



# QuickReads: Your Personalized Content Guide using Hybrid Filtering

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**Project Guide**  
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# Outline

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# Introduction

- In today's fast-paced world, staying informed and inspired is essential. **QuickReads** revolutionizes your reading experience by offering personalized article recommendations tailored to your interests.
- QuickReads, an innovative article recommendation system uses the power of web scraping to collect articles from many trusted websites covering multiple domains.
- By using an advanced hybrid recommendation model, the system learns from user behavior and preferences to enhance the recommendation process.
- The name "QuickReads" suggests a platform where users can quickly find and read articles, emphasizing efficiency and accessibility in accessing online content.

# Introduction

## ➤ Objectives:

- To provide domain-based recommendations using hybrid model.
- To enhance content discovery using dynamic web scraping.
- Using natural language toolkit (NLTK) for summary of articles.
- To enhance the system by adding read aloud and dictionary feature (using API).
- To encourage user engagement.

# Literature Survey of the existing system

Sr. No.	Title	Author(s)	Year	Outcomes	Methodology	Result
1.	[1] An interactive intelligent web-based text-to-speech system for the visually impaired.	Essien, Nesabasi P., Victoria A. Uwah, and Emmanuel P. Ododo	2021	The objectives of this paper are to develop a web-based text-to-speech system using JavaScript, compatible with various speech synthesis libraries, and to provide a versatile tool for converting plain text files into audio format to aid accessibility in education and assist visually impaired users.	The methodology employed involves utilizing JavaScript to develop a web-based text-to-speech system, integrating Natural Language Processing and Digital Signal Processing techniques, and ensuring compatibility with multiple speech synthesis libraries.	The result is an efficient web-based text-to-speech system, compatible with major devices, capable of converting plain text into speech in real-time.
2.	[2] Research Paper On Recommendation System	Singhal, A., Rastogi, S., Panchal, N., Chauhan, S., & Varshney, S.	2021	This research paper explores how recommendation systems streamline information retrieval by suggesting items based on user preferences. We emphasize the importance of context-awareness and discuss collaborative filtering and content-based approaches.	The methodology involves reviewing existing recommendation approaches, analyzing their operation in real-world scenarios, and emphasizing the significance of context-awareness.	The result showcases a comprehensive understanding of recommendation systems and their pivotal role in information retrieval.

# Literature Survey of the existing system

Sr. No.	Title	Author(s)	Year	Outcomes	Methodology	Result
3.	[3] A hybrid system for personalized content recommendation.	Ye, Bo Kai, Yu Ju Tony Tu, and Ting Peng Liang.	2019	The objectives of this study are to address the limitations of traditional content-based and collaborative filtering methods in recommending research articles, by designing and implementing a hybrid recommendation system.	The methodology involves designing a hybrid recommendation system for research articles, merging content-based and collaborative filtering techniques. Data on articles and user interactions are collected, followed by feature extraction and model development.	The results of the study demonstrate the superiority of the hybrid recommendation system over traditional methods.

# Limitations of existing systems

From the literature review of existing systems, we find that :

- **Domain Restrictions:** Some systems may focus on specific domains or genres, limiting the variety of content available to users and potentially overlooking niche interests.
- **Pure Content-based filtering:** It has a major constraint that it is not always feasible to obtain individual customer preferences or identify proper attributes for matching user preference.
- **Pure Collaborative filtering (Cold Start Problem):** It requires a significant amount of historical user-item interaction data to make accurate recommendations. As a result, it's challenging to provide recommendations for new users with limited or no historical data.

# Limitations of existing systems

- **No Article Summarization:** Without article summarization functionality, users may face challenges in quickly grasping the key points of lengthy articles.
- **Limited Dictionary Integration:** The current system may lack integration with a dictionary feature restricting users from easily accessing definitions or meaning.
- **Absence of Read-Aloud Functionality:** The absence of a read-aloud feature for summarized content restricts accessibility and user experience, especially for those with visual impairments or engaged in multitasking.



# Problem statement

- Some recommendation systems lack personalization, offering generic suggestions instead of tailoring recommendations to individual preferences and interests.
- Users might feel limited in discovering new topics and areas of interest, which could restrict their ability to expand their knowledge and explore different subjects.
- Users seek high-quality and trustworthy content from reputable sources, necessitating mechanisms to filter out irrelevant or unreliable articles.

