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Development of an AI-Powered Global News Bias and Narrative Intelligence System for Real-Time News Analysis

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Abstract: ***The rapid growth of digital news platforms and the rise of AI-generated misinformation have increased the need for intelligent systems that help users critically evaluate news content. Many existing news websites simply display headlines and articles without providing tools to analyze bias, verify facts, or understand different narratives, making it difficult for readers to judge the credibility of information. This project proposes an AI-Powered Global News Bias and Narrative Intelligence Platform that transforms traditional news reading into an analytical and interactive experience. The system is developed as a full-stack web application using React and TypeScript for the frontend and Node.js with Express for the backend, integrated with a Supabase PostgreSQL database for efficient data management. The platform retrieves live news articles from multiple APIs and applies artificial intelligence techniques such as news summarization, bias detection, narrative analysis, fact checking, and cross-language comparison to provide deeper insights into news content. In addition to analysis features, the system includes functionalities such as an AI chatbot for user interaction, automated newsletters, video search, personalized dashboards, and audio news briefings. It notifications based on user interests to enhance the overall user experience. Experimental testing with real-time news data shows that the platform can efficiently collect, process, and analyze news articles while delivering AI-generated insights quickly. The proposed system helps users better understand current events by providing contextual analysis and intelligent recommendations.***

Keywords: ***News Intelligence Platform, Bias Detection, Narrative Analysis, Fake News Detection, AI Chatbot, News Aggregation, React, Node.js, Supabase.***

I. INTRODUCTION

The internet has become the primary source of news for people worldwide, delivering information instantly through websites, social media, and mobile applications. While this accessibility allows users to receive updates quickly, it also creates challenges such as misinformation, biased reporting, and an overwhelming amount of content, making it difficult for readers to identify reliable information. To address this problem, this project introduces an AI-Powered Global News Bias and Narrative Intelligence Platform that helps users better understand digital news. The system collects real-time news from multiple sources and applies Artificial Intelligence and Natural Language Processing (NLP) techniques to summarize articles, detect possible bias, analyze narratives, and provide fact-checking insights. The platform is developed as a full-stack web application using React and TypeScript for the frontend and Node.js with Express for the backend, with Supabase PostgreSQL used for data storage. It also includes features such as an AI chatbot, personalized news recommendations, newsletters, video search, audio news briefings, and a user dashboard. By combining real-time news aggregation with AI-based analysis, the platform provides a more interactive and informative way for users to explore news and better understand current events.

II. LITERATURE REVIEW

The rapid growth of digital news platforms has changed how people access information. Online news sources provide instant updates on global events, but the large amount of available content often makes it difficult for users to identify reliable and meaningful information. Many existing news platforms mainly display headlines and articles without offering tools to analyze or understand the news in depth.

News aggregation systems collect articles from multiple sources and present them on a single platform, allowing users to access news from

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different publishers easily. However, most traditional news aggregators provide limited analytical features and do not help users evaluate the context or perspective of the news.

Recent advancements in Artificial Intelligence (AI) and Natural Language Processing (NLP) have made it possible to automatically process and analyze news content. AI techniques can summarize articles, identify key topics, and provide insights that help users understand news more efficiently. The NewsHub platform builds on these advancements by combining news aggregation with AI-based analysis and interactive features such as AI chatbots and personalized recommendations to provide a smarter and more engaging news reading experience.

III. PROBLEM STATEMENT

The increasing availability of online news has made information easily accessible, but the large volume of articles from multiple sources often makes it difficult for users to quickly understand important information. Most existing news platforms mainly display headlines and articles without providing tools that help users analyze or interpret news content effectively. Users often need to read multiple articles to understand the key points, which can be time-consuming and may lead to information overload. In addition, many platforms provide limited interaction and lack intelligent features such as article summarization, personalized recommendations, and interactive assistance. Therefore, there is a need for a system that not only aggregates news from various sources but also helps users understand the information more efficiently. The NewsHub platform addresses this problem by providing AI-based news summarization, chatbot interaction, personalized recommendations, and automated news updates, enabling users to explore and understand news content more effectively.

