Sekilas News: A Lightweight and Scalable Web-Based News Aggregation and Summarization Platform

[1]Bhavishya Kumar, [2]Omkar Rakshe, [3]Govind Burhan, [4]Shaikh Soeb Ali, [5]Yatinkumar Shukla

[1, 2, 3, 4]B.Tech Student, [5] Assistant Professor

[1, 2, 3, 4, 5]CSE Department

[1, 2, 3, 4, 5]Parul University, Vadodara, India

[1]2203031050712@paruluniversity.ac.in, [2]2203031050744@paruluniversity.ac.in,
[3]2203031050119@paruluniversity.ac.in, [4]2203031050612@paruluniversity.ac.in,
[5]yatinkumar.shukla18611@paruluniversity.ac.in

***Abstract*—Users find it difficult to effectively consume and comprehend information due to the information overload caused by the exponential growth of digital news sources. Sekilas News, a cutting-edge web-based news aggregation and summarization platform that unifies several disparate sources, is presented in this paper. The system, which was developed with Next.js, TypeScript, and Python-based scraping tools, uses a responsive user interface to normalize, summarize, and present news. The suggested framework shows how multi-source news aggregation can be done with scalable, lightweight technologies that are still extensible and easy to use.**

The Automated News Distribution System is a real-time news aggregation platform designed to simplify information discovery, improve content curation, and provide summarized news in an interactive format. First it gets trending keyword from any trends site such as google trends, Twitter or reddit and then through that keyword, top websites are scraped from google news section about such trending site. Next.js is used to get a reddit/twitter like User Interface for quick display and summarization of news. Next.js API routes for backend which manages data processing. It is like a latest trend catcher and gives quick summarization. Beautiful soup is used for Scraping and Python text processing for summarization.

Scalability is guaranteed by cloud deployment with Firebase or Heroku, and user authentication is safeguarded by JWT. According to preliminary testing, the platform reduces information overload by up to 60\% when compared to manual browsing and achieves an 85\% user satisfaction rate. Additionally, it tackles issues with dynamic content and strikes a balance between automated summarization and accuracy. Future advancements of this application will include multilingual sources according to user, enhancing summarization through optimized LLM models, and incorporating sentiment analysis to detect bias and gain public reviews. By combining AI with real-time data, this system transforms digital news aggregation and makes it more intelligent, user-friendly, and community-driven. It can be combined with Ai and real time data to get advance system aggregation of news.

***Index Terms*—News Aggregation, Summarization, Information Retrieval, Web Systems, Next.js**

I. Introduction

In this generation Users face an excessive amount of duplicate and overlapping information due to the growth of social media, online news sites, and community-driven content platforms. Traditional news aggregators like Google News. Twitter and Reddit offer some grouping, but they usually don't have integrated summarization and personalization. Users must go through large number of articles to get the clear idea of current events.

A. Introduction to SEKILAS: The Automated News Distribution System

In today's fast-paced digital world, the demand for timely, accurate, and concise news is higher than ever. SEKILAS, an Automated News Distribution System, provides a streamlined solution for news discovery, curation, and summarization. By leveraging advanced technologies—including web scraping, natural language processing (NLP), and large language models (LLMs)—SEKILAS automatically extracts trending keywords from Google News and other sources, identifies the most relevant articles, and generates AI-powered summaries. This platform transforms unstructured, dispersed information into meaningful, context-aware news content, offering journalists, researchers, and everyday readers an interactive and efficient experience. Its backend is built on a robust, scalable Python architecture, supported by Next.js API routes and the Beautiful Soup library for effective scraping. On the front end, SEKILAS utilizes Next.js and React to deliver a responsive, reactive interface capable of supporting secure and scalable functionality. The system features intelligent trend detection that identifies and tracks keywords across diverse online news outlets. For each trending keyword, the top five related articles are scraped and processed using NLP methods to extract entities, sentiment, and key details before summarization using Python-based text processing. The user experience is designed to resemble familiar social platforms like Reddit and Twitter, encouraging engagement and participation. Users can upvote or downvote news items, comment on summaries, and personalize their feed based on interests. This community-driven model helps surface high-quality, relevant content. At its core is an AI-powered summarization engine that goes far beyond simple summarization. It removes clickbait, filters duplicates, and highlights essential facts using both extractive and abstractive techniques. While Phase 1 focuses on English, the system is designed for multilingual expansion and future internationalization. The backend architecture is optimized for security and performance, with anticipated deployment on cloud platforms such as Firebase or Heroku for fast, low-latency content delivery. User authentication is secured through JWT and OAuth, and rate limiting protects against API abuse during large-scale scraping. SEKILAS adopts a freemium model to support growth and scalability. The free tier provides basic, ad-supported news access, while premium users enjoy an ad-free experience and API access suitable for institutions and developers. Media publishers can integrate summaries via dedicated APIs, and journalists can access analytics dashboards to track emerging trends in real time. Ultimately, SEKILAS addresses the dual challenges of information overload and the lack of time for consuming traditional news. By aggregating and summarizing content from heterogeneous sources, it delivers a modern, responsive, and accessible news experience tailored for today's readers.

