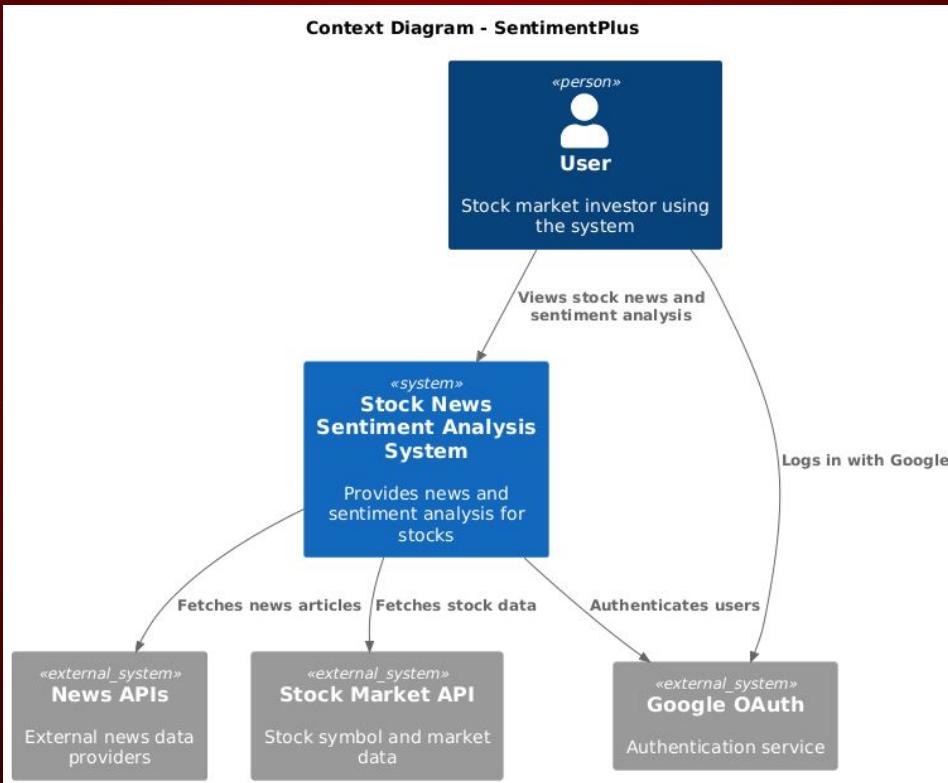
What is BERT?

BERT is an advanced Natural Language Processing (NLP) model developed by Google. It is formulated on the Transformer architecture and is devised to comprehend the context of a word in a sentence by studying it in both directions—left and right from the word—thus, it is very useful for sentiment analysis tasks, for example, understanding the sentiment of the text.

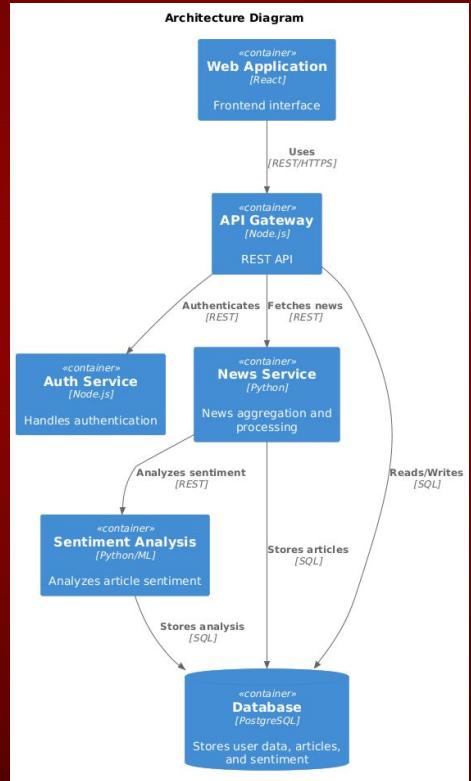
In what way is it applied?

In the context of your project, BERT can be utilized through Huggingface to analyze stock market news articles and perform sentiment analysis. It will monitor the text and determine the sentiment(s) expressed in the news as positive, neutral, or negative. Therefore the technology enabling the categorization of each news piece and, consequently the provision of sentiment insights to the investors that quick assess of how the news may impact the stock performance. BERT's success in learning complex language patterns makes sentiment analysis more precise, which gives a more well-founded recommendation compared to the traditional NLP models.

