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Newsly
A Personalised News Feed Application Using Mern Stack

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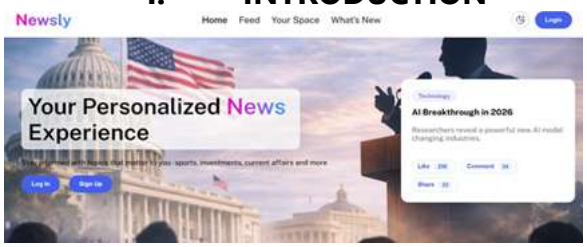
Abstract- In today's digital age, users are overwhelmed with an excessive amount of information from various news platforms. Finding relevant and personalized news becomes difficult and time-consuming. The objective of this project, Newsly, is to develop a personalized news application that delivers curated news content based on user interests. The application allows users to select their preferred categories and generates a customized news feed using real-time data from NewsAPI. Built using React (Vite), the system focuses on simplicity, responsiveness, and user experience. Instead of implementing a complex backend, localStorage is used to simulate authentication and data persistence for demonstration purposes. This project demonstrates how modern frontend technologies can be leveraged to build efficient, scalable, and user-centric applications. Future enhancements may include AI-based recommendations, real-time updates, and backend integration.

Keywords – Personalisation, MERN Stack, NewsAPI, React.js, Node.js, Supabase, Clerk Auth, Express.js, PostgreSQL.

I. INTRODUCTION



The rapid expansion of digital media has transformed how users consume news. With a massive volume of articles published across multiple platforms, users are frequently exposed to information overload, making it difficult to identify relevant content. As a result, users spend excessive time filtering news, leading to inefficient consumption and reduced engagement.

Many existing platforms rely on generalized content delivery or opaque recommendation algorithms, which often fail to provide accurate personalization—especially for new users with no prior interaction data. Additionally, complex interfaces and excessive advertisements further degrade the user experience.

To address these challenges, this project introduces Newsly, a lightweight personalized news application that delivers curated content based on explicit user preferences. Built using a React-based frontend and integrated with NewsAPI, the system enables users to select their interests and receive a dynamically updated news feed.

By emphasizing simplicity, transparency, and user control, Newsly enhances the news consumption experience while reducing information overload, demonstrating the effectiveness of modern frontend technologies in building user-centric applications.

A. Problem Statement

The exponential growth of digital news content has led to information overload, making it difficult for users to identify relevant and meaningful articles. Users are often required to manually filter large volumes of content, resulting in inefficient consumption and reduced engagement.

Existing news platforms rely on generalized feeds or opaque recommendation algorithms that depend on prior user data, making personalization ineffective for new users. Additionally, complex interfaces, excessive advertisements, and limited user control further degrade the overall experience. These limitations highlight the need for a simple and transparent approach to personalized news delivery.

B. Proposed Solution

To address the identified challenges, this project presents Newsly, a lightweight personalized news application designed to deliver curated content based on explicit user preferences. Unlike traditional platforms that rely on opaque recommendation algorithms, Newsly provides a transparent and user-driven approach to personalization.

The application introduces a dedicated personalized feed section called "Your Space", where users can access news content tailored to their selected interests. As illustrated in the system interface, users can navigate through sections such as Home, Feed, and Your Space, with the latter acting as the core personalization module. This section dynamically displays relevant articles based on user preferences, ensuring a focused and clutter-free experience.

Developed using a React (Vite) frontend and integrated with NewsAPI, the system fetches real-time news data and presents it in an interactive card-based layout. Features such as category tagging, engagement options (like, comment, share), and intuitive navigation further enhance usability. User preferences are managed using localStorage, enabling seamless personalization without requiring backend infrastructure in the initial implementation. By combining a user-friendly interface with explicit preference selection and a dedicated personalized feed (Your Space), Newsly effectively minimizes information overload while improving content relevance and user engagement.

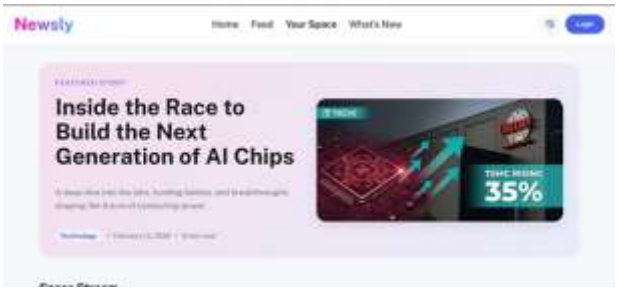


Fig. 2

II. LITERATURE REVIEW

The rapid growth of digital news platforms has led to extensive research in the areas of information filtering, personalization, and user experience optimization. Modern systems increasingly rely on recommendation techniques to deliver relevant content to users.

Previous studies have explored the use of content-based filtering and collaborative filtering methods for personalized news delivery. These approaches analyze user behavior, preferences, and interaction history to recommend relevant articles. However, such systems often require significant historical data, making them less effective for new users, a challenge commonly referred to as the cold-start problem.