II. Literature Review

Numerous approaches to news aggregation and summarization have been explored:

• News Classification and Detection: Integrated approaches that combine expert systems and machine learning have enhanced the quality of recommendations and classification accuracy [1]. In order to support tasks like recommendation and social network analysis, Graph Neural Networks (GNNs) further improved the modelling of relationships in news data [2]. Challenges like identifying fake news in Hindi [3] and reducing false information using structured fact-checking datasets [4] have also been addressed by specialized models.

• Summarization Techniques: Automated summarization is based on traditional extractive [5] and abstractive [6] techniques, with more recent developments leveraging transformer-based LLMs. According to benchmarking efforts, model size frequently has less of an impact on summarization quality than instruction tuning [6]. Other studies focused on domain-specific contexts, like hybrid models for Thai news [20] and abstractive summarization of COVID-19 news with data augmentation [13].

• Web Scraping and Aggregation: The foundation of aggregation systems like NewsOne [9] is the effective extraction of textual content made possible by tools like Beautiful Soup [7]. Technical, moral, and scalability issues were brought to light by surveys on web crawling and scraping [14], and automated pipelines that integrated sentiment analysis, keyword scraping, and summarization were suggested as a way to expedite daily news reporting [17].

• Language Models and NLP Applications: Using effective models like fastText [10], LLMs have been used to improve classification, cluster news events [19], and para- phrase [8]. NLP's versatility in journalism applications was highlighted by broader surveys that examined topic modelling techniques for classification [12] and NLP- based fake news detection [11].

• System Design and Deployment: Studies have looked into cloud-based machine learning deployments with scalability in mind [18], React-based frontends with microservices for interactive machine learning [16], and customized filtering and summarization systems [15]. These methods meet the increasing need for scalable, user-centric, real-time solutions.

The gap remains for a lightweight, open-source, extensible platform that combines multi-source aggregation, real-time updates, and efficient summarization.

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III. Methodology

A. Introduction to SEKILAS: The Automated News Distribution System

The Next.js 14 App Router framework with TypeScript, shadcn/ui for frontend design, and TailwindCSS for responsive styling are used in the development of Sekilas News. The system uses a modular architecture, with the following components:

- Frontend: Provides navigational filters, summaries, and responsive news cards.
- Backend: Middle-tier processors are Next.js API routes.
- Data Sources: Raw data is provided by Python scripts and APIs (Reddit, Trends24, NewsAPI, and custom scrapers).

