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NEWS APPLICATION SYSTEM

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ABSTRACT

This paper discusses the creation of a real-time, cross-platform news app with artificial intelligence (AI) features for a better and personalized news experience. The app is created using the Flutter platform and divides news into genre and includes a smart "Ask AI" chat interface that can answer user queries in natural language. The app also includes speech-to-text (STT) and text-to-speech (TTS) features, thus encouraging hands-free usage and enhanced accessibility. Mobile-first, the project underscores the increasing significance of AI in online media and how natural language processing and cross-platform development can be integrated to form contemporary news delivery solutions.

Keywords: Flutter, News App, Ask AI, Speech-to-Text, Text-to-Speech, Personalized News, Natural Language Processing, Cross-platform App.

1. INTRODUCTION

In the fast-changing digital era, news consumption has dramatically changed from print to mobile devices. Today, users want real- time, personalized, and interactive content. Most traditional news apps provide static content, not having intelligent interactivity and the ability to accommodate user preferences.

This project would fill the gap by providing a cross-platform AI- powered News App developed with Flutter, providing personalized news, voice interaction, and intelligent query solving. The central innovation is the incorporation of AI- driven natural language processing (NLP) that allows users to interact with the app using an "Ask AI" chat interface. This enables users to pose questions such as "Summarize today's top headlines" or "What is the latest news in sports? ", turning the application into a smart assistant rather than a mere news aggregator.

In addition to that, the application features speech-to-text (STT) and text-to-speech (TTS) features for voice interaction and accessibility. These features make the user experience richer, particularly for people with reading disabilities, visually impaired individuals, or for people who are accustomed to browsing via voice while multitasking. Through minimalistic design and real-time information updates from trusted APIs, the application offers a contemporary approach to how news is presented, navigated, and interpreted.

2. LITERATURE REVIEW

Evolution of News Apps

The initial digital news platforms centered largely on web delivery with minimal interactive behavior by the users. Apps such as Google News, Flipboard, and Inshorts have eased the presentation of content but do not largely possess conversational interfaces or AI-powered personalization. Due to improvements in cross-platform libraries such as Flutter, creating native-quality mobile news experiences on Android and iOS became more accessible through a unified codebase (Sharma & Patel, 2022).

Natural Language Processing in News Applications The inclusion of Natural Language Processing (NLP) enables users to engage with applications through voice and text, making it easier to access content. Advanced NLP technologies like transformer-based models (e.g., BERT, GPT) can comprehend user queries and provide context-specific, relevant responses. Apps that have NLP modules like "Ask AI" provide real- time summaries, explanations, and even conversational answers to news- related questions (Li & Zhang, 2021).

Key NLP Modules:

Speech-to-Text (STT): Translates voice into searchable text, improving accessibility and allowing hands-free use (Kim & Park, 2023).

Text-to-Speech (TTS): Speaks content aloud to users in a voice that sounds human, making news readable by visually impaired people and multitaskers (Huang & Yang, 2023).

Voice Accessibility and Smart Interaction

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The application of TTS and STT is on the rise in education and accessibility-based use cases. These are particularly beneficial in enhancing inclusivity and facilitating voice-controlled navigation. Wang & Zhao (2021) research reveals that voice integration enhances user interaction and satisfaction in mobile applications by a significant amount.

AI-Powered Personalization

Personalization in news applications has moved from basic category filters to adaptive learning algorithms that suggest content based on user behavior and interests. AI can also offer summarized versions of long articles, saving users time while preserving context (Xu & Jiang, 2022).

Comparative Gap in Existing Systems Even after all the progress, few systems bring Flutter, AI-driven conversation, speech capabilities, and personalized news delivery all together in one package. This work integrates all these features to close actual-world gaps in usability, accessibility, and intelligence in mobile news reading.

making it much different from conventional systems.

Managing visitor and faculty interactions can be cumbersome in large institutions. Traditional systems usually require manual interventions, which are time-consuming and do not have the personal touch that makes an experience memorable. This is especially true at entry points, such as gates.

3. PROBLEM STATEMENT

Whereas most news apps offer categorized content, they are not personalized, nor are they adaptive and intelligent in responding to user interactions. Present systems are insufficient in offering:

Interactive capabilities enabling users to query for specific questions or receive real-time summaries.

Accessibility features like TTS for reading articles or STT for voice- based searching.

Personalized delivery as per user preferences and interaction history learning.

Most applications necessitate manual search or browsing, which can be time-consuming and unnatural, particularly on handhelds. There is also increasing demand for accessibility—enabling people with varying capabilities or learning strategies.

This project fills these gaps by developing a smart, voice-based news app that learns from user behavior and enables real-time conversational interaction. It is not only concerned with the dissemination of news but with how news is being accessed, comprehended, and experienced, hence becoming more inclusive, efficient, and user-centered.

4. METHODOLOGY

The AI-based news app development is done through a modular and structured model in the design, implementation, and testing stages. The architecture of the system was designed to run effectively on both Android and iOS platforms, with Flutter for UI and core

logic and NLP and voice integration technologies to enhance interaction.

4.1 System Architecture

The application architecture consists of three key modules:

Input Module: Receives user input through text or voice through speech-to- text (STT).

Processing Module: Manages API calls, AI interactions, query processing, and personalization.

