PERSONALIZED NEWS DIGEST

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College : Mangalore Institute of Technology and Engineering, Moodbidre
Branch : Department of Computer Science & Engineering (IOT AND Cyber Security with Blockchain Technology)
Guide(s) : Dr. Shivananda V Seeri
Student(S) : Mr. Prathamesh Godse
Mr. Prajwal Shetty S
Ms. Sneha Nayak

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Introduction:

In today's digital age, the overwhelming volume of news from social media, websites, and blogs often leads to information overload, making it difficult for users to find relevant and reliable content. The Personalized News Digest project addresses this by delivering clean, concise, and tailored news summaries based on user interests. Using Natural Language Processing (NLP) techniques such as tag segregation, sentiment analysis, and summarization with pre-trained models from Hugging Face, the system efficiently filters and curates content. It is built on a robust frontend-backend architecture, where the frontend offers an intuitive interface for topic-based filtering, and the backend manages data fetching, processing, and API integration. This approach ensures users receive meaningful, unbiased updates in a distraction-free manner, providing a smarter and more efficient way to consume news.

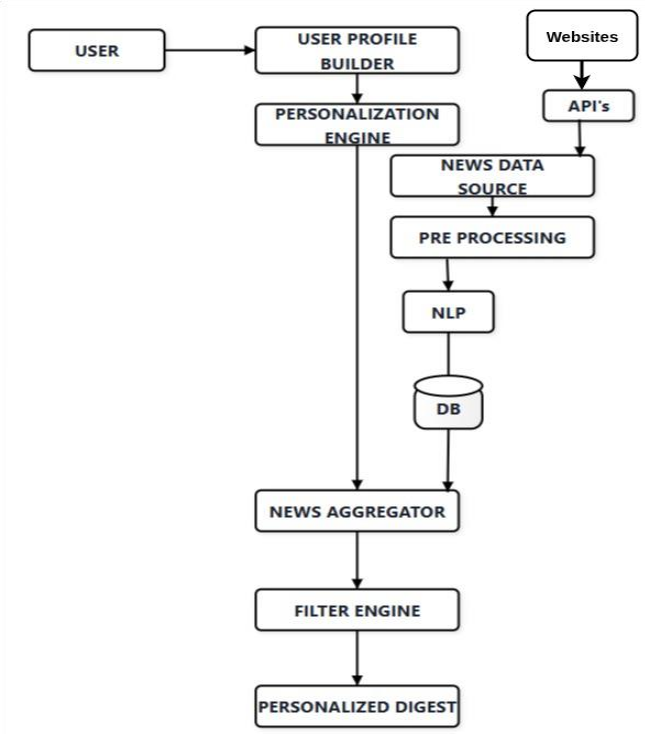

Figure 1: Architecture Diagram

Objectives:

1. Deliver Relevant News: Provide users with news content that is directly relevant to their interests, free from unnecessary details or sensationalism.
2. Summarize Effectively: Use NLP techniques to generate short, accurate summaries of long-form news articles for faster and more efficient reading.
3. Classify News Intelligently: Categorize news articles based on tags (topics) and sentiment (positive, negative, or neutral) to enable better filtering and customization.
4. Ensure Unbiased Delivery: Minimize the impact of biased reporting by focusing on facts and essential information.
5. Build a User-Friendly Interface: Develop a frontend that allows users to easily search, filter, and read news summaries.
6. Implement a Robust Backend: Create a backend system capable of fetching, processing, and delivering news data using NLP models such as Hugging Face for summarization, sentiment analysis, and tag segregation.
7. Enhance User Experience: Offer a distraction-free and time-efficient news consumption experience.

Methodology:

The methodology of the Personalized News Digest project follows a structured pipeline that collects, processes, and delivers relevant news content to users. Initially, data is gathered from multiple sources such as RSS feeds, APIs, and online platforms to ensure a continuous and diverse flow of information. The collected data is then preprocessed by removing noise like HTML tags, duplicates, and irrelevant content, followed by normalization techniques to prepare it for analysis. Natural Language Processing (NLP) techniques, including tag segregation, sentiment analysis, and text summarization using pre-trained models from Hugging Face, are applied to extract key insights and generate concise summaries.

Result and Conclusion:

The Personalized News Digest system was successfully developed and implemented, achieving its objective of delivering concise, relevant, and categorized news content. The system effectively fetches news from multiple sources, processes it using NLP techniques such as summarization, sentiment analysis, and tag segregation, and presents it through a user-friendly interface. Features like authentication, role-based access (viewer, editor, admin), bookmarking, and filtering enhance usability and personalization. The frontend-backend integration ensures smooth data flow, and the system is capable of providing distraction-free, meaningful news updates, thereby reducing information overload for users.

The Personalized News Digest project successfully addresses the problem of information overload by providing a streamlined and intelligent news consumption platform. By integrating Natural Language Processing techniques and a structured frontend-backend architecture, the system delivers personalized, concise, and unbiased news summaries. It improves user experience through efficient filtering, categorization, and role-based

interaction, making news consumption faster and more relevant. Overall, the project demonstrates how technology can transform traditional news delivery into a smarter, user-centric solution in today's data-heavy environment.

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Future Scope:

1. Implement advanced recommendation systems using machine learning and user behaviour analysis for improved personalization
2. Enhance real-time news updates using scalable streaming architectures
3. Add multilingual support to reach a broader and diverse audience
4. Develop voice-based interfaces for hands-free and accessible interaction
5. Build mobile applications for better usability and wider reach
6. Introduce offline reading features for uninterrupted access to news
7. Integrate explainable AI to provide transparency in recommendations
8. Improve bias detection mechanisms to ensure more reliable and unbiased content
9. Optimize the system for large-scale deployment with better performance and scalability