Existing news applications such as Google News and Inshorts provide curated content using algorithm-driven recommendations. While these platforms improve accessibility, they often lack transparency in how content is selected, limiting user control over personalization. Additionally, excessive content aggregation and advertisement-heavy interfaces contribute to information overload rather than reducing it.

Recent research has also emphasized the importance of user-centric design in improving engagement and usability. Studies highlight that simple interfaces, explicit user input, and clear content categorization significantly enhance user satisfaction and interaction efficiency.

Despite these advancements, a key research gap remains in developing lightweight systems that combine effective personalization with transparency and simplicity. Many existing solutions either rely heavily on complex machine learning models or fail to provide direct user control over content selection. The proposed system, Newsly, addresses these limitations by adopting a user-driven personalization approach. Instead of relying solely on implicit behavioral data, it allows users to explicitly select their interests and access a dedicated personalized feed (Your Space), ensuring immediate and transparent content filtering. This approach aligns with recent trends in user-centric system design while maintaining simplicity and performance.

III. METHODOLOGY

The proposed system follows a frontend-driven workflow to deliver personalized news content. User authentication is handled using Clerk, enabling secure login and signup.

After authentication, users select their preferred news categories, which are stored using Supabase (PostgreSQL) and localStorage for persistence. The system then fetches real-time news data from NewsAPI.

A client-side content filtering mechanism processes the fetched data and selects relevant articles based on user preferences. The filtered content is displayed in a dedicated personalized feed section called "Your Space", presented in a structured card-based layout. The system also supports user interactions such as liking, commenting, and searching, enhancing engagement. The overall workflow is illustrated in Fig. 3.

This methodology ensures a lightweight, scalable, and efficient approach to personalized news delivery while maintaining simplicity and user control.

3.A. Tech Stack

Layer	Technology Used	Purpose
Front-end	React (Vite)	UI development & responsive design
Back-end	Node.js, Express.js	API handling and server-side logic
Authentication	Clerk Auth	Secure user authentication
Database	Supabase (PostgreSQL)	User data and preferences storage
API Integration	NewsAPI	Fetch real-time news articles
State Storage	Local Storage	Client persistence of preferences
Deployment	Github and Netlify	CI/CD and Deployment

3.B. Workflow

IV. FEATURES & SERVICES

The Newsly application incorporates a set of essential features designed to enhance usability, personalization, and overall user experience. The system focuses on delivering relevant content while maintaining a simple and intuitive interface.

- Personalized News Feed: The application provides a customized news feed based on user-selected interests, ensuring that users receive relevant and meaningful content while minimizing information overload.
- Category-Based Customization: Users can select preferred categories such as technology, sports, or business, allowing the system to filter and display content aligned with their interests.
- Search Functionality: A built-in search feature enables users to explore news articles on specific topics, improving accessibility and content discovery.
- Responsive User Interface: The application is designed with a responsive layout, ensuring seamless performance across different devices and screen sizes.
- Theme Customization: Support for light and dark modes allows users to personalize the interface according to their preferences, enhancing readability and comfort.

These features collectively contribute to an interactive, efficient, and user-centric news consumption experience, aligning with the objective of reducing information overload while improving accessibility.

V. RESULTS AND OUTPUT

The developed application successfully demonstrates the implementation of a personalized news delivery system using a lightweight frontend architecture. The system validates the effectiveness of explicit user preference selection in reducing information overload and improving content relevance.

Output Workflow:

- Users select their preferred categories during initial interaction
- The system dynamically fetches and displays relevant news articles using NewsAPI
- The personalized feed updates in real time based on user preferences
- Users can modify their interests at any time to refine recommendations
- The search functionality enables quick retrieval of topic-specific news

The application provides a smooth and responsive user experience, supported by an intuitive interface and efficient data handling. Despite the absence of backend infrastructure in the current implementation, the system maintains consistent performance and usability, demonstrating the feasibility of building scalable and user-centric applications using modern frontend technologies.

VI. CONCLUSION

The Newsly application successfully addresses the problem of information overload by delivering personalized news content. The project demonstrates the effective use of frontend technologies to build a responsive and user-centric application.

Although the current version is a frontend-only implementation, it lays a strong foundation for future improvements such as backend integration, real-time updates, and AI-driven recommendations.

VII. FUTURE SCOPE

While the current implementation focuses on a frontend-based personalized news system, several enhancements can be introduced to improve scalability, intelligence, and functionality.

- Backend Integration: Implementation of a full-stack architecture using Node.js and Express.js, with database support (MongoDB or PostgreSQL via Supabase) for persistent user data management.

- AI-Based Recommendation System: Integration of machine learning models to provide advanced, behavior-based personalization alongside explicit user preferences.
- Authentication System: Secure user authentication and session management using modern solutions such as JWT or third-party services like Clerk.
- Real-Time Notifications: Implementation of push notifications to deliver breaking news and updates instantly to users.
- Mobile Application Development: Extension of the platform into a mobile application using frameworks such as React Native to increase accessibility and user reach.

These enhancements will transform the application from a lightweight prototype into a fully scalable and production-ready personalized news platform.

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