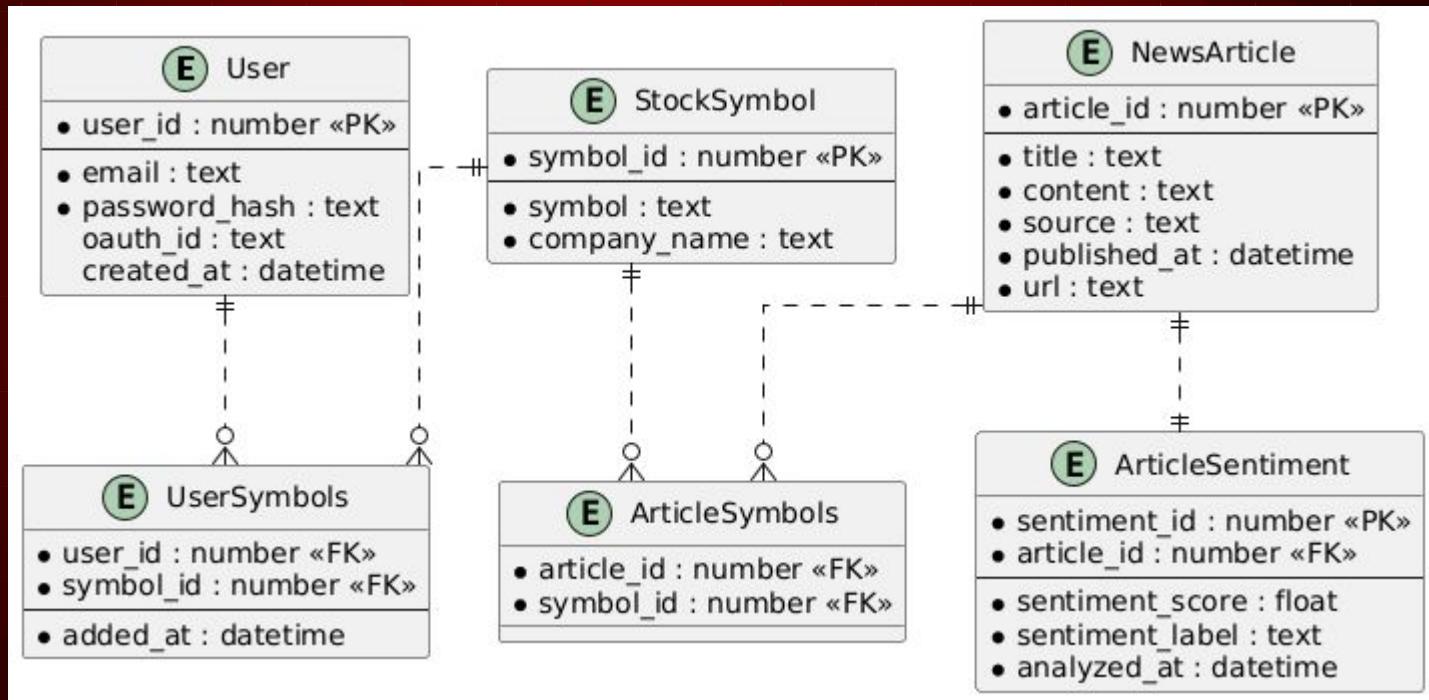
Context Diagram



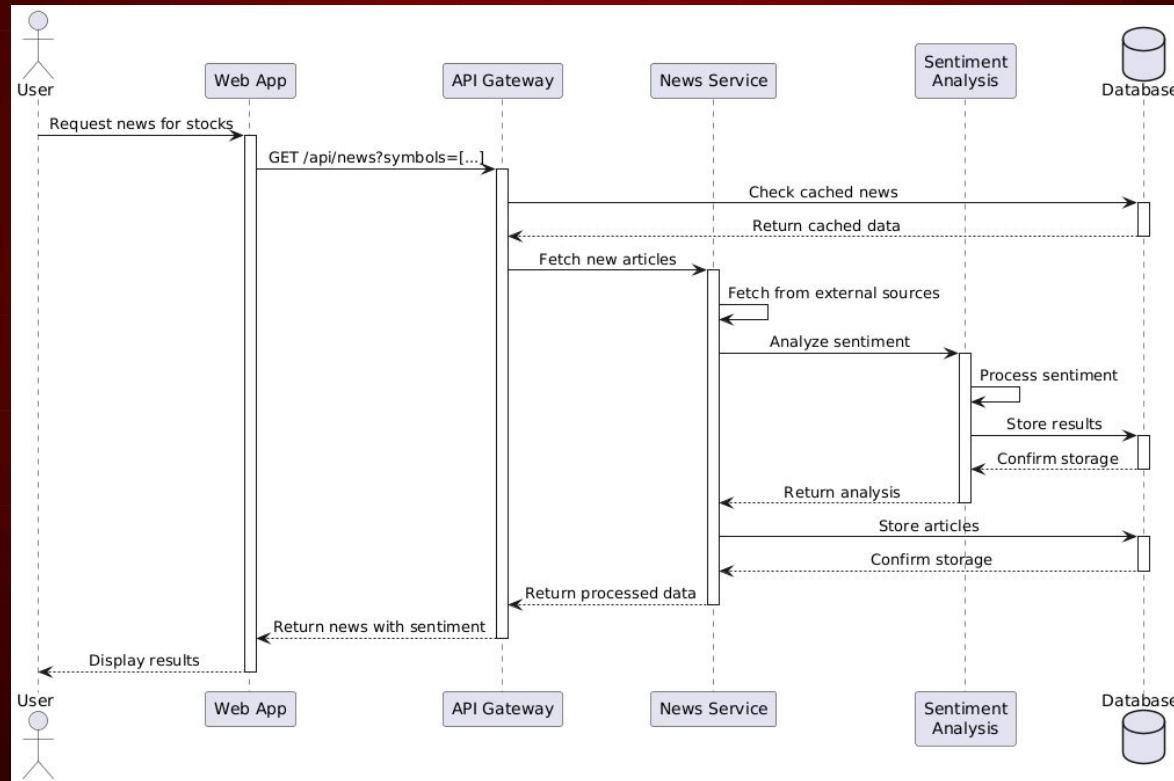
Architecture Diagram



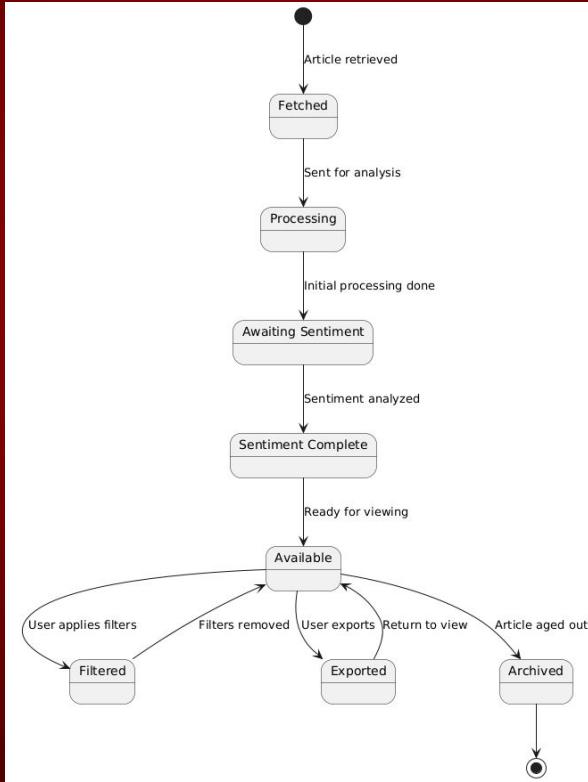
ER Diagram



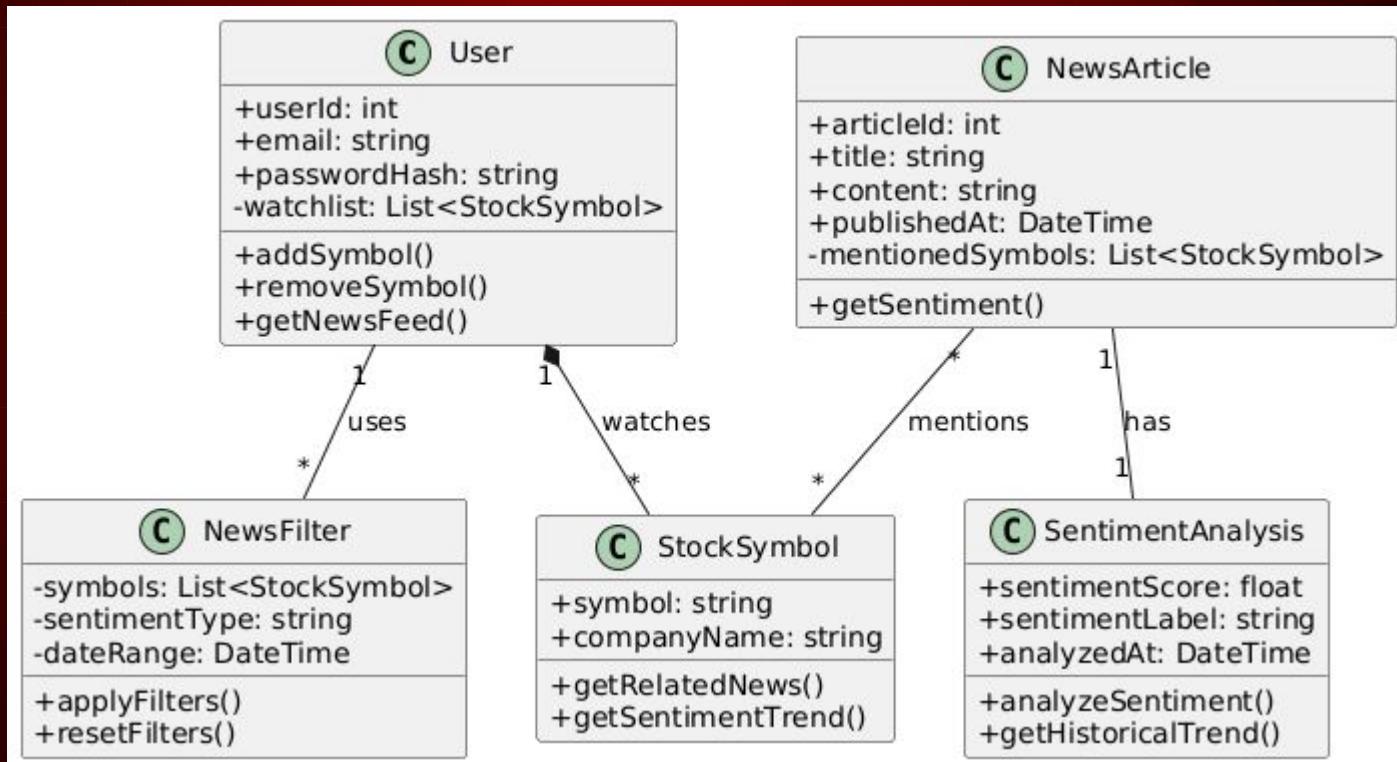
Sequence Diagram



State Diagram



Class Diagram



Product Backlog

Sno	Sprint	User Story / Task	Description	Acceptance Criteria
1	Sprint 1	User Story	As a user, I want to input stock symbols of interest so I can receive relevant news articles.	Users can search and input stock symbols. Stock symbols stored and shown on dashboard.
2	Sprint 1	User Story	As a user, I want to see a list of news articles related to stock symbols I've selected.	Articles are filtered by stock symbols. News displayed in chronological order.