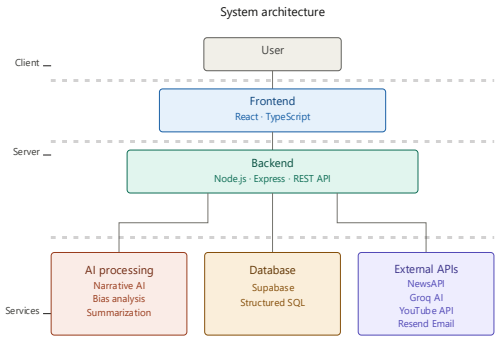
IV. OBJECTIVES

The main objectives of the AI Powered News Bias and Narrative Intelligence Platform are:

- To develop a web-based platform that collects and displays news articles from multiple online sources.
- To apply Artificial Intelligence techniques to summarize news articles, helping users quickly understand key information.
- To analyze news content and provide insights into bias and narrative patterns present in the articles.
- To implement an AI-based chatbot that allows users to interact with the system and ask questions related to news topics.
- To provide personalized news recommendations based on user interests and reading behavior.
- To include additional features such as video search, automated newsletters, and audio news briefing to improve user engagement.
- To design a responsive and user-friendly interface using modern web technologies for efficient news exploration.
- To enhance the news reading experience by combining news aggregation, AI analysis, and interactive tools within a single platform.

V. SYSTEM ARCHITECTURE

The system architecture of the proposed platform is designed using a layered approach that integrates the user interface, application logic, artificial intelligence processing, and external services to provide intelligent news analysis



A. User Layer

The User interacts with the system through a web interface using a browser or device. Users can search for news articles, view summaries, analyze bias, and access personalized recommendations. All user requests are first handled by the frontend interface.

B. Frontend Layer

The Frontend is developed using React and TypeScript, which provide a responsive and interactive user interface. This layer is responsible for displaying news content, AI-generated insights, dashboards, and other platform features. It communicates with the backend server through API requests

C. Backend Layer

The Backend, implemented using Node.js and Express, manages the core application logic. It processes requests from the frontend, interacts with the database, and integrates with external APIs. The backend also coordinates AI processing tasks and ensures smooth communication between different system components.

D. AI Processing Module

The AI Processing module performs intelligent analysis on news articles. It applies Natural Language Processing techniques to generate summaries, detect potential bias, and analyze the narrative structure of news content. These features help users understand the context and reliability of information.

E. Database Layer

The system uses Supabase PostgreSQL as the database for storing user data, news articles, analysis results, and system information. This database ensures secure storage and efficient retrieval of information required by the platform.

VI. EXISTING SYSTEM

The existing system mainly consists of traditional news websites and news aggregation platforms that collect news articles from different sources and display them to users. These platforms allow users to access news easily, but they mainly focus on presenting headlines and full articles without providing advanced tools for analysis. As a result, users often need to read complete articles to understand the main information, which can be time-consuming.

In addition, these systems offer limited tools for analyzing news content and do not provide interactive features that help users explore news topics more effectively. Personalization features are also limited, making it difficult for users to receive news based on their interests. Because of these limitations, users may find it challenging to quickly understand and explore important news information.

VII. METHODOLOGY

The AI-Powered Global News Bias and Narrative Intelligence Platform follows a structured methodology that combines news aggregation, artificial intelligence, and natural language processing to analyze news content. The system collects real-time news articles from multiple sources using external news APIs and stores them in the database for processing.

Natural Language Processing (NLP) techniques are applied to analyze the articles and identify important information such as topics, keywords, and narrative patterns. AI-based summarization generates short summaries of long articles, helping users quickly understand the main points, while narrative and bias analysis compare news from different sources to highlight different perspectives.

The system also includes a conversational AI chatbot that allows users to interact with the platform. In addition, recommendation features suggest relevant articles based on user interests, improving the overall news reading experience.

