BOOK RECOMMENDER SYSTEM

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ABSTRACT

Nowadays the amount of information especially in Internet is growing very rapidly. Finding necessary information becomes more difficult. Recommendation systems aim to solve this kind of problems. With the help of them one can quickly access relevant information without searching the web manually. A book recommendation system is a type of recommendation system where we have to recommend similar books to the reader based on his interest. The books recommendation system can be used by online applications which provide e books like google play books, open library, good Read's, etc. We present a book recommendation system website. This application implements collaborative filtering recommendation system. The main goal is the efficiency of recommendations i.e. to create such a system, which can give qualitative recommendations to their users based on their search.

Keywords: Recommender System, Collaborative Filtering.

I.   INTRODUCTION

The booming technology of the modern world has given rise to the enormous book websites. This makes the buyers to choose the best books to read as books play a vital role in many people's life. The various kinds of books come into existence on day-to-day basis. So in order to eliminate this critical situation the recommendation system has been introduced in which the suggestion on the various books can be provided based on the analysis of the buyer's interest.

The Book Recommendation System is an intelligent algorithm which reduces the overhead of the people. This provides benefit to both the seller and the consumer creating the win-win situation. The E-commerce site to network security, all demands the need for the recommended system to increase their revenue rate. The content filtering, association rule mining and collaborative filtering are the various decision-making techniques employed in the recommendation system as it helps buyers by the strong recommendations as there are various books, buyers sometimes cannot find the item they search for. The Book Recommendation System is widely implemented using search engines comprising of data sets. This system is designed to be used efficiently on desktops. Personal assistant software improves user productivity by managing routine tasks of the user and by providing information from online sources to the user. This book recommendation has considered many parameters like content of the book and quality of the book by doing collaborative filtering of rating by the other buyers. This recommender system also uses associative model to give stronger recommendations. This system does not have performance problem since it built the recommendations offline.

This project was started on the premise that there is enough openly available data and information on the web that can be utilized to build a recommender system that has access to makingrecommendations for users.

II.   LITERATURE SURVEY

CLASSIFICATION OF FILTERING APPROACHES

1. POPULARITY BASED RECOMMENDATIONS

A Recommendation engine recommends the most relevant items to the user by using different algorithms to filter the data. A Recommendation system is more useful in the context of data extraction relating to applications of big data and machine learning. As the name indicates Popularity based recommendation system works with the current vogue. It basically uses the items which are in swing at present. This is the most basic

recommendation system which provides generalized recommendation to every user depending on the popularity. Whatever is more popular among the general public that is more likely to be recommended to new customers. The generalized recommendation not personalized is based on the count. In this paper I am going to use a class that we created which includes the methods to create recommendations and to recommend the item to the user. Next I will load the data of Comma Separated Value (CSV). After that sort the sound name based on the how many users have listened to the sound name. After the collection of data code splits the dataset into training and the test dataset using 80–20 ratio. This creates an instance of popularity based recommenders class. At last I will use the popularity model to make the predictions.


Popularity based recommendations

2. COLLABORATIVE FILTERING

Collaborative filtering is the process of filtering for information or patterns using techniques involving collaboration among multiple agents, viewpoints, data sources, etc.[2] Applications of collaborative filtering typically involve very large data sets. Collaborative filtering methods have been applied to many different kinds of data including: sensing and monitoring data, such as in mineral exploration, environmental sensing over large areas or multiple sensors; financial data, such as financial service institutions that integrate many financial sources; or in electronic commerce and web applications where the focus is on user data, etc.

Collaborative Filtering
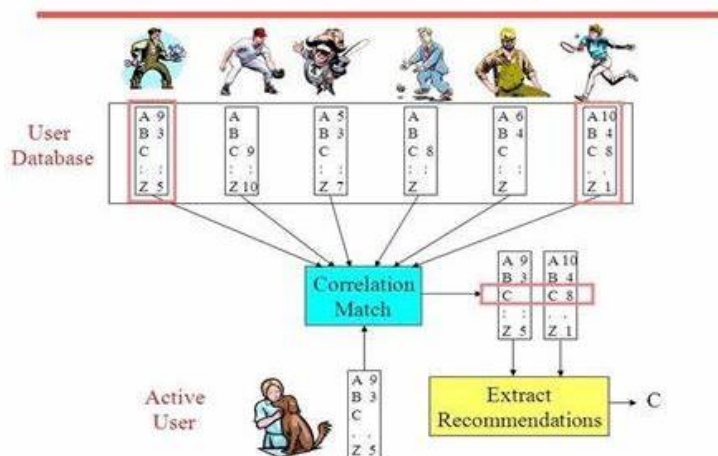
collaborative filtering can be based on implicit observations of normal user behaviour (as opposed to the artificial behaviour imposed by a rating task). These systems observe what a user has done together with what all users have done (what music they have listened to, what items they have bought) and use that data to predict the user's behaviour in the future, or to predict how a user might like to behave given the chance. These predictions then have to be filtered through business logic to determine how they might affect the actions of a

business system. For example, it is not useful to offer to sell somebody a particular album of music if they already have demonstrated that they own that music.