3	Sprint 1	User Story	As a user, I want to filter news articles by relevance to my stock symbols so that I can focus on the most important articles.	News ranked by relevance to stock symbols. Filter option for relevant articles only.
4	Sprint 1	Technical Task	Set up backend infrastructure for news aggregation and stock symbol search.	API fetches news from 3 sources. Backend handles stock searches and storage.
5	Sprint 1	Technical Task	Establish database structure for user profiles, stock symbols, and news articles.	Create tables for users, symbols, articles. Ensure user-stock preferences are linked.

Product Backlog

Sno	Sprint	User Story / Task	Description	Acceptance Criteria
6	Sprint 2	User Story	As a user, I want to log in securely so that I can access personalized sentiment analysis.	Users log in with email/password. Support Google OAuth login.
7	Sprint 2	User Story	As a user, I want each news article to display a sentiment rating so that I can gauge its emotional tone (positive, negative, neutral).	Sentiment rating visible for each article. Sentiment rating is easy to understand.
8	Sprint 2	User Story	As a user, I want to filter news articles by sentiment so that I can focus on specific sentiment types (e.g., only positive news).	Filter by positive, negative, neutral. Dynamic UI update when filtering.
9	Sprint 2	Technical Task	Integrate AI sentiment analysis engine for news articles.	AI assigns sentiment to articles. AI achieves 80% accuracy or higher.
10	Sprint 2	Technical Task	Develop user authentication system (login and OAuth).	Implement login with email/password. Add OAuth for social logins.

