

ENHANCEMENT IN ONLINE BOOK RECOMMENDATION SYSTEM USING COLLABORATIVE FILTERING TECHNIQUE

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Abstract

Generally, the customer who tends to buy a book are often left with the confusion or they are able to find the next best fit for them, So, in order to recommend the customer as per the needs we need a recommendation system and, in the project, we build a recommendation system which helps the buyer to , collaborative and association and mining techniques). And in this project, we use collaborative filtering method. As it is much effective. The matrix factorization method is also used to find the missing values in the prediction process. And then the factorized values are passed through the KNN algorithm. The objective of the project is to create a machine learning model to recommend the best fit books for user based on the users interest and the popularity. So, with this process of recommendation we could recommend the best fitting books for the user and help user to buy the most relevant book for them.

Keywords:

Recommendation system, matrix factorization, KNN algorithm, book recommendation.

1. INTRODUCTION

In the past few decades, the growth in Google, YouTube, Amazon, kindly and many other web services the recommendation system have impacted in our day-to-day life. In general, the recommendation system aimed to suggest relevant content to the users. Main objective is to build a recommendation system based on which the most relevant book will be recommended for the users. In Content Filtering Method compares the items based on the features.

Recommender systems provide an alternative to search algorithms by helping people discover things that they wouldn't have found otherwise. However, recommender systems are frequently built by indexing nontraditional data with search engines. Develop recommender systems using a variety of methods, including a collaborative approach and a content-based approach.

Using collaborative filtering, data is collected and analyzed based on user behavior, preferences, or activities, and predictions are made about what users will like based on their similarities with other users.

User Profiles and Content-based Approaches: These approaches are based on the item descriptions.

In a content-based recommender system, keywords are used to describe items and a user profile is built to indicate the type of item this user likes.

We are basically trying different models like collaborative filtering-based recommendations since we are trying to recommend books based on past purchases or ratings previously given by the user

2. LITERATURE REVIEW

Mathew, P., Kuriakose, B. [1] A trend has emerged in the use of online recommendation systems It is easier and faster to buy items online rather than going to a store and buying them, and transactions are also quick when done online rather than going out and buying them.

Tewari, A.S., Kumar, A. [2].To recommend the most appropriate products to end users, recommendation systems are widely used. Booksellers compete with each other by any means necessary nowadays.

Ramakrishnan, G., Saicharan, V. [3]. The paper proposes and compares various methods for incorporating implicit feedback into recommendation systems.

Kanetkar, S., Nayak, A., [4]. In this paper, we attempt to introduce a model for an electronic customized crossover book recommender framework which exploits differed parts of giving proposals separated from the ordinary cooperative and content-based sifting draws near.

Cui, B. and Chen, [5]. The proposal pages contain all the fundamental and extending book data for perusers to allude to. Perusers can suggest a book on these pages, and the proposal information will be dissected by the suggestion framework to pursue logical buying choice.

3. EXISTING SYSTEM

A recommendation system are algorithms aimed at suggesting relevant items to users . Various techniques are introduced for recommendation system . There are three methods used in existing systems so far. They are Content based filtering method , collaborative filtering method and hybrid filtering method. These methods implement various techniques such as cosine similarity , sine similarity yet these systems are facing several challenges . Some of them are data sparser, scalability and gray sheep . These systems also face drawbacks in shilling attacks and privacy protections. The dataset in existing system is large and full dataset that involves complicated process for analyzing and filtering in order to obtain the required information. Hence it requires large amount of time which is thus resolved by our proposed system

4. PROPOSED METHOD

In our proposed system , the datasets are converted into trained dataset . This is done by classifying them into different categories. Since our project compares different methods of categorization the datasets, we have different methods . We use KNN algorithm for filtering the database . The methods used by KNN are Euclidean distance, Cosine similarity and Pearson Correlation . Hence this

proposed system is quick in calculating and has a simple algorithm to interpret. The accuracy of this system is high and the system is useful for regression and classification

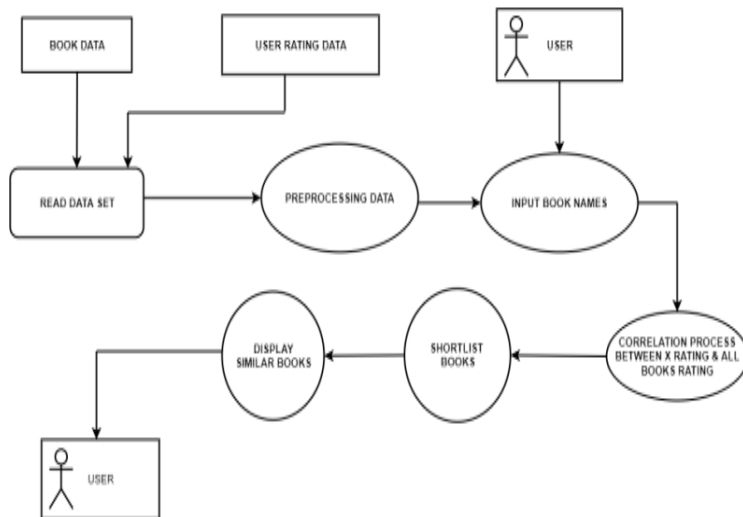


Fig.1.proposed system architecture

5. ALGORITHM

Step 1: Start

Step 2: Creating database 1 – Book data

Step 3: Creating database 2 – User rating data

Step 4: Creating database 3 – Read data

Read dataset set is obtained from book data and user rating data.

