



Content and Collaborative based Sinhala Book Recommendation System

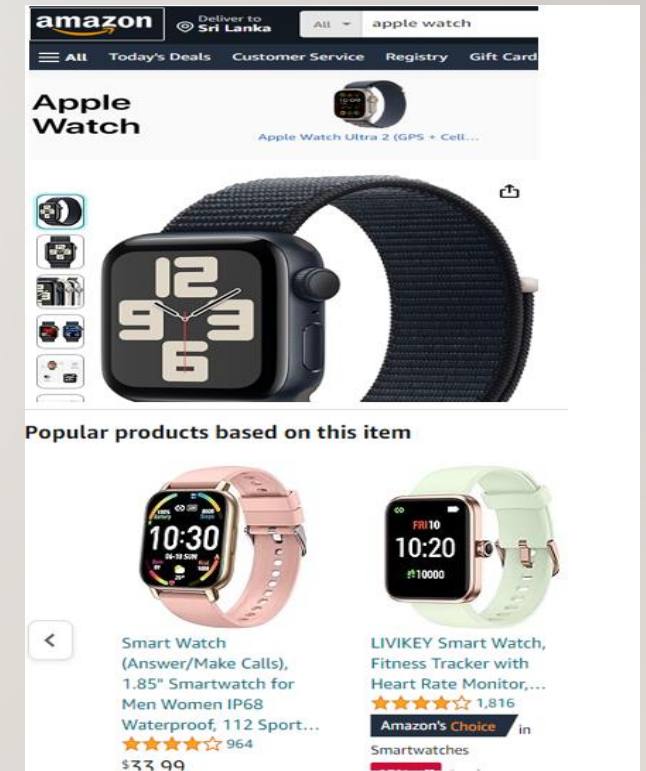
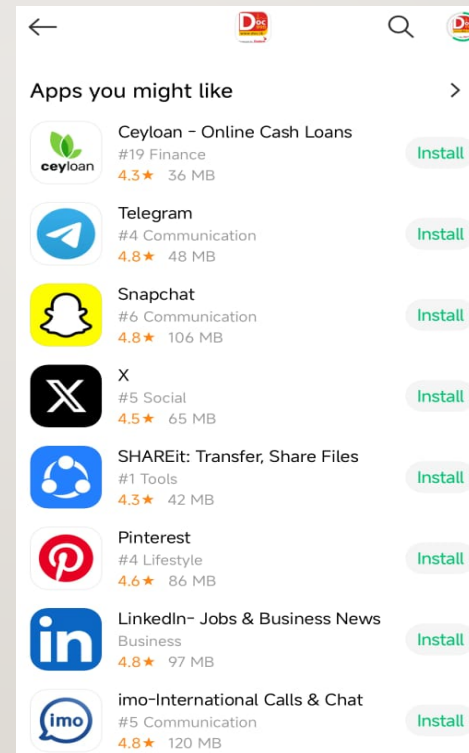
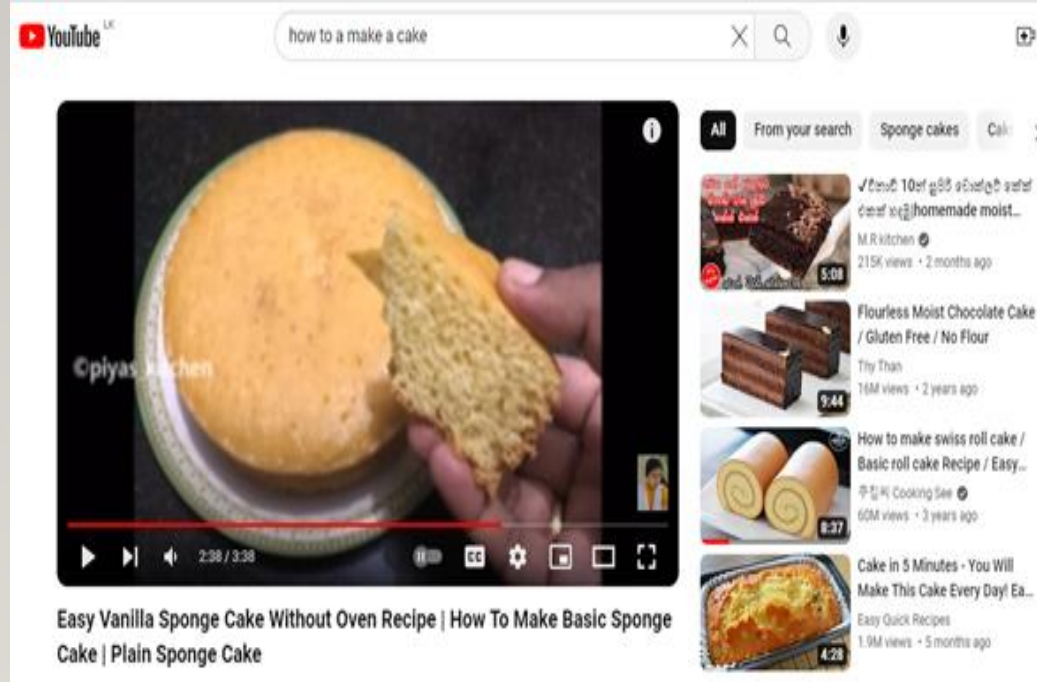
Chinthaka Perera

