
SAP Stocks - AI-Powered Real-Time Stock News Sentiment Analysis Platform

1. Problem and Solution

a. Definition - “Why” and “What”

In today’s fast-paced stock market, traders and investors face information overload. Thousands of financial articles, tweets, and reports appear every minute. Traditional analysis tools either lag behind or rely on superficial keyword matching, leading to delayed decisions, emotional trading, and missed opportunities.

This project aims to solve this by providing real-time, AI-driven sentiment insights on financial news, empowering traders to make faster and more informed investment decisions.

b. Industry Domain - “Where”

Industry: Financial Technology (FinTech), Artificial Intelligence, and Data Analytics
Application Areas:

- Stock Market Analysis
- Automated Trading Systems
- Financial Journalism
- Investment Advisory Platforms

c. Solution Provided - “How” and Core Technology Domain

Our platform delivers a comprehensive real-time sentiment analysis ecosystem for financial news using cutting-edge AI models and modern web technologies.

Core Components:

1. Real-Time News Fetching:
 - Fetches live stock-related news from 60+ online sources using Selenium.
 - Extracts and parses relevant financial content using Llama 3.2 LLM.
2. Sentiment Classification:
 - Uses a fine-tuned and quantized FinBERT model for accurate classification into *Bullish*, *Bearish*, or *Neutral* categories.
3. AI Chatbot with RAG:

- Integrates Langchain with ChromaDB for a Retrieval-Augmented Generation (RAG) pipeline.
- Employs Gemini-1.5-Flash LLM to answer user queries about stocks and market sentiment conversationally.

4. Additional Features:

- Dummy trading simulator to test sentiment-driven strategies.
- IPO Calendar and Market Insights Dashboard.
- Personalized expense tracker integrated into the platform.
- Fake news reporting system leveraging blockchain for transparency.

Core Technology Stack:

- Backend: Python (Flask), Selenium, FinBERT, Llama 3.2
- AI Layer: Langchain, ChromaDB, Gemini-1.5-Flash
- Frontend: React.js, Tailwind CSS
- Deployment: Docker, Docker Compose, Ollama API, Vercel

d. Impact Seen / Expected

Metric	Before	After (Expected)
Average Time to Analyze Market Sentiment	~15–20 min	< 10 seconds
Accuracy of Sentiment Classification	70–75%	92–95% (FinBERT)
Decision Latency for Traders	High	Reduced by 80%
Coverage of News Sources	<10	60+ global finance sources

Expected Impact:

- Helps traders identify market trends instantly.
- Reduces emotional bias in decision-making.
- Provides data-driven insights for better portfolio management.

Transform Stock Market Analysis
 “Decode Market Sentiment in Real-Time – Trade with Confidence Using SAP Stocks”

Why SAP Stocks?
 SAP Stocks leverages AI-driven sentiment analysis to process market emotions in real-time, reducing guesswork and improving trade accuracy. Stay ahead of the market with data-backed insights.

“Make Smarter Decisions, Faster – With SAP Stocks”

What Makes SAP Stocks Special?

- AI-Powered Sentiment Analysis: Tracks real-time news, social media, and financial reports to gauge market sentiment and provides personalized investment insights based on your income and market trends.
- Secure & Reliable Trading – Blockchain-based fake news reporting ensures traders aren't misled, while dummy trading lets users test strategies risk-free before investing real money.
- All-in-One Stock Intelligence – Features an AI chatbot for instant news queries, IPO calendar & Grey Market Premium (GMP) insights, and real-time stock analytics for smarter decision-making.