VIII. PROPOSED SYSTEM

The proposed system, AI Powered News Bias and Narrative Intelligence Platform, is designed to help users understand news more effectively. The platform collects news articles from multiple sources and uses artificial intelligence to summarize articles and analyze their narrative or perspective.
It also includes features such as an AI chatbot for user interaction, personalized news recommendations, video search, automated newsletters, and audio news briefings. By combining news aggregation with AI-based analysis, the system provides a more efficient and interactive way for users to explore and understand news content. The platform also helps users identify possible bias and compare different viewpoints on the same topic. It presents insights in a clear and user-friendly interface, making complex information easier to understand.

This approach improves transparency and supports users in making more informed decisions when consuming news. Additionally, the system saves users time by providing summarized and organized news content. It also encourages critical thinking by highlighting different perspectives in news reporting.

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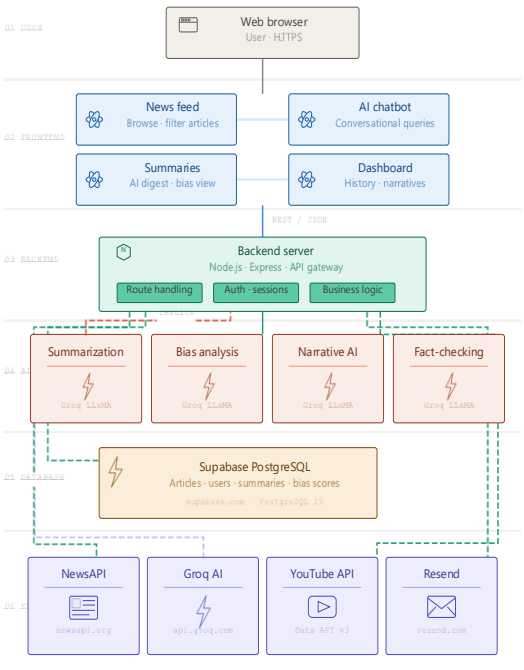
IX. SYSTEM DESIGN

The system design describes the structure and working of the AI-Powered News Bias and Narrative Intelligence Platform. The platform follows a full-stack web architecture that includes frontend, backend, and database components. The frontend is developed using React and TypeScript, providing a responsive interface for users to browse news articles, view summaries, and interact with the AI chatbot.

The backend is built using Node.js and Express, which handle API requests, data processing, and communication with AI services for analyzing news content. The system uses a Supa base PostgreSQL database to store user information, news articles, and analysis results. These components work together to collect news from multiple sources, analyze it using artificial intelligence, and present useful insights to users through an interactive platform. This architecture ensures efficient data flow between system components and supports real-time news analysis. It also improves system scalability and performance as the platform grows.



X. API IMPLEMENTATION

The AI Powered News Bias and Narrative Intelligence Platform uses several REST APIs to retrieve news data, perform AI-based analysis, manage user features, and provide services such as newsletters and video search. The backend is developed using Node.js and Express, and all API requests are handled on the server side to ensure secure communication with external services such as AI models and news providers.

XI. NEWS AND INGEST APIS

The News and Ingest APIs collect and manage news articles in the system. The endpoint POST /api/ingest fetches news articles from external sources and stores them in the database. The endpoint POST /api/force-refresh removes existing articles and retrieves fresh data to keep the system updated. Users can view articles through GET /api/articles, which returns a paginated list filtered by category. The endpoint GET /api/articles/:id provides detailed information about a specific article along with its narrative and bias analysis.

XII. INTELLIGENCE APIS

The Intelligence APIs provide AI-based analysis features. The endpoint GET /api/narratives retrieves narrative threads related to news topics, organized by recent activity. The endpoint GET /api/narratives/:id shows detailed information about a specific narrative thread and related articles. The endpoint POST /api/compare-narrative compares narratives from different sources or languages. The endpoint POST /api/ask enables the AI chatbot, allowing users to ask questions and receive AI-generated responses

XIII. PERSONAL FEATURE APIS

The Personal Feature APIs support user-specific features. The endpoint POST /api/features/save-article allows users to save or remove bookmarked articles. The endpoint GET /api/features/dashboard/:userId provides reading statistics and personalized recommendations. The endpoint POST /api/features/fact-check performs AI-based fact checking on news content and returns a result with a confidence score.

