



Advanced Research Journal of Computer Science

Received: November 02, 2024 | Accepted: November 11, 2024 | Published: December 03, 2024
Volume 01, Issue 02, Pages 01-03

DOI <https://doi.org/10.66590/arjcs2024010201>

Research Article



EZ Bulletin: Using Artificial Intelligence a Personalized Mobile News Aggregation and Summarization System

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Abstract | It is so easy for people, now a days, to access information by the rapid development of online news, but the problem of information overload has created a lot of problems. User used different websites to search news related their interest, available time and location. EZ Bulletin is developed in order to provide a personalized and simple solution for providing accessible news. This proposed mobile app is collecting news from various online websites and organized into location based, latest and trending categories. Natural Language Processing (NLP) techniques are also used in order to generate summarized form of lengthy articles. With addition of text-to- speech feature, it allows the users to listen the summarized form of news instead of reading. This system supports the offline access, notifications, feedback, saved content, personalized news preference and user registration. Firebase is needed for data management and notifications, while technologies related to mobile applications are used in order to give an interactive interface. Testing is performed by integration, functional and unit testing. It has been as shown through documented test cases the successful operation of various important functions like registration of user, login with summarization of news. This proposed system is demonstrating how mobile technologies, NLP, artificial intelligence and web scraping could combine together in order to make news consumption more personalized, easier and faster.

Key Words News Aggregation, Artificial Intelligence, Natural Language Processing, Web Scraping, Text-to-Speech, Mobile Application, News Summarization, Firebase

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How to Cite the Article:

Amin, Muhammad Bilal Bin, "EZ Bulletin: Using Artificial Intelligence a Personalized Mobile News Aggregation and Summarization System." *Advanced Research Journal of Computer Science*, vol. 01, no. 02, December 2024, pp. 01-03. <https://doi.org/10.66590/arjcs2024010201>

INTRODUCTION

Internet provides us every type of information, with digital newspapers, blogs and news articles published daily. However, getting most relevant news could be time consuming because users should need to visit various websites and read out lengthy news articles.

EZ Bulletin project can address these problems by collecting news through various online resources and present location based, latest, trending and personalized news in one mobile application. It also considers users' search history and interest in order to provide most relevant content and made it useful for casual readers, commuters, professionals and students [1].

Another important feature of EZ Bulletin is to made the news summary. By using NLP based techniques, the system can convert long news articles into short form by retaining all important information. Users can listen the

summarized form by text to speech feature. It makes news consumption more convenient and faster, for people who are exercising, working, traveling, or doing other activities.

Problem Statement and Proposed Solution

Typical platforms of online news could provide a huge bundle of information, but users are facing various difficulties, like lengthy articles, advertisements, unreliable sources, repeating information and irrelevant results. Researching news manually requires extra effort and time. Our project identifies all these issues like genuine problems that EZ Bulletin addresses [2].

The proposed solution for this problem is the aggregated mobile news application that is used to collect information from various resources and presented in a sequential form. This system provides us three majors news

categories: latest news, location-based news and trending news. Through trending news, users can view location-based news, popular stories and information related to user's present location and latest updates.

This application is also providing personalization, as users can use previous interaction and preference in order to get most relevant news. This also minimizes the need for the users in order to search repeatedly for similar type of information.

MATERIALS AND METHODS

This system is following the architecture which is client-based server. This mobile application is providing the user interface by backing communication with external source, news processing, data storage and service manage authentication. This project also describes the various components including web scraping module, Firebase blackened and client application.

News Collection

Web scraping can be used to gather information from various online sources. This project uses python library, a beautiful soup, that can phrase XML and HTML documents with extracting important information like article content and headlines. This collected information is then organized and processed for presenting in this mobile application. This approach can reduce the need for various users in order to visit different websites.

However, this web scraping has some limitations also because some websites can restrict the automatic access and developer should consider intellectual and legal property requirements with the help of online content.

News Personalization

This application is using the interaction history, location and user preference in order to provide most relevant information. This system organizes the content into various categories so the user could quickly find the relevant information they needed. Personalized news has become useful when users follow specific subjects like entertainment, politics, education, sports and technology.

News Summarization

- This system used Natural Language Processing (NLP) in order to summarize the long news articles
- 2. NLP identifies most important information and also generate concise and short summaries
- NLTK can be used for text summarization and processing
- This system used machine-learning models like BART in order to summarize the text
- These models could be helpful for the users to understand the main idea of article without reading its complete content

Text to speech feature can convert the generated summary into audio form. This can allow the user to listen

the news instead of read it completely. This feature is also useful for those people who are traveling and busy and they prefer audio-based information instead of reading it thoroughly. Playback controls like forward, rewind, pause and play are included in order to enhance usability.

