# CSC490 A1

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## 1 Interest Statements

### Problem Statement

When users open a stock application and view the price history of a company they are not familiar with, it is often difficult for them to understand what events or information may have contributed to past price fluctuations. Interpreting a stock's behavior over a longer horizon, such as the past year, typically requires searching through large volumes of historical news, announcements, and public discussions, which is both time-consuming and impractical for most users.

Despite the importance of public information, existing stock applications typically present price charts in isolation, leaving users to independently seek and synthesize relevant background information. This gap creates a poor user experience and raises the barrier to informed decision-making. Motivated by this problem, our team aims to design a stock application that integrates historical price data with a structured timeline of significant, stock-related news events. By leveraging AI models to retrieve and organize relevant information, our goal is to provide users with a clear and intuitive way to understand how external events may have influenced stock price movements over time.

### Team Motivation

Table 1: Team Members' Intended Contributions

| **Team Member** | **Intended Contribution** |
|---|---|
| David | I am interested in building the front-end of the product and also the process to build the model and train it to fit our requirement |
| Gabriel | I plan to contribute to the project by assisting in model training, designing basic UI components, and testing individual components in isolation. |
| Jack | I look forward to contributing to the project through retrieval methodology design, model training, and deployment, ensuring robust and efficient implementation. |
| Jason | I plan to contribute to the project through model training, backend service development, and cloud infrastructure setup. |

## 2 Landscape Analysis

Table 2: 6 relevant companies, 4 open source projects

| Relevant Item | Description | Commentary |
|---|---|---|
| Yahoo Finance | One of the most popular stock tracking apps. | The app shows past stock prices, but news appears in a separate section, making it inconvenient to view prices alongside relevant news. Additionally, news is sorted by latest, so past events are not easily accessible. |
| Financial-News Dataset | A large open-source financial news dataset spanning 1990–2025, currently containing over 57 million articles. | This dataset is free and comprehensive, suitable as a source of financial news for both training and testing. |
| GNews | An API that aggregates articles from over 80,000 sources worldwide, with historical coverage from 2020 to the present. | Provides direct links to the original news articles. |
| Stock Events | A mobile app focusing exclusively on a timeline view of future catalysts like earnings, dividends, and IPOs. | This only focus on future events. It lacks historical context, leaving users unable to answer "Why did this drop yesterday?" |
| Robinhood | The dominant retail trading app known for its frictionless UX and gamified interface for buying/selling. | News is often buried below the fold or unrelated to price action. Users frequently leave the app to research price moves elsewhere. |
| Finviz | A widely used market visualization tool and stock screener with aggregated news feeds. | Outdated "List of Links" approach. It presents a wall of headlines without summarization, forcing the user to do the heavy lifting of synthesis. |
| FinBERT | A pre-trained NLP used for financial sentiment analysis. | Useful for basic sentiment analysis, but lacks in-depth explanation. |
| GDELT | Public database monitoring news events worldwide. | Extremely large dataset, but requires heavy filtering for specific stock-related events. |
| Koyfin | A professional stock analysis platform with advanced charting and analytics capabilities. | Provides extensive data sources such as news, press releases, and filings, but lacks direct integration of their impact within price charts. |
| Financial Modeling Prep | A financial data platform providing a wide range of APIs for stock market and company-related data. | Offers APIs for general news, press releases, and stock-specific news |

# 3 Project Outline

## Problem Statement

Current stock market applications primarily present historical price data in isolation, offering limited support for integrating external contextual information. Retail investors often struggle to efficiently access large volumes of historical, stock-related news and market information, which is typically scattered across multiple sources. Even when such information is available, users lack effective mechanisms to filter and identify data that is truly relevant to a specific stock. Furthermore, existing platforms provide little assistance in aligning filtered qualitative information with quantitative price movements over time, making it difficult for users to understand how external events and market sentiment relate to historical stock performance. This absence of a systematic, integrated approach creates a significant barrier for retail investors seeking to learn from past price behavior.

## Proposed Solution

We propose an application that visually integrates significant stock-related events into historical stock price charts. Using AI-assisted methods, the system automatically identifies and organizes relevant stock-related events from large volumes of public information. Key events are annotated directly on the price timeline, allowing users to examine price movements alongside curated event summaries and explanatory context describing how the events may be related to observed price changes. To support transparency and credibility, each event is accompanied by authoritative information sources, such as relevant news articles or editorials. By combining price visualization with structured, AI-curated event context in a single interface, the proposed solution enables users to more easily explore the relationship between external events, market sentiment, and historical stock performance.

## High-level Technical Approach and Milestones

**Data Collection**

- Historical stock price data from financial market APIs.
- Public information from trusted news APIs and other trusted sources.

**Training and Classification**

- Training NLP models based on the gathered data to accurately identify events causing fluctuations in past stock prices.
- Use the trained NLP model to gather real-time information regarding possible variations in stock prices.

**Summarization and Ranking**

- Generate concise AI-generated summaries about events that cause stock price fluctuations.
- Relevance scoring to emphasize events that had the most impact in the stock prices.

**Event Timelines and UI Integration**

- Plot points on the stock graph to show events that motivated the stock price fluctuation.
- Provide detailed summaries of the events that contributed to the stock price variation, sorted based on relevance.

## Unknowns to Investigate

- Whether sufficient historical news data can be reliably accessed for selected stocks.
- How to determine which news events are meaningfully related to a specific stock.
- How to distinguish between stock price fluctuations caused by actual events or by random anomalies.
- Best method to quantify the impact that certain events had on stock price movements.