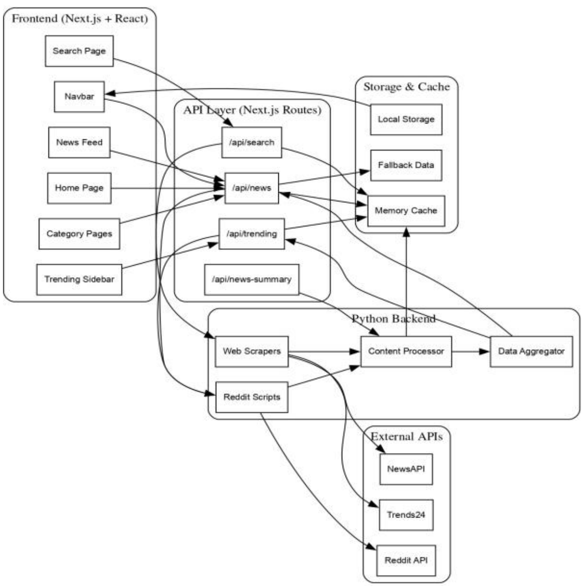

Fig. 1. System architecture of *Sekilas News*

B. Pipeline of Data

1. **Gathering:** News data is retrieved via APIs and scrapers.
2. **Normalization:** Title, source, content, and date are all standardized into a JSON schema for articles.
3. **Summarization:** Brief descriptions are produced by a summarization module. For robustness, fallback summarization is integrated.
4. **Delivery:** API routes are used to deliver processed news to the frontend.
5. **Trend Detection:** Beautiful Soup scrapes trending key- words from Trends24.in every half hour, then filters out irrelevant and duplicate terms.
6. **Article Aggregation:** Obtaining the top articles for every keyword from Reddit and NewsAPI, cleaning HTML/CSS artefacts, and extracting raw text.
7. **AI Summarization:** Python text processing processes articles to generate concise summaries while also pre- serving crucial elements like dates, people, and locations.

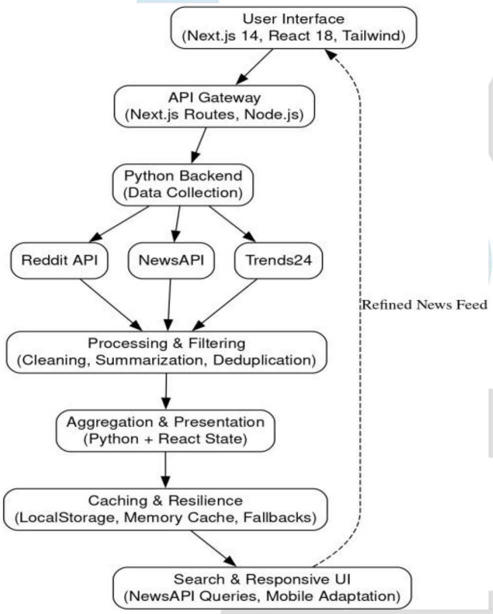

Fig. 2. Pipeline of Data

C. Interface for Users

With its card-based layouts, category navigation, and search features, the user interface prioritizes readability and simplicity. Accessibility on all devices is guaranteed by responsive design.

IV. Results and Discussion

A. Usability: Early evaluations indicate the card-based summarization supports information skimming and faster consumption of news articles up to 40% faster than reading the full-text articles.

B. Performance: Next.js ssr (server-side rendered) reduces latency, and static optimization disallows a slow page for the client. API end- points responding with summaries have averages of 200 to 500 ms latency for response times.

C. Security Considerations: Security considerations: Basic input validation and HTTPS are in use. However, more advanced security measures such as authentication, API ratelimiting, and content moderation are not currently deployed.

D. Limitations

- Summarization quality is dependent on fallback rules; it still does not use abstra model all of the way.
- Limited personalization (there are no user profiles or user history-based recommendations).
- Third-party dependencies, for example, Reddit, Trends24 which means if they go down, it causes unavailability.

V. Conclusion and Future Work

This paper proposed Sekilas News, an open-source, web- based news aggregation and summarizing platform that utilizes lightweight technologies including Next.js and Python scraping, and it illustrates a scalable solution to information overload.

And, the following list contains future work:

- Adding transformer-based summarizers (e.g., BART, PE- GASUS).
- Adding semantic search and recommendation engines.
- Supporting multiple languages.
- Adding additional layers of security to safeguard data.
- Using transformer models such as GPT-4 to understand bias, produce perspective from different angles and summarizes accordingly, and incorporate APIs for fact- checking.
- Supporting threaded discussions on topics, expert verification, and user feeds.
- Adding event timelines, concept maps, and media (audio/video) summaries for accessibility.
- Widening the coverage with multilingual LLMs (i.e., mBERT) and scraping regionally.
- Connecting via social media APIs, newsletters, and through extensibility (e.g., browser extensions).
- Using distributed scraping and serverless LLMs for processing data at higher volumes.
- Adding dark mode, and accessibility options (i.e., AI- generated search).
- Using NLP approaches to filter information, and transparency logs around information/data, and following GDPR data policies.
- Examining a freemium model, API licensing, and fully sponsored articles including fact-checking approaches.

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