SYSTEM ARCHITECTURE :

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  graph TD
    Start([Start]) --> StockTicker[Stock Ticker Entered]
    StockTicker --> Fetches[Fetches Financial data-News- Social media feed]
    Fetches --> FakeNews{Fake News Reporting via blockchain}
    FakeNews -- If found fake --> Discard([Discard])
    FakeNews -- If not fake --> AIModel[AI Model]
    AIModel -- Provides --> Sentiment[Sentiment]
    Sentiment --> Personalized[Personalized traders recommendation]
    Sentiment --> DummyTrading[Dummy trading platform with market sentiment]
    Sentiment --> IPOGMPs[IPO GMPs]
    IPOGMPs --> End([End])
  
```

Key Features

- Real-Time Sentiment Analysis**
 Uses AI-powered models to analyze news articles, financial reports, and social media discussions, extracting sentiment scores.
 Positive 90%
- Trade Alerts & Signal**
 Get notified about potential buy & sell opportunities before they happen. Differentiates between bullish, bearish, and neutral signals in real-time.
- Live Financial News Updates**
 Continuously scrapes, aggregates, and curates news from trusted financial sources. Also provides fake news reporting using blockchain.
- Dummy Trading**
 Dummy trading feature lets you practice stock trading with real-time market data using virtual money, helping you test strategies without financial risk before investing real money.
- Personalized Stock Recommendation System**
 Utilizes historical market data, sentiment trends to suggest stocks with high growth potential.

More About SAP STOCK

- SAP stocks is a next-generation sentiment-based stock analyzer. Designed to help traders make data-driven and emotion-aware investment decisions. Powered by AI and machine learning.
- With SAP stocks, traders can move beyond just numbers and charts – they can understand the market's emotions and predict trends with confidence.

2. Current Status and Future Viability - “What Next”

a. Current Status

- Backend APIs and sentiment engine developed using Flask and FinBERT
- Real-time web scraping of 60+ sources implemented via Selenium
- AI chatbot integrated with Langchain + ChromaDB + Gemini LLM
- Frontend React dashboard operational
- Docker containerization completed for scalable deployment

b. Future Plans and Relevance

- Integrate advanced financial LLMs (e.g., BloombergGPT, FinGPT) for improved contextual accuracy.
- Expand to multi-language support for global financial coverage.
- Deploy on cloud (AWS / GCP) for scalability.

- Launch a Pro version for brokerage integration and live portfolio tracking.

Target Market Size:

- Global retail trading market: \$1.8 trillion+ daily volume
- Active investors worldwide: >100 million potential users

Competitive Differentiators:

- Real-time AI insights (most competitors provide delayed or static analysis).
- Interactive RAG chatbot instead of static dashboards.
- End-to-end open-source deployment with Docker support.

c. Business Model

Freemium Model:

- Free Tier: Real-time news sentiment dashboard and chatbot access.
- Premium Tier:
 - Advanced analytics (custom sentiment filters, IPO tracking).
 - API access for traders and fintech startups.
 - Subscription-based insights for brokers and portfolio managers.

d. Sponsor / Type of Support Available / Required

Available Support:

- Internal mentorship and technical infrastructure from D. Y. Patil College of Engineering.
- Hosting and compute credits via Google Gemini API (student program).

Required Support:

- Cloud sponsorship (AWS/GCP) for large-scale data storage and real-time inference.
- Financial domain partnership for real market integration and data licensing.

e. Top 3 Risks and Mitigation Plan

Risk	Impact	Mitigation Plan
Data source failure or API downtime	Medium	Maintain multiple fallback sources and caching system

Model drift leading to reduced accuracy	High	Schedule periodic retraining on updated financial datasets
Regulatory issues for financial predictions	Medium	Implement clear disclaimers and restrict to informational use only

4. Recognition Received

- Selected for internal review under AI & FinTech Innovation Projects 2025 at D. Y. Patil COE.
- Shortlisted for Agile Pune 2025 Conference Demo Track.
- Positive evaluation during departmental project showcase.

5. Project Team Details

a. Team Name – Neural Ninjas

b. Team Members

Name	Branch & Year	Photo
Uday Bhole	BE Artificial Intelligence & Data Science	
Aaryan Palve	BE Artificial Intelligence & Data Science	
Parth Magar	BE Artificial Intelligence & Data Science	
Yash Mhaskar	BE Artificial Intelligence & Data Science	

Piyush Choudhari	BE Artificial Intelligence & Data Science	

c. Project Mentor

Name	Department	Designation	Photo
Vinayak Kottawar	Artificial Intelligence & Data Science	HOD - Artificial Intelligence & Data Science	

6. College Name and Logo

D. Y. Patil College of Engineering, Akurdi, Pune