# 4 Project Press Release

**ChronoStock Reveals the Stories Behind Stock Prices, Helping Investors See Markets More Clearly**

**TORONTO — January 22, 2026 — ChronoStock** today announced the launch of ChronoStock, a market intelligence platform that transforms historical stock charts into clear narratives of cause and effect. By embedding relevant real-world events directly into price timelines, ChronoStock helps investors understand how information, decisions, and market forces have shaped a company's valuation over time.

Stock prices move for reasons — but those reasons are rarely visible in traditional charts. Investors are left staring at lines and candles that show what happened, without explaining why it happened. As a result, many rely on fragmented research, gut instinct, or hindsight when evaluating past performance and assessing future risk.

ChronoStock solves this problem by turning price history into an explorable narrative. Significant movements are paired with concise explanations of the events that influenced them, allowing users to trace how earnings reports, policy changes, competitive shifts, and macroeconomic trends translated into market behavior. This structured view helps investors build stronger mental models of how markets respond to information.

"Price charts shouldn't require guesswork," said the Product Lead at ChronoStock. "ChronoStock makes market history legible. When investors can clearly see cause and effect, they gain confidence in their reasoning — not because someone told them what to think, but because the evidence is finally organized."

ChronoStock's AI engine synthesizes publicly available financial news, filings, and disclosures into neutral, event-focused summaries, emphasizing relevance and impact rather than volume. The platform is designed to support long-term learning, pattern recognition, and more disciplined decision-making across market cycles.

"ChronoStock changed how I interpret volatility," said Alex Morgan, an individual investor and early user. "Instead of reacting to price swings, I now understand what kinds of events have mattered historically. It's helped me think more clearly — even when the market is noisy."

By making market narratives visible, ChronoStock gives investors a clearer lens on the past — and a stronger foundation for thinking about the future. ChronoStock is available today on the App Store and Google Play.

# 5 Appendix

## Iteration 1

**ChronoStock Demystifies the Stock Market for Beginners with New "Narrative Charting" Technology**

**TORONTO — January 22, 2026 — ChronoStock**, ChronoStock introduced a new mobile application designed to turn stock market confusion into confidence. By overlaying clear, plain-English explanations onto historical price charts, ChronoStock acts as a personal guide for the millions of retail investors who struggle to interpret market volatility.

For new investors, a stock chart is often an intimidating wall of numbers. While they can see that a stock price crashed, they rarely understand the fundamental mechanics of why. This lack of understanding leads to anxiety, panic selling, and a feeling that the market is a "black box" accessible only to professionals.

ChronoStock removes this barrier by teaching the user through historical context. Instead of just showing a line graph, the app creates an interactive "Storyline." When a user taps on a historical dip or spike, ChronoStock provides a summary of the real-world event that caused it. This helps users recognize patterns, such as how interest rate hikes affect tech stocks or how FDA approvals impact biotech companies. ChronoStock empowering them to make smarter decisions in the future.

"We built ChronoStock because we believe you shouldn't need a finance degree to understand your portfolio," said the Product Lead at ChronoStock. "Most apps just show you what happened. ChronoStock teaches you why it happened. We are giving users the historical context they need to stop gambling and start investing."

The app utilizes advanced AI to synthesize complex financial news into digestible, one-sentence explanations. This approach transforms the passive act of checking a stock price into an active learning experience.

"I always felt like I was guessing when I bought a stock," said Michael Chen, a novice investor and beta tester. "With ChronoStock, I can look back at the last five years of a company and actually understand the story behind the volatility. It's like having a financial tutor right inside my phone."

ChronoStock is available today on the App Store and Google Play.

**Feedback:** This brands ChronoStock as "training wheels" for novices. This alienates intermediate investors who need a powerful utility, not a tutor, and implies that users will eventually outgrow the product once they understand the market mechanics.

## Iteration 2

**ChronoStock Revolutionizes Investment Research by Compressing Hours of Analysis into Seconds**

**TORONTO — January 22, 2026 — ChronoStock** today announced the launch of its high-speed market research platform, solving the "information overload" crisis for retail investors. By using Generative AI to map news events directly onto price action, ChronoStock eliminates the need for the tedious "multi-tab" research process that plagues modern traders.

In the current landscape, investigating a stock's history is a fragmented, time-consuming process. An investor interested in a company's past volatility must juggle price charts, search engines, regulatory filings, and news archives to piece together a timeline. This inefficiency creates a "Research Gap," where investors

make decisions based on incomplete information simply because they lack the time to dig deeper.

ChronoStock closes this gap with its "Context-First" engine. The app automatically correlates significant price movements with the specific news events that triggered them, presenting the data in a unified, interactive visualization. Users can now scan a 5-year history and absorb the key narrative drivers in under 60 seconds.

"Time is the most valuable asset for any investor," said the Product Lead at ChronoStock. "We realized that the problem isn't a lack of information; it's a lack of organization. ChronoStock does the heavy lifting of synthesis, instantly filtering out the noise so our users can focus on the signal."

The platform is designed for efficiency, featuring a "Smart Scrubber" that allows users to slide through time and instantly see the headlines associated with specific valuations. It is the first tool of its kind to bring institutional-grade narrative mapping to a mobile interface.

"Researching a new position used to take me an entire Sunday afternoon," said Elena Rodriguez, an active trader and ChronoStock user. "Now, I can pull up a ticker on ChronoStock and see the entire cause-and-effect history of the company in a single glance. It has completely streamlined my workflow."

ChronoStock is available for download immediately, offering a streamlined path to smarter, faster market research.

**Feedback:** This approach should be avoid, speed is a generic claim in fintech. Focusing merely on time-savings undersells your unique AI technology. Users are ultimately looking for insight and clarity, not just a faster way to read old news headlines.