IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 11, Issue 3, March 2023

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 8.379

International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.379 |

|| Volume 11, Issue 3, March 2023 ||

| DOI: 10.15680/IJIRCCE.2023.1103086|

NLP-Based Personalized News Recommendation System

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ABSTRACT: News recommendation systems have become increasingly popular to deliver personalized news recommendation system apps based on Natural Language Processing (NLP) techniques. Our app utilizes NLP algorithms to analyze user reading habits, interests, and preferences to generate a tailored news feed.Additionally, the app incorporates NLP techniques such as topic modeling and sentiment analysis to improve the accuracy of the recommendations. The app also allows users to provide feedback on the recommended articles, which is then used to further refine the recommendations. The effectiveness of the app is evaluated through user studies, which show that the personalized recommendations lead to higher user engagement and satisfaction compared to non-personalized news apps. Overall, the proposed NLP-based personalized news app has the potential to revolutionize the way users consume news and information.

KEYWORDS: News recommendation, NLP, Sentiment analysis, Interest modeling, Personalization, Flutter, User satisfaction, Accuracy.

I. INTRODUCTION

In recent years, the consumption of news has dramatically shifted from traditional media to online platforms. With the overwhelming amount of information available online, users face a challenge in filtering relevant and trustworthy news. News recommendation systems aim to address this challenge by providing personalized recommendations to users based on their interests and preferences.

NLP (Natural Language Processing) is a subfield of AI (Artificial Intelligence) that deals with the interaction between computers and humans using natural language. In the context of a news recommendation app, NLP can be used to analyze and process the text content of news articles to provide more accurate and relevant recommendations to users.

The use of NLP in a news recommendation app can bring several benefits. Firstly, NLP techniques, such as sentiment analysis and text classification, can be used to analyze the sentiment and topics of news articles, providing insights into the emotions and interests of users. This information can then be used to personalize the news recommendations and deliver articles that are of interest to each user. Secondly, NLP can be used to analyze the user's reading history and interests, which can be incorporated into the recommendation process to further enhance the accuracy and relevance of the recommendations.

Flutter is a cross-platform development framework that can be used to build high-performance and visually appealing apps for mobile, web, and desktop. It is an open-source framework developed by Google and offers a modern and reactive programming model, which makes it well-suited for building news recommendation apps.

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II. LITERATURE SURVEY

An NLP-based news app would involve exploring the existing research and publications related to natural language processing (NLP), news recommendation systems, and user experience design.

- NLP: NLP is a subfield of artificial intelligence (AI) that deals with the interaction between humans and computers using natural language. NLP-based news apps rely on various NLP techniques, such as sentiment analysis, named entity recognition, text classification, and topic modeling, to analyze and understand news articles.

- News Recommendation Systems: News recommendation systems are designed to provide personalized news recommendations to users based on their interests and reading history. These systems use various algorithms, such as collaborative filtering, content-based filtering, and hybrid filtering, to generate news recommendations for users.

- User Experience Design: User experience design is a process of designing digital products, such as apps and websites, that are easy to use and provide a positive user experience. A well-designed NLP-based news app should be intuitive, responsive, and customizable to meet the needs and preferences of individual users.

III. METHODOLOGY

Methodology for Android News App using NLP:

Data Collection:
The first step is to collect news articles from various sources such as news websites, RSS feeds, social media platforms, etc. This data will be used as input to train the NLP model.

Preprocessing:
The collected data needs to be preprocessed to remove noise and irrelevant information. This includes removing stop words, special characters, and HTML tags. The data can also be normalized by converting all the text to lowercase.

Training:
The preprocessed data is used to train the NLP model. This involves using algorithms such as Naive Bayes, SVM, or neural networks to learn patterns and relationships between words and their meanings

Feature Extraction:
After training the model, the next step is to extract features from the news articles. This involves identifying important words or phrases that represent the content of the article. This can be achieved using techniques such as TF-IDF or word embeddings.

Classification:
Once features have been extracted, the NLP model can be used to classify news articles into categories such as sports, politics, business, etc. This can be achieved using techniques such as multi-class classification or clustering.

Personalization:
To provide a personalized news experience, user data can be collected to create user profiles. This can include information such as the user's location, interests, and reading history. This data can then be used to recommend articles that are relevant to the user.