Product Backlog

Sno	Sprint	User Story / Task	Description	Acceptance Criteria
11	Sprint 2	Technical Task	Connect backend to sentiment analysis model.	API connects backend to sentiment model. Ensure real-time sentiment processing.
12	Sprint 3	User Story	As a user, I want to filter articles based on both stock symbols and sentiment so I can focus on the best insights for my trading decisions.	Apply filters for symbols and sentiment. Filtered news updates in real time.
13	Sprint 3	User Story	As a user, I want to export the sentiment analysis and news data to a CSV file so I can analyze it offline.	Provide option to export data to CSV. Export includes stock, sentiment, and news.
14	Sprint 3	User Story	As a user, I want to view historical sentiment trends for a particular stock symbol so I can analyze long-term market sentiment.	Sentiment trends shown graphically. View trends for different time periods.
15	Sprint 3	User Story	As a user, I want to reset all filters easily so I can return to the full, unfiltered news feed.	Provide a clear option to reset filters. Reset clears all active filters.

Product Backlog

Sno	Sprint	User Story / Task	Description	Acceptance Criteria
16	Sprint 3	Technical Task	Implement historical sentiment tracking and visualization.	Track and store historical sentiment. Display trends using a graph.
17	Sprint 3	Technical Task	Improve frontend performance and responsiveness.	Optimize UI for mobile and desktop. Ensure fast filter application.

Sprint 1 Backlog

User Story / Task	Description	Acceptance Criteria	Story Points
User Story	As a user, I want to input stock symbols of interest so I can receive relevant news articles.	- Users can search and input stock symbols. - Stock symbols stored and shown on dashboard.	5 Points
User Story	As a user, I want to see a list of news articles related to stock symbols I've selected.	- Articles are filtered by stock symbols. - News displayed in chronological order.	8 Points
User Story	As a user, I want to filter news articles by relevance to my stock symbols so that I can focus on the most important articles.	- News ranked by relevance to stock symbols. - Filter option for relevant articles only.	5 Points
Technical Task	Set up backend infrastructure for news aggregation and stock symbol search.	- API fetches news from 3 sources. - Backend handles stock searches and storage.	8 Points
Technical Task	Establish database structure for user profiles, stock symbols, and news articles.	- Create tables for users, symbols, articles. - Ensure user-stock preferences are linked.	5 Points

Total 31 Points

Test Cases

Test Case ID	Story/Task	Test Case Description	Expected Result	Actual Result	Pass/Fail
TC-1.1	User Story 1	Verify users can input stock symbols.	Stock symbols can be entered.	Stock symbols entered successfully.	Pass
TC-1.2	User Story 1	Verify system shows suggestions as users type stock symbols.	Stock suggestions appear as user types.	Suggestions displayed for relevant symbols.	Pass
TC-1.3	User Story 1	Verify stock symbols are stored and displayed on the dashboard.	Stock symbols are visible on the dashboard.	Stock symbols displayed correctly.	Pass
TC-2.1	User Story 2	Verify news articles are filtered by selected stock symbols.	Articles are filtered by selected stock symbols.	Articles not filtered properly.	Pass
TC-2.2	User Story 2	Verify articles are displayed in chronological order.	News articles appear in chronological order.	Chronological order not working.	Pass

Test Cases

Test Case ID	Story/Task	Test Case Description	Expected Result	Actual Result	Pass/Fail
TC-3.1	User Story 3	Verify news articles are ranked based on relevance to stock symbols.	Articles are ranked based on relevance.	Ranking algorithm needs optimization.	Pass
TC-3.2	User Story 3	Verify the relevance filter displays only relevant articles.	Only relevant articles are displayed.	Irrelevant articles also displayed.	Pass
TC-4.1	Technical Task 1	Verify API fetches news from all 3 sources.	News fetched from all 3 sources.	API failed to fetch from one source.	Pass
TC-4.2	Technical Task 1	Verify backend stores and retrieves stock symbol data.	Stock symbol data stored and retrieved correctly.	Stock data stored and retrieved successfully.	Pass
TC-5.1	Technical Task 2	Verify tables for user profiles, stock symbols, and articles are created.	Tables for users, symbols, articles created.	Tables created successfully.	Pass

Stories Completed

Completed Stories/Tasks	Description
User Story 1	Stock symbol input, suggestions, and display functionalities are completed.
User Story 2	News articles filtered by stock symbols and displayed in chronological order are completed.
User Story 3	Relevance-based filtering of news articles is completed.
Technical Task 1	Backend infrastructure for news aggregation from 3 sources is set up and functional.
Technical Task 2	Database structure for users, stock symbols, and articles is established, and relationships are working correctly.