Output Module: Renders or reads results via text-to-speech (TTS).

These modules interface with real-time news APIs and an AI server (like OpenAI or Dialogflow) to provide quick, customized, and smart responses.

4.2 Development Tools and Technologies

Flutter SDK – For developing cross- platform UI/UX

Dart Language – Backend and frontend code

REST-based News API – For retrieving categorized news articles

OpenAI API / NLP Model – For processing queries through "Ask AI" Google Speech-to-Text – For translating user voice queries to text

Flutter TTS Plugins – For translating articles or answers into audio

4.3 Features Implementation

Categorized News Feed:

News content is retrieved and rendered based on categories such as Business, Sports, Health, and Technology. Live data is parsed from external APIs and displayed using a scrollable Flutter UI.

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"Ask AI" Chat Interface:

The AI interface takes text or voice inputs. These are passed to the backend NLP processor, which produces an appropriate response. The response is either displayed as text or spoken through TTS.

Speech Interaction (STT and TTS):

Speech-to-Text (STT): Audio capture and transcription are done using Flutter plugins. This enables voice-based question asking.

Text-to-Speech (TTS): Once responses or articles are fetched, they can be read out by utilizing TTS libraries incorporated in the app.

User Interface:

Built with Flutter's widget framework to be minimalist, sleek, and responsive, the UI responds to different screen sizes and supports light and dark modes.

4.4 Personalization Engine

Despite being lightweight, the application caches temporary user behavior information (e.g., most recently used categories or types of queries) locally. This enables the AI assistant to provide content recommendations or respond to queries more contextually as time passes.

5. PROPOSED SYSTEM

The suggested system is a smart, AI- based news app that fuses real-time news delivery, natural language processing, and voice interaction. The system is tailored to offer an interactive, easy-to-use, and personalized news experience for the new generation.

5.1 Input Module

This module enables users to:

Choose news topics (e.g., Technology, Health, Sports).

Employ voice input (using STT) to pose questions such as:

"What's current in tech?" "Summary today's top headlines.

Input queries manually through text chat with the AI.

5.2 Processing Module

At the application's core, this module performs:

Retrieving news from external APIs.

Passing user queries on to an NLP model (e.g., OpenAI GPT).

Parsing and formatting the AI response.

Logging common topics for light personalization.

It also smartly differentiates between a category request ("Show politics news") and a precise query ("What occurred in Parliament today?").

5.3 Output Module

The output system Shows the response of the AI in a chat-like format.

Reads responses or news stories aloud with TTS.

Adds links to full articles for those who desire more information.

Provides controls for audio playback for accessibility.

6. RESULT

The AI-powered News App was tested on various mobile platforms like Android and iOS to check its functionality, performance, accessibility, and ease of use. Every feature was tested separately, and feedback was collected from a sample set of users in order to know the practical applicability and efficiency of the solution.

1. Integration of News API: The application was able to retrieve current news articles of multiple categories like Technology, Sports, Health, and Entertainment from the integrated REST API. The average time taken by a category feed was recorded as around 1.5 to 2 seconds based on the speed of internet.
2. Speech-to-Text (STT) Accuracy: Powered by Google's speech recognition capabilities, the app showed an average accuracy of more than 95% in clean environments. In noisier environments, accuracy was still in excess of 90%, which is satisfactory for everyday use scenarios.

3. Text-to-Speech (TTS) Clarity: News stories and AI replies were well-enunciated via the TTS system. Users were able to modify speech rate, and most found the voice natural and comprehensible.
4. Ask AI Query Response: The natural language interface processed a broad spectrum of user queries, ranging from basic keyword-based queries such as 'Show tech news' to more sophisticated queries such as 'What is the effect of AI on journalism?'. The response time was less than 3 seconds on average.
5. User Interface and Experience: The UI based on Flutter was appreciated for its seamless transitions, minimalistic layout, and intuitive navigation. Dark mode support and category filters contributed to the usability.
6. Accessibility: Visually impaired users enjoyed the integration of STT and TTS, enabling them to navigate and use the app completely by voice.
7. User Feedback Summary: From a survey with 20 participants:

- 90% felt the AI helper was helpful and informative
- 85% graded the voice features as 'very helpful'
- 95% enjoyed the personalized and segmented news presentation

These findings substantiate that the app not only satisfies technical criteria but also provides an enhanced user experience. Combining AI and voice technologies offers substantial value, making the system a visionary solution in digital news dissemination.

7. CONCLUSION

The suggested AI-driven news app is a leap forward in consuming and engaging with the news on mobile devices. Through the use of Flutter for cross-platform development, Natural Language Processing (NLP) for smart dialogue, and voice interaction features such as STT and TTS, the app reimagines static content delivery to become a dynamic, accessible, and engaging experience.

The addition of features like category-based filtering, real-time "Ask AI" support, and audio playback increases usability and accessibility, especially for visually impaired users or those looking for hands-free access to news. In addition, the lightweight personalization engine provides richness to the user experience by learning about reading behavior and preferences over time.

In total, the system closes the gap between legacy news applications and smart, voice-based assistants, paving the way for interactive digital journalism. With additional developments like multilingual support, offline capabilities, and push notifications in the future, the application has the potential to become an end-to-end news solution for users with varying requirements in the AI age.

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