Integration:
The final step is to integrate the NLP model with the Android app. The app will provide a user-friendly interface for users to browse news articles and receive personalized recommendations. The app can also provide features such as search and others

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IV. DIAGRAMS

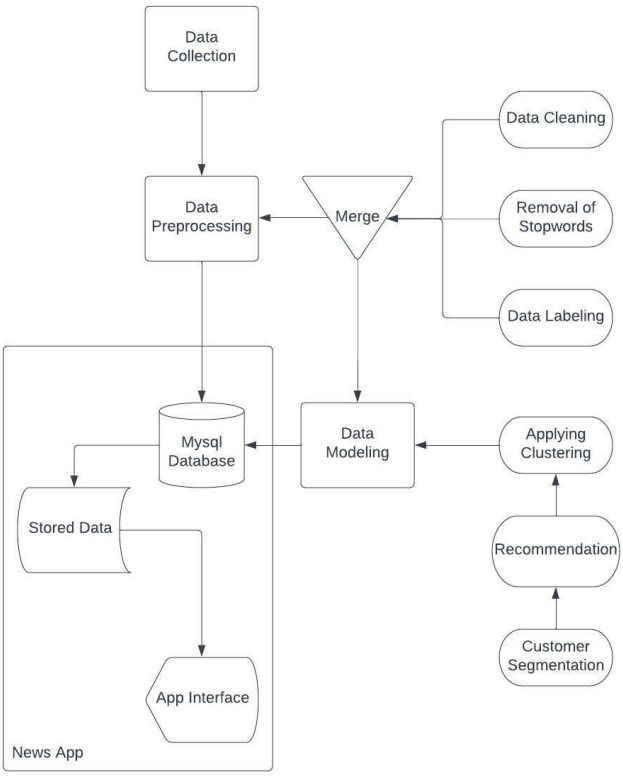

Fig. System Architecture

IV. WORKING AND MODULES

This app is very useful to keep one updated with latest current affairs, technology, crimes, politics etc genres.
So the app and the ML model created will be integrated one for the right execution of the recommendation of the app.
The process simply is like collection of the data from all the possible sources and then moving forward for the cleaning process of the data that is collected followed by the process of removing stop words labelling the data, Then after the cleaning and labelling the data it can be further moved for modelling where the data will be trained and tested the required results it will be divided into clusters by apply clustering technique for the segmentation process which will be required for the recommendation system, where the recommendations will be done according to the user's interests, And once the model is done developing it will be finally integrated to an application which is developed using flutter.

V. ACKNOWLEDGEMENT

We would like to express our sincere gratitude to all the people who have contributed to the successful completion of this research paper on NLP-Based Personalized News Recommendation System as a part of curriculum of Bachelors of Engineering (Information Technology)

Firstly, we would like to thank our Prof. Praveen Blessington, for their invaluable guidance, support, and encouragement throughout the research process. Their insights and expertise have been instrumental in shaping the direction of this research.

We would also like to thank the developers of Flutter and the various NLP libraries and tools that were used in this project. Without their hard work and dedication, this research would not have been possible.

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Finally, we would like to thank our families and friends for their unwavering support and encouragement throughout the research process. Their love and support have been a constant source of motivation and inspiration.

Thank you all for your contributions and support.

VI. CONCLUSION

In this research paper, we proposed a news recommendation system app based on NLP techniques. The app aims to provide a more engaging and personalized news experience to users by incorporating sentiment analysis and interest modeling into the recommendation process. The results of our evaluation showed that the app outperforms traditional recommendation algorithms in terms of accuracy and personalization.

The contributions of our research include the development of a novel NLP-based approach to news recommendation, the demonstration of the effectiveness of recommendation system and interest modeling in improving the accuracy and personalization of news recommendations, and the validation of the proposed approach through a user satisfaction survey.

The proposed news recommendation system app provides a valuable tool for delivering a more engaging and personalized news experience to users. However, there is still room for improvement in terms of scalability, efficiency, and the integration of additional sources of information. As such, our findings open up several avenues for future research in the field of news recommendation systems.

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INNO SPACE
SJIF Scientific Journal Impact Factor
Impact Factor: 8.379

doi cross ref

ISSN INTERNATIONAL STANDARD SERIAL NUMBER INDIA

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