Step 5 : Read dataset is now preprocessed

Step 6 : The input got from user is co-related with preprocessed Data

Data

Step 7 : Books on shortlisted based on rating

Step 8 : Similar books are displayed to user

Step 9 : Stop

6. MODULES

MODULE 1-Dataset Description

• We are considering 3 different files for our dataset . These files are extracted from some of the websites which are created for books selling.

1) Book - This dataset comprises of all information related to a book . For example: title, author, year of publishing, pattern, category , price ,language etc

2) Users - This file consist of information of user who have registered, their name ,age, email id , location , contact number etc

3) Ratings - This file is the most important file of our dataset. It mainly comprises of the number of ratings each user has given for a particular book along with their user id is collected and stored as data.

A powerful collaborative filtering model can definitely be built using our data set that contains all three files - the book,users and ratings respectively.

MODULE 2-Preprocessing data

- The raw data is converted into understandable format
- The unimportant or irrelevant and extinct data are removed from dataset in order to obtain a compact dataset from full dataset.

MODULE 3 -Perform EDA-Exploratory Data Analysis

- This data analysis is perform for collection of count of the number of users who have given ratings for a book and it also extracts the count of those users who have awarded more than 200 ratings.

MODULE 4 -Clustering

- Clustering uses Nearest Neighbour Algorithm . It is as same as K nearest . Nearest neighbour algorithm is used for clustering base on Euclidean distance.

MODULE 5 -Matrix Factorization techniques

- This particular technique is used to make the prediction more effective . The are mainly used to find the missing values and these factorized values are passed to through KNN Algorithm . Matrix Factorization Technique allows users to discover the latent (hidden) features underlying the interactions between users and items (books).

9. IMPLEMENTATION AND OUTPUTS

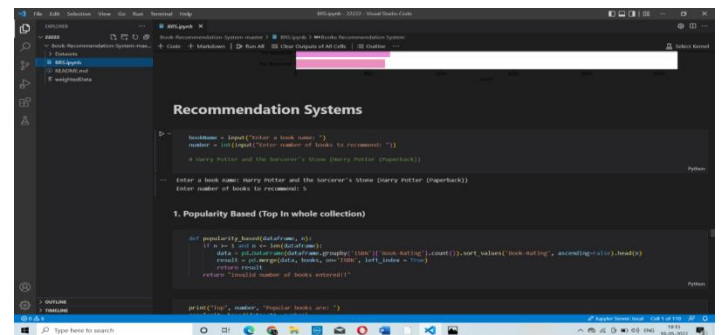


Fig.2.Recommendation Systems

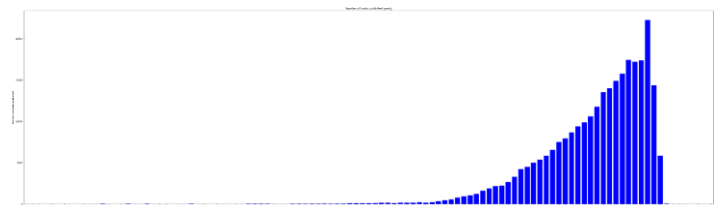


Fig.3.Data Visualization

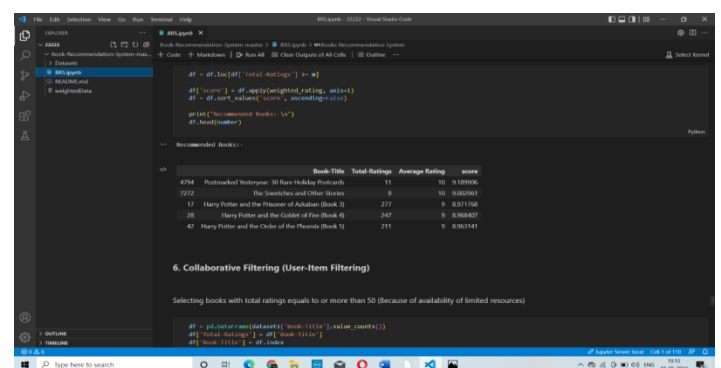


Fig.4.Average Weighted Ratings

Fig.5. Collaborative Filtering

Fig.8. Hybrid Approach

Fig.6. Nearest Neighbours Based

Fig.7. Content Based

10. RESULTS AND DISCUSSION

Our recommendation system is completely based on the rating provided by each user through their identity . But practically thinking , trust issues are raised here . Like whether the ratings are. Genuine or not ?.Our system resolves the problem of data sparsity and we recommend future researchers to focus and resolve these issues too.

11. FUTURE ENHANCEMENT

Here the recommendation system takes the number of users In future recommendation system can be the users rating by factoring the absolute rating instead of just considering the number of users who have rated that particular book . The full dataset is sorted out into compact dataset which results in accuracy

12. CONCLUSION

All recommendation systems face a huge obstacle because of the large data set that is need to be handled. It is difficult to filter large data set. Our proposed algorithm consists of compact dataset which thus produces more accurate result compared to full dataset. Thus we experimentally prove that our dataset is more efficient and accurate compared to existing and it also takes only less time for filtration

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