Relying on a scoring or rating system which is averaged across all users ignores specific demands of a user, and is particularly poor in tasks where there is large variation in interest (as in the recommendation of music). However, there are other methods to combat information explosion, such as web search and data clustering.

3. CONTENT BASED FILTERING

Content-based filtering uses item features to recommend other items similar to what the user likes, based on their previous actions or explicit feedback. To demonstrate content-based filtering, let's hand-engineer some features for the Google Play store. The following figure shows a feature matrix where each row represents an app and each column represents a feature. Features could include categories (such as Education, Casual, Health), the publisher of the app, and many others. To simplify, assume this feature matrix is binary: a non-zero value means the app has that feature.

You also represent the user in the same feature space. Some of the user-related features could be explicitly provided by the user. For example, a user selects "Entertainment apps" in their profile. Other features can be implicit, based on the apps they have previously installed. For example, the user installed another app published by Science R Us.

The model should recommend items relevant to this user. To do so, you must first pick a similarity metric (for example, dot product). Then, you must set up the system to score each candidate item according to this similarity metric. Note that the recommendations are specific to this user, as the model did not use any information about other users.
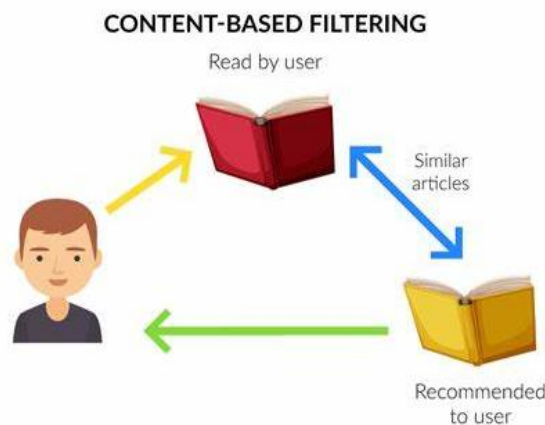
**Content-Based Filtering**

III.   EXISTING SYSTEM

There are some existing book recommendation systems like Google reads, Amazon kindle etc.

Google reads, Amazon kindle and other recommendation systems use mostly "THE POPULARITY BASED RECOMMENDATIONS". The MNC's like Amazon, Flipkart use CONTENT based recommendation systems. The Netflix and Amazon Prime too use the same algorithms for recommending the movies to their users.The existing system uses POPULARITY based recommendations; The popularity based recommending systems are very simple in their working flow. It Shows the books which are very popular among the existing users.

Disadvantages

1.It does not provide personalized recommendations.

2.It cannot differentiate any two given books.

3.It cannot calculate the similarity difference between two books.

4.The recommendations are very less accurate.
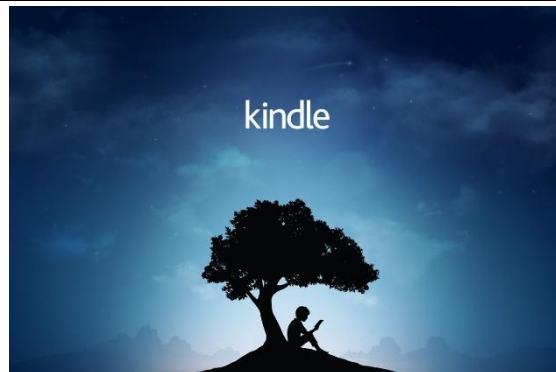
Existing Systems

IV. PROPOSED SYSTEM

The project is about creating a book recommender using the Collaborative Filtering -approach ..But ,including the "popularity and rating" also as a constraint. In this we calculate popularity using...a formula derived From Mathematical deductions and use, Book dataset from Kaggle to develop a prototype... The Ratings are joined with popularity and finally integrated with Collaborative approach.

This model mainly consists of two approaches:

1. Popularity based Filtering

2. Collaborative Filtering

We are using Collaborative Filtering Approach extensively for recommending books which improves the accuracy of recommendations.

Advantages:

1. It provides personalized recommendations based on given book.

2. It can differentiate two books and calculate the similarity distance between any two books.

This application mainly consists of two parts.

a. Recommending top 50 books

At this step we recommend top 50 books which most of the users has given good rating. This is for a new user who is just beginning his journey of reading books. We have achieved this using Popularity based filtering approach.