XIV. NEWSLETTER APIS

The Newsletter APIs manage email subscriptions and newsletter activity. The endpoint POST /api/newsletter/subscribe allows users to subscribe to news updates, while POST

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/api/newsletter/unsubscribe lets users cancel their subscription. The endpoint GET /api/newsletter/track/:token tracks email interactions such as opens and link clicks..

XV. VIDEO API

The Video API retrieves video content related to news topics. The endpoint POST /api/videos/search uses the YouTube Data API v3 to find videos related to specific news topics, providing users with additional visual information about current events

XVI. SYSTEM TESTING

System testing is the process of checking whether the developed system works correctly according to the specified requirements. It helps identify errors, bugs, and performance issues before the system is deployed. In the AI Powered News Bias and Narrative Intelligence Platform, system testing was performed to ensure that all modules, APIs, and features function properly. The frontend interface was tested to verify that users can browse news articles, view summaries, and interact with the chatbot without errors. The backend APIs were tested to ensure proper communication between the server, external APIs, and the database. News retrieval, AI analysis features such as summarization and narrative detection, and additional features like video search, newsletters, and personalized recommendations were also tested.

The results showed that the system works efficiently and successfully integrates news aggregation with AI-based analysis, providing reliable information and a user-friendly experience.

XVII. IMPLEMENTATION & RESULT

I. IMPLEMENTATION

The AI Powered News Bias and Narrative Intelligence Platform was implemented as a full-stack web application using modern web technologies. The frontend of the system was developed using React and TypeScript, which provides a responsive and interactive user interface for browsing news articles, viewing summaries, and interacting with the AI chatbot. The backend was developed using Node.js and Express, which handle API requests, news data processing, and communication with external services. The backend also manages AI-based features such as news summarization, narrative analysis, and chatbot responses. The system uses Supabase PostgreSQL as the database to store news articles, user data, and system-related information. External APIs are integrated to retrieve live news data, perform AI analysis, and provide related video content. All APIs are handled securely through the backend server to ensure safe communication with external services.

II. RESULT

After implementation, the system was tested with live news data to evaluate its functionality and performance. The platform successfully retrieves news articles from external sources and displays them in a structured format for users. The AI analysis features generate summarized versions of articles and provide narrative insights that help users quickly understand news content. The AI chatbot allows users to ask questions related to news topics and receive relevant responses. Additional features such as video search, personalized recommendations, and automated newsletters were also tested and found to function correctly. The results show that the platform effectively combines news aggregation with AI-based analysis and interactive features, providing users with a more informative and engaging way to explore news content.

