

News Streaming using LLM's to curate the best business article for investors

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Problem statement: In the modern financial landscape, timely and relevant news is critical for investors, analysts, and decision-makers. However, manually tracking and extracting key developments across hundreds of companies from diverse news sources is time-consuming, inconsistent, and prone to human bias. Traditional tools often fail to deliver company-specific, investor-focused news summaries in a scalable and professional format.

Abstract - This project presents a scalable, serverless pipeline for real-time extraction and summarization of financial news relevant to investors. Leveraging AWS Lambda, Playwright, and OpenAI's GPT models, the system scrapes Google News for hundreds of listed and unlisted companies, filters key headlines using AI-based relevance criteria, and generates professional, investor-focused summaries. The output is stored in structured CSV files on Amazon S3, enabling timely and actionable insights for financial analysts and decision-makers.

Keywords - AWS Lambda, Web Scraping, AI-driven News Curation, Serverless Architecture.

I. INTRODUCTION

In today's dynamic financial environment, timely access to relevant news is critical for investors and analysts. With hundreds of companies generating news daily, manually tracking, filtering, and interpreting this information is time-consuming and often inefficient. Traditional methods of news monitoring fail to scale and lack the intelligence to prioritize what truly matters to investors.

This project addresses that gap by building an automated, AI-powered news pipeline that processes financial headlines at scale. Using Google News as the source, the system extracts recent news for both listed and unlisted companies, filters important stories based on investor relevance using GPT based classification, and generates clear, professional summaries. By leveraging AWS Lambda for parallel execution and OpenAI for intelligent summarization, the project ensures fast, scalable delivery of investor-focused news directly to structured storage on Amazon S3.

Motivation

- **Investor Relevance:** Manually tracking news for hundreds of companies is inefficient and misses key updates that impact investment decisions.
- **Need for Automation:** There is a lack of scalable tools that can automatically extract, filter, and summarize news in a structured, investor-ready format.
- **AI-Powered Filtering:** GPT models can intelligently differentiate between impactful and nonactionable headlines, improving content quality.
- **Cloud Scalability:** AWS Lambda enables concurrent processing of large datasets, reducing processing time from hours to minutes.
- **Professional Summarization:** Rewriting raw headlines into well-structured business summaries enhances clarity, readability, and value for financial professionals.

II. SYSTEM ARCHITECTURE

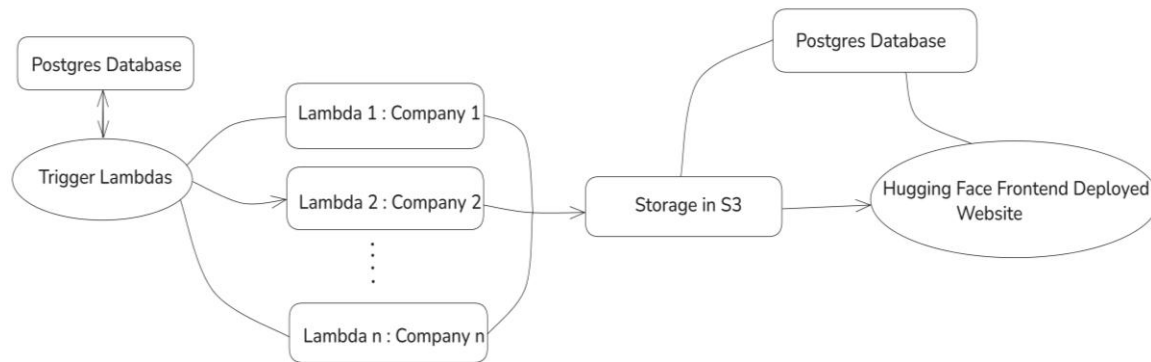


Fig :- Investor news pipeline

III. TECHNICAL DETAILS

1. Problem Description

This project aims to automate the extraction, filtering, and summarization of Google News articles for hundreds of companies, identifying headlines that are strategically important for investors. It leverages AWS Lambda for concurrent processing, Playwright for web scraping, and OpenAI's GPT models to rewrite selected headlines into investor-focused summaries, delivering concise, professional news insights directly to an S3 bucket for further use.

IV. RESEARCH QUESTIONS

1. How accurately can AI models like GPT-4o classify and summarize financial news headlines that are strategically important for investors?
2. What are the most effective prompt engineering strategies for generating concise, informative, and investor-relevant summaries of financial news using LLMs?
3. How does the use of concurrent AWS Lambda functions affect the scalability and latency of processing large-scale company news datasets?
4. Can headline-level filtering using company-specific prompts outperform generic NLP classifiers in identifying high-impact financial news?

V. OBJECTIVES

- Automate the extraction of news headlines and full articles for a large number of companies using Google News and Playwright.
- Identify and filter strategically important headlines for investors using customized, company specific prompts and GPT-based classification.
- Generate well-structured summaries and rewritten headlines in a professional tone suitable for investor communication, using OpenAI's GPT models.
- Implement scalable parallel processing with AWS Lambda to efficiently handle data collection and processing for hundreds of companies simultaneously.

VI. POTENTIAL OUTCOMES

- High-quality investor-focused summaries of news articles that enable quicker decision making and better market awareness.
- Significant time savings through automation of news collection, filtering, and summarization for hundreds of companies.
- Improved accuracy and consistency in identifying strategically relevant headlines compared to manual or rule-based approaches.

- A scalable and reusable news processing pipeline that can be applied across markets, sectors, or geographies with minimal adjustments.
- Actionable insights for financial analysts and investors, delivered in a structured format that supports integration with dashboards, alerts, or reports.

VII. APPLICATION

- Financial Market Analysis – Providing investors with quick, accurate, and relevant news summaries to support stock trading and investment decisions.
- Portfolio Management Tools – Integrating curated news into dashboards for real-time market awareness.
- Automated Research Assistance – Assisting analysts in monitoring hundreds of companies without manual searching.
- Corporate Monitoring – Tracking competitors, partners, and market trends for strategic decision-making.

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