Algorithm for recommending top 50 books

1. As we have books, ratings and users API

2. Classify those books with minimum 250 votes, As we are considering only these books for recommending.

3. Calculate average rating for every book.

4. Sort the books based on the average rating of the book in descending order.

5. Display the top 50 books. (POPULARITY BASED FILTERING)
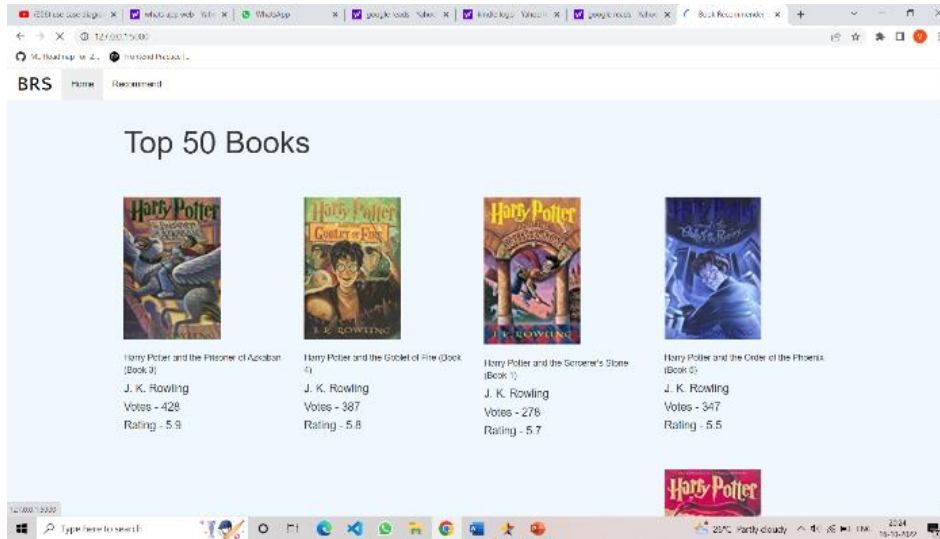
Recommending top 50 books.

b. Recommending books based on user search.

At this step we are recommending books based on the user search, Let us assume a user had read a book on space and interstellar objects, and if he searches for that book, our system would recommend books similar to that searched book.

Algorithm for recommending for recommending books on user search

1. We use Collaborative Filtering method to achieve this.

2. rating of those users is considered who has given rating to minimum 200 books.

3. only those books are considered on which there are at least 50 ratings

4. Create a pivot table with index book-Title, columns user id and ratings as values.

5. Fill all the empty values with 0s.

6. The similarity scores are generated with cosine function.

7. Whenever user enters the name of the book, algorithm searches for the book in data set and stores the cosine similarity score, and it returns 6 books with very close similarity score.

8. The above approach is inspired from Kth Nearest Neighbor's algorithm.
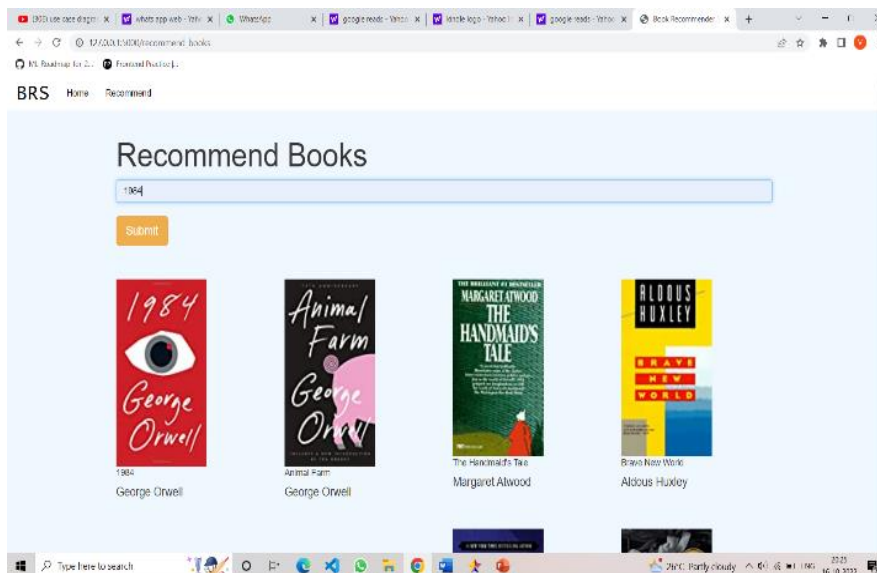
Recommending based on user search

V.   ADVANTAGES AND DISADVANTAGES

ADVANTAGES:

- It makes user search easy.
- It provides personalized recommendations.
- Our interface takes less space.
- It runs fast and saves time of user.
- It recommends books based on the user's search.

DISADVANTAGES:

- The dataset used has only limited books and this can be extended to a large books data set.
- Can be upgraded by using more complex algorithms and deep learning techniques to get more accurate results.

VI.   CONCLUSION

The booming technology of the modern world has given rise to the enormous book websites. This makes the buyers to choose the best books to read as books play a vital role in many people's life. The various kinds of books come into existence on day-to-day basis. So in order to eliminate this critical situation the recommendation system has been introduced in which the suggestion on the various books can be provided based on the analysis of the buyer's interest. This book recommendation has considered many parameters like content of the book and quality of the book by doing collaborative filtering of rating by the other buyers. This recommender system also uses associative model to give stronger recommendations. This system does not have performance problem since it built the recommendations offline.

This project can be further extended by giving a large data set of books and user ratings. It can be further improved by allocating an entry for every new user in the data base and storing his past searches and recommending him the books based on his past searches.

VII.   REFERENCE

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