19440677 / 2019/MCS/067

**Supervised by:
Prof. M.G.N.A.S. Fernando**

RECOMMENDATION SYSTEMS

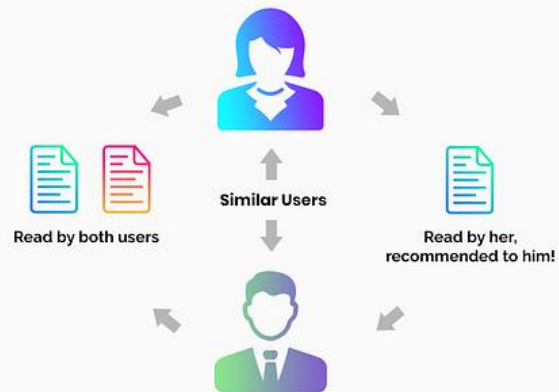
A recommendation system is a computer program that recommends items for users of digital platforms such as e-commerce websites and social networks



TYPES OF RECOMMENDATION SYSTEMS

1. Collaboration Filter
2. Content Based Filter
3. Knowledge based
4. Demographic based
5. Hybrid Filter

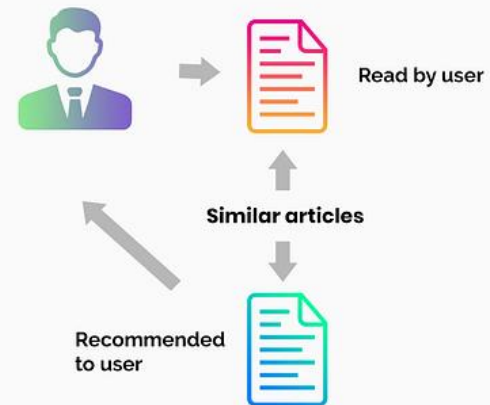
Collaborative filtering



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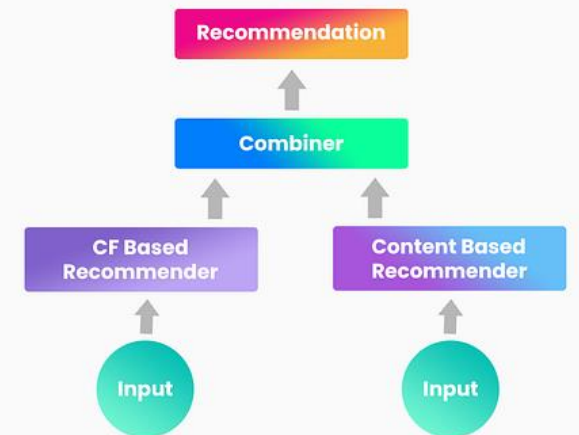
Content-based filtering



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Hybrid Recommendations



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PROBLEM STATEMENT



RESEARCH GAP

- Multiple application for English Book Recommendation
- Online book store limitations



12. 12. 12

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ලොව පුත්තරතම නගරය දරුණු හිමි පතනයකින් වැසී ගත් දෙසැම්බරයක, නාළනාන්තෙක් ඔවුන්ගේ ජීවිත බිලී ගත්තේය. ඔවුන්ගේ සිහින විනාශ කර දැමුවේ ය. බැලූ බැල්මට එය පරිපූර්ණ මිනීමැරුමකි. කිසිදු සැක සටහනක් නොමැත.