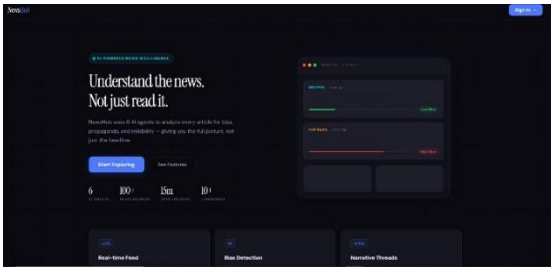

Fig 1.1 LANDING PAGE

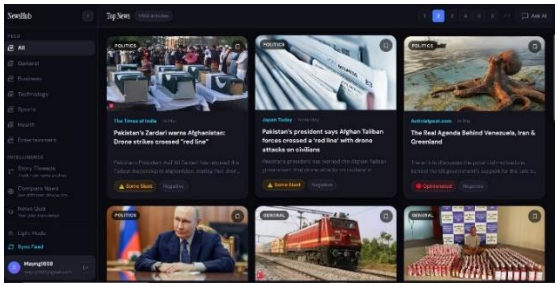

Fig 1.2 NEWS DISPLAY PAGE

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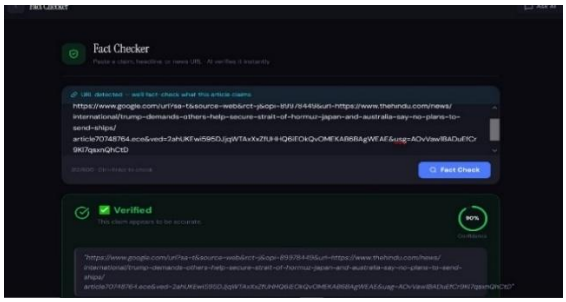

Fig 1.3 FAKE NEWS DETECTION

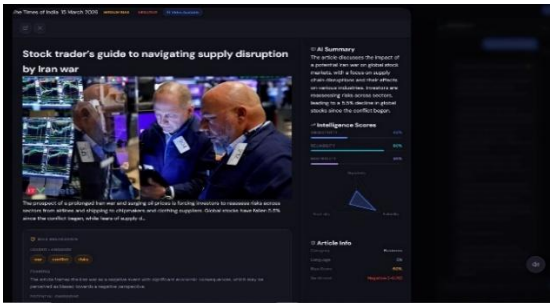

Fig 1.4 ARTICLE ANALYSIS PAGE

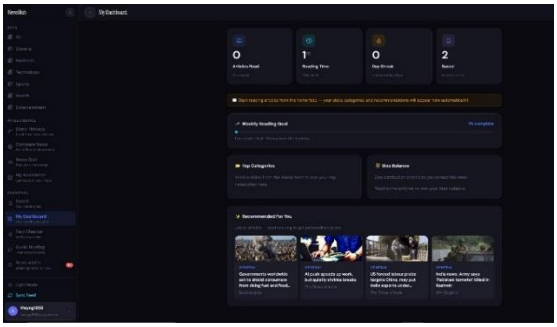

Fig 1.5 USER DASHBOARD

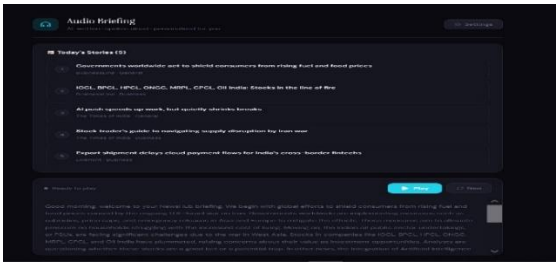

Fig 1.6 AUDIO BRIEFING

XVIII. CONCLUSION

The AI Powered News Bias and Narrative Intelligence Platform was developed to improve how users access and understand digital news. The system collects news from multiple sources and uses artificial intelligence to generate summaries and analyze narratives, helping users quickly understand important information. Features such as the AI chatbot, personalized recommendations, video search, and automated newsletters make the platform more interactive and useful for users.

The system is implemented using React and TypeScript for the frontend, Node.js with Express for the backend, and Supabase PostgreSQL for data storage. Overall, the platform provides a reliable and user-friendly solution that helps users explore news more efficiently and make better-informed decisions.

XIX. FUTURE ENHANCEMENTS

Although the AI Powered News Bias and Narrative Intelligence Platform provides several intelligent features for analysing and exploring news content, there are still opportunities for future improvement. One enhancement could be the integration of more advanced bias detection models to better identify different types of bias in news articles and help users understand how different sources present the same event. Another improvement is the development of a mobile application version of the platform, allowing users to access personalized news updates, summaries, and chatbot features more easily on smartphones. The system could also support multi-language news analysis, enabling users to compare news coverage from different countries and languages. Future versions may also include improved recommendation systems that analyze user reading behavior more effectively to provide more accurate and personalized news suggestions, making the platform more intelligent and user-friendly.

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