Team Velocity - This Sprint

***Total Story Points Completed:
31 points***

Burndown Chart



Completed/Committed Ratio

- **Story Points Committed:** 31 points
- **Story Points Completed:** 31 points
- **Completed/Committed Ratio:** 100%

Retrospective

IdeaBoardz - sprint1

View Section All Sections Export Login

start typing to filter stickies

sprint1

What went well +

Strong communication	Problem solving
+ 4	+ 2
On time delivery	risk management
+ 2	+ 0
successful in our roles	effective team collaboration
+ 4	+ 1
defined goals	flexible for meetings
+ 0	+ 1
Smooth technology integration	MVP Development
+ 2	+ 0

What can be improved +

feedback mechanism	Time management
+ 0	+ 0
Communication gaps	Decision making speed
+ 1	+ 4
technical challenges	unclear requirements
+ 5	+ 3
set time limits for each task	deadline monitoring
+ 0	+ 4
improvement in test coverage	
+ 4	

Action Items +

Improvement in test coverage	technical challenges
+ 0	+ 0
Deadline monitoring	decision making speed
+ 0	+ 0
unclear requirements	
+ 0	

24°C Sunny

Search

3:22 PM 10/23/2024

Sprint 2 Backlog

Sno	Sprint	User Story / Task	Description	Story Points
6	Sprint 2	User Story	As a user, I want to log in securely so that I can access personalized sentiment analysis.	8 points
7	Sprint 2	User Story	As a user, I want each news article to display a sentiment rating so that I can gauge its emotional tone (positive, negative, neutral).	13 points
8	Sprint 2	User Story	As a user, I want to filter news articles by sentiment so that I can focus on specific sentiment types (e.g., only positive news).	5 points
9	Sprint 2	Technical Task	Integrate AI sentiment analysis engine for news articles.	8 points
10	Sprint 2	Technical Task	Develop user authentication system (login and OAuth).	13 points

Sprint 2 Backlog

Sno	Sprint	User Story / Task	Description	Story Points
11	Sprint 2	Technical Task	Connect backend to sentiment analysis model.	3 Points

App Screenshot

MARKET NEWS | 14:57:45 REFRESH

Add symbol... +

ALL NEWS ▾ 3 ITEMS

[gurufocus.com](#) 23/10/2024 **ARM Stock Dips Amid Licensing Dispute with Qualcomm (ARM)**
Arm Holdings PLC (ARM) experienced a notable stock decline of 6.89% recently. This drop follows reports of escalating legal tensions with Qualcomm, which stem from... MORE ↗

[seekingalpha.com](#) 23/10/2024 **Can International Small Caps Help Diversify U.S. Equity Risk?**
As U.S. equities face valuation concerns in a changing market environment, international small caps offer strong diversification with less correlation and lower volatility. Click to read. MORE ↗

[argaam.com](#) 23/10/2024 **US oil inventories rise by above 5M barrels**
Crude oil inventories in the US rose more than expected in the week ended Oct. 18, according to a report released by the Energy Information Administra... MORE ↗

App Screenshot

MARKET NEWS

14:58:17

REFRESH

Add symbol...



\$APPLE

\$AAPL

ALL NEWS

3 ITEMS

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Goldman Sachs, Apple fined by CFPB

Firms' joint foray into consumer finance wasn't ready, regulator alleges

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Apple Scales Back Vision Pro Production, Plans Cheaper Version for 2024 as Demand Lags

Based on a report from The Information, Apple Inc. (AAPL) has drastically reduced Vision Pro mixed reality headset production since the summer, will likely stop

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investing.com 23/10/2024 \$AAPL

Apple down as top analyst Kuo says company cut iPhone 16 orders by 10M units By Investing.com