User and Data Management

Firebase can be used for database management and user authentication. This system can store information like browsing related data, saved articles, preferences and user profiles. Authentication can allow the register users to secure the access to their accounts.

This application can also include feedback functionality that user can provide suggestions and report problems. Administrator can manage the feedback, content and users.

System Features and Technologies

EZ Bulletin can combine different technologies in order to provide a completed news consumption platform. Its main features could include:

- **Personalized News:** News is always selected in the base of user previous activity, location and interest
- **Trending News:** Users could view currently famous stories
- **Latest News:** Users could access latest news updates
- **Location-Based News:** This system could provide a news relevant to user detected and selected location
- **AI-Based Summarization:** Lengthy news articles could be converted into short summaries
- **Text-to-Speech:** Users could listen the summary into form of audio
- **Offline Access:** The selected summaries and articles could be saved for using it later
- **User Authentication:** Users could introduce account and sign it securely
- **Feedback System:** Users could report problems and submit feedback
- **Notifications:** Users could receive breaking and important news updates. React Native can be used in order to develop mobile application, which are supported by AI, machine learning models, error handling libraries and regular expressions

This system could separate the data layers, business logic and UI for making better performance and organization.

RESULTS

Testing and Results

The EZ Bulletin is evaluated by using integrated, unit and functional testing. Login tests can be successfully handling invalid and valid emails, missed fields and passwords. The feature of news summaries is also tested with location based; latest and trending news and documented cases generate summaries successfully. Integrated testing also confirmed proper interaction with Firebase having data validation, sign in and user

registration. As a whole, these tested functions worked well according to expectation, although no statistics usability comparison and user study on larger scale was conducted [3].

DISCUSSIONS

The EZ Bulletin system also helps to reduce the overloaded online news by summarizing, organizing, collecting and converting it into audio form. Features like summarization and personalization could help the users in order to find the most relevant information by saving time and improved audio. NLP, AI, Firebase and beautiful soup support the main functions of the system. However, the system main dependence is on firebase, processing resources, internet connectivity and external news websites, which can affect its reliability and performance.

CONCLUSIONS

EZ Bulletin is summarization system and mobile news application, which is designed to make consumption of online news faster and easier. This system can collect news from various sources and organized into location based, trending and latest categories with providing personalized material according to the interest of user. Further NLP summarization feature can reduce the long articles into short version, along with text to speech permits the user to listen the summaries of news [4].

This project is also demonstrating the practical integration of firebase services, mobile app development, naturally language processing, artificial intelligence and web scraping. The testing of documents presents that bigger functions like user registration, news summarization and authentication with backend passes their various test cases.

As a result, EZ Bulletin gives us a very useful solution, which is technology based, in order to reduce effort and time to consume and find the online news. Further betterment in user evaluation, recommendation algorithms, multilingual support, summarization accuracy and data collection can make the system more useful and reliable in future version.

Limitations

Limitations and Future Work

The main limitation of EZ Bulletin is the dependence on web-scraping because access restrictions and change in website layout could affect the news gathering. In future version, the use of licensed sources and official news APIs made possible for more reliability. Summarization accuracy can be improved due to evaluation of results by human feedback and rouge scores for completeness, readability and factual accuracy.

This system can be expanded by the use of social media integration, voice assistant, voice commands and multiple languages. Advance recommendations models could improve personalization, while more study can improve audio summaries, reading time, satisfaction and usability.

REFERENCES

- [1] Yang, Y. *et al.* "Study on the optimization of linear induction motor traction system for fast speed maglev train." *Journal of Transportation Systems and Technology*, vol. 4, no. 3, 2018, pp. 156–164.
- [2] Costa, F. *et al.* "Characterization of levitation force for a superconducting magnetic levitation vehicle." *Journal of Transportation Systems and Technology*, vol. 4, no. 3, 2018, pp. 124–133.
- [3] Long, Z. *et al.* "A novel design of electromagnetic levitation system for a high-speed maglev train." *Journal of Transportation Systems and Technology*, vol. 4, no. 3, 2018, pp. 212–224.
- [4] Asogwa, Tochukwu *et al.* "Improving the intelligent control of magnetic levitation ball using artificial neural network." *International Journal of Engineering and Computer Science*, vol. 8, no. 6, 2019, pp. 24679–24685.