මිනී මරුවා පළපුරුදු අයෙකි. පැරිස් පොලීසියේ අපරාධ මිදර්න ඒකකයේ පොලීස් පරීක්ෂකවරු මේ අපරාධය දෙස සියත් ආකාරයෙන් බැලූහ. හිම දියව ගොස් නගරයට තිරු පායා එන්නට පෙර අපරාධය විසඳා ගත යුතුය. එහෙත් ඔවුන් ඉදිරියේ වූයේ බිඳ දැමිය නොහැකි ශක්තිමත් පවුරකි. පිටි වන්නට දොරටු නොමැති පුහුණුකාරීකම් ඔවුහු පැවැලී සිටියහ.


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SCOPE OF THE STUDY

- Share a Google form
- Apply sentiment analysis for the reviews
- Login and register to the application
- Display a book details when a book is selected
- List out recommended book list for the selected book

RESEARCH QUESTIONS

- How to find a valid dataset.
- How to apply sentiment analysis with high accurate for the review.
- What are the preprocessing steps to be carried out.
- How to apply Collaborative based approach and content based approach (hybrid).
- How to recommend list of books with highest accuracy.
- How to evaluate the system.

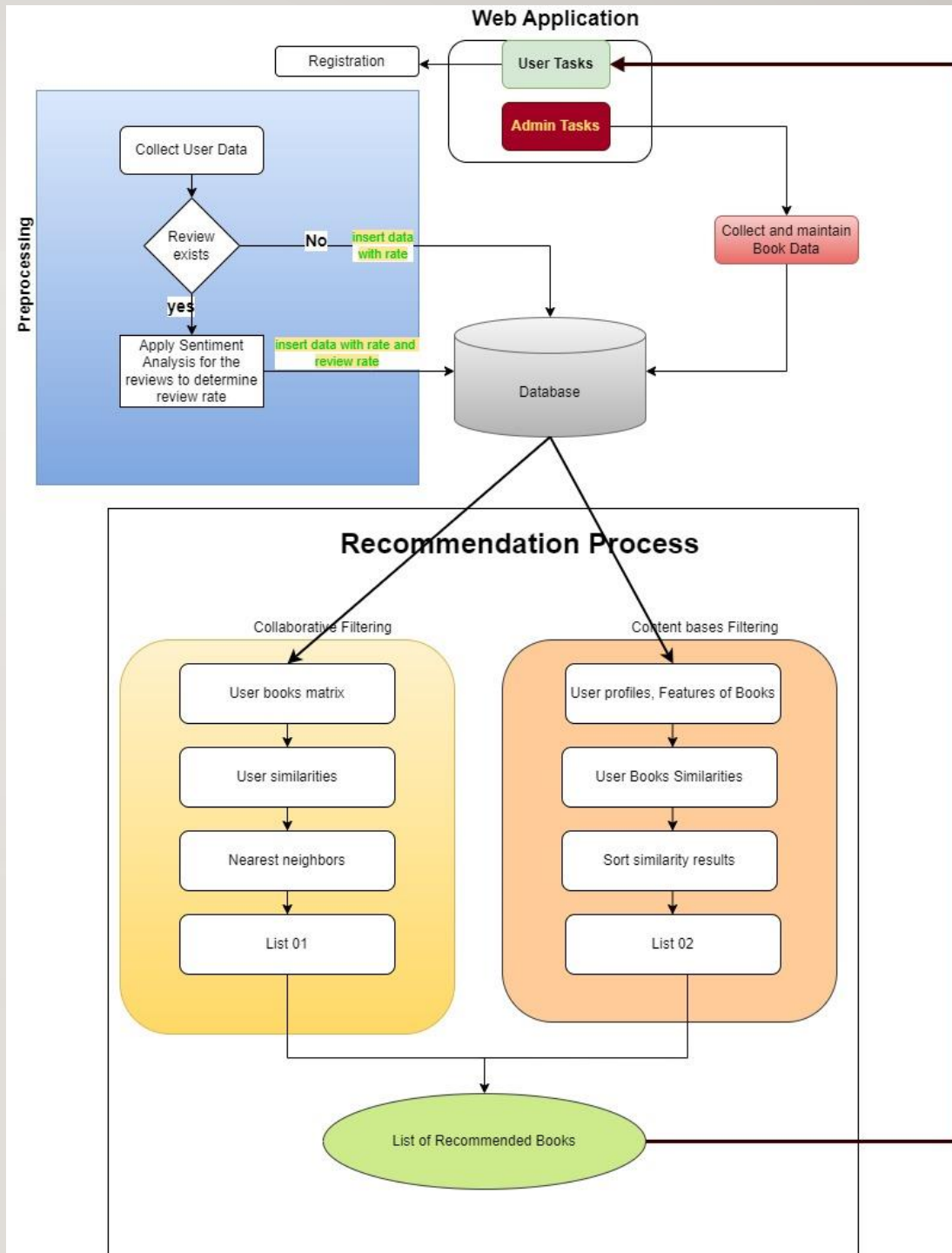
LITERATURE WORKS

Research	Description	Technology	Limitation
Personalized Book Recommendation System using Machine Learning Algorithm - 2021 (<i>Sarma et al., 2021</i>)	It recommend books for online users that rated a book using the clustering method and then found a similarity of that book to suggest a new book <ol style="list-style-type: none">1. Data acquisition2. Data Preprocessing3. Apply Clustering technique	Clustering based approach that use collaborative, content based, hybrid.	Less Accuracy
Book Recommendation Platform using Deep Learning - 2020 (<i>Wadikar et al., 2020</i>)	It recommend books based on two approaches. Text based and image based	Cosine Similarity and Convolutional Neural Network (CNN)	evaluation and validation process have not been presented in the research

LITERATURE WORKS

Research	Description	Technology	Limitation
Book Recommendation System using Item based Collaborative Filtering - 2019 (<i>Shah, 2019</i>)	It describes all the recommendation problems like sparsity, cold start in details and used item based approach to implement the system. And Mean Absolute Error (MAE) used for evaluation	Item based collaboration approach	User reviews has not been used for recommendation