# System Design

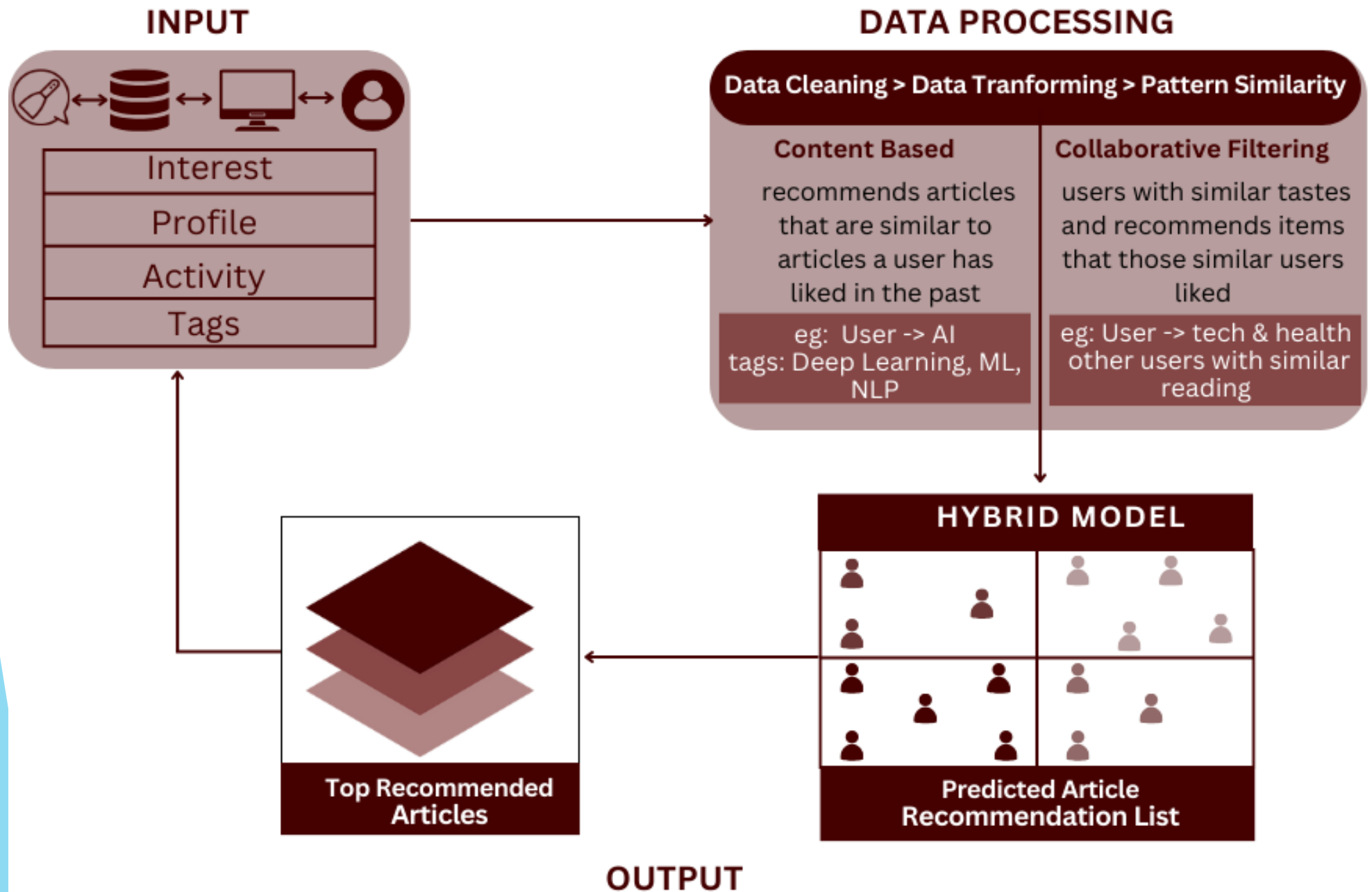


Fig 1: System Design for Hybrid Model

# Technologies

- **Web Scraping:** Selenium
- **Summary:** Natural Language Processing (NLP)
- **Text to Speech:** SpeechSynthesisUtterance
- **Dictionary:** Dictionary Api
- **Machine Learning:** Scikit-learn
- **Frontend Development:**
  - i. HTML, CSS
  - ii. Python 3.11.0
  - iii. JavaScript
- **Backend Development:**
  - i. Django 4.2.5
  - ii. SQLite3

# Methodology

## 1. Data Collection:

Scraping Articles using Selenium(Rows: 104, Columns: 8) and User Interaction data.

## 2. Data Cleaning and Preprocessing:


- a) **Text Cleaning:** Remove html tags, special characters, remove punctuations, numbers, stop words.
- b) **Tokenization and Vectorization:** Eg: TF-IDF (Term Frequency-Inverse Document Frequency)
- c) **Normalization:** User interaction scores are normalized using MinMaxScaler from scikit-learn

## 3. Feature Engineering: Similarity calculation using cosine similarity.

## 4. Algorithm Selection: (Content + Collaboration =Hybrid)


## 5. Model Training and Evaluation

# Implementation


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# Conclusion

- We have implemented Data Collection and Data Cleaning and Data Processing. We also have implemented Summarization of the article, Read aloud option and dictionary .
- QuickReads represents an innovative and effective hybrid recommendation system designed to provide personalized article recommendations to users.
- Additionally, the system's future scope includes enhancements in personalization, multi-modal content analysis, context-aware recommendations, interactive user feedback, semantic search, and ethical AI practices.

# References

[1] Essien, Nesabasi P., Victoria A. Uwah, and Emmanuel P. Ododo. "An interactive intelligent web-based text-to-speech system for the visually impaired." *Asia-Africa Journal of Recent Scientific Research* 1 (2021): 76-98

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[2] Singhal, A., Rastogi, S., Panchal, N., Chauhan, S., & Varshney, S. (2021). **"Research Paper On Recommendation System."** Global Scientific Journals.

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[3] Ye, Bo Kai, Yu Ju Tony Tu, and Ting Peng Liang. **"A hybrid system for personalized content recommendation."** *Journal of Electronic Commerce Research* 20.2 (2019): 91-104.

[http://www.jecr.org/sites/default/files/2019vol20no2\\_Paper2.pdf](http://www.jecr.org/sites/default/files/2019vol20no2_Paper2.pdf)

**Thank You...!!**