Apple down as top analyst Kuo says company cut iPhone 16 orders by 10M units

MORE

API

The screenshot shows the Postman application interface. The top navigation bar includes Home, Workspaces, API Network, Overview, and a search bar. The main workspace is titled "Team Workspace" and contains a collection named "API documentation". A current request is shown for "GET http://localhost:3000/api/news". The request details tab shows the method as "GET" and the URL as "http://localhost:3000/api/news". The "Params" tab is selected, displaying a table with one row for "Query Params". The "Body" tab is also visible. The response pane displays a JSON array of news items. Each item has an "id", "title", "description", "source", "url", "publishedAt", and "relatedSymbols". The first item's description mentions Jonathan Newman appearing on The Lakey Effect. The second item's description discusses European short-term bonds rising after an ECB rate cut. The third item's description discusses CSGP shares declining after disappointing earnings.

```
[{"id": "e9c30555-f9ce-4a2b-afcd-8e3233dcbbfe", "title": "Who Should Voters Trust on the Economy?", "description": "On October 18, 2024, Jonathan Newman appeared on The Lakey Effect with Jimmy Lakey to discuss whether or not voters should trust Trump on the economy. Or,", "source": "mises.org", "url": "https://mises.org/podcasts/individual-interview/who-should-voters-trust-economy", "publishedAt": "2024-10-23T18:38:00.000000Z", "relatedSymbols": []}, {"id": "77623b29-ale1-4d2e-bac6-c00807c511db", "title": "European Short-term Bonds Rise as Traders Bet on ECB Rate Cut", "description": "European short-term bonds have climbed, contrasting with the movements of similar U.S. and UK securities, as traders anticipate a 50 basis point rate cut by the", "source": "gurufocus.com", "url": "https://www.gurufocus.com/news/2563799/european-shortterm-bonds-rise-as-traders-bet-on-ecb-rate-cut", "publishedAt": "2024-10-23T18:30:13.000000Z", "relatedSymbols": []}, {"id": "d0033d72-cb8d-4b01-9cf8-b0583f511c6e", "title": "CSGP Shares Decline After Disappointing Earnings Report", "description": "CoStar Group (CSGP) shares fell by 9.06% after the company released its third-quarter earnings report, which did not meet market expectations. The stock is curi", "source": "gurufocus.com"}]
```

API

The screenshot shows the Postman application interface. The left sidebar displays "Team Workspace" with sections for Collections, Environments, and History. The main workspace shows an "Overview" of a collection named "http://localhost:3000/api/news?symbols=AAPL,TSLA,AMZN". A "GET" request is selected with the URL "http://localhost:3000/api/news?symbols=AAPL,TSLA,AMZN". The "Params" tab shows a parameter "symbols" with values "AAPL,TSLA,AMZN". The "Body" tab shows the response body in JSON format:

```
1 [  
2 {  
3     "id": "66440da2-f217-41b8-9785-d0dbfe2b9983",  
4     "title": "Goldman Sachs, Apple fined by CFPB",  
5     "description": "Firms' joint foray into consumer finance wasn't ready, regulator alleges",  
6     "source": "advisor.ca",  
7     "url": "https://www.advisor.ca/industry-news/regulation/goldman-sachs-apple-fined-by-cfpb/",  
8     "publishedAt": "2024-10-23T18:02:09.000000Z",  
9     "relatedSymbols": [  
10         "AAPL"  
11     ]  
12 },  
13 {  
14     "id": "dbd43f12b-3939-4613-98f1-6293779502ab",  
15     "title": "Apple Scales Back Vision Pro Production, Plans Cheaper Version for 2024 as Demand Lags",  
16     "description": "Based on a report from The Information, Apple Inc. (AAPL) has drastically reduced Vision Pro mixed reality headset production since the summer, will likely stop",  
17     "source": "gurufocus.com",  
18     "url": "https://www.gurufocus.com/news/2563702/  
19         apple-scales-back-vision-pro-production-plans-cheaper-version-for-2024-as-demand-lags",  
20     "publishedAt": "2024-10-23T17:35:29.000000Z",  
21     "relatedSymbols": [  
22         "AAPL"  
23     ]  
24 },  
25 {  
26     "id": "844ad893-8b05-45ac-bcfc-ed5ff5cd1a34",  
27 }
```

The status bar at the bottom indicates "Status: 200 OK Time: 6.36 s Size: 1.7 KB".

WikiPage

<https://github.com/htmw/2024F-Team-Spirit/wiki>



LIVE

Application Demo



Thank you