An Enhanced Collaborative Filtering-based Approach for Recommender Systems – 2020 (<i>Sallam et al., 2020</i>)	A system implemented for Arabic dataset.	Item based and model based via Matrix Factorization	User reviews data (Arabic) has not been considered for recommendation

ARCHITECTURE



1. Preprocessing
2. Apply Collaborative filtering
3. Apply Content based filtering
4. Combined the result with hybrid approach

DESIGN

❑ User Interface

1. Login/logout with authenticate
2. View most rated and most popular book list
3. Search particular book and display all the details for the books
4. Display some reviews and rate given by users for the selected book
5. List out 20 recommended books

❑ Backend logic

1. Python with libraries

❑ Database

1. Mysql - workbench

IMPLEMENTATION

❑ User Interface

1. Implement the UI with python flask, Bootstrap, html and css
2. Integrate authentication

❑ Pre processing

1. Google Translator to convert Sinhala review to English
2. Apply sentiment analysis – TextBlob, Vader, Own mechanism

❑ Main Technology

1. Apply Collaborate Filter
2. Apply Content based filter
3. Apply Hybrid by combining Collaborate and Content based

EVALUATION

❑ Qualitative

1. To evaluate the novelty, scope of the proposed application
2. To evaluate whether the system provides a solution to the existing problem
3. To identify the limitations of the project

❑ Quantitative

1. System
 - Collaborative via Mean Absolute Error (MAE) → **2.52**
 - Content via Artificial Neural Network (ANN) → **80%**
2. Online Survey

CONTRIBUTION

❑ **Society – Book readers**

1. Find new books
2. Check the reviews and rate for a given books
3. Do not need to depend from others
4. Save time searching books and walking through book fairs.

❑ **Author**

1. Write more books for the genre which user keen to read

FUTURE ENHANCEMENT

- Collect more data to enhance the accuracy.
- Consider latest books.
- Include a book purchase facility by routing to an online book store.
- Include more filters like genre
- Include more details of a book like number of pages, published year, ISBN number
- Administrator feature to add, update, remove data

DEMO

Sinhala Book Recommendation System

THANK YOU