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The Book Recommender Engine using Collaborative Filtering

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ABSTRACT: This Online book selling websites helps to buy the books online with Recommendation system which is one of the stronger tools to increase profit and retaining buyer. The book recommendation system must recommend books that are of buyer's interest. Recommendation systems are widely used to recommend products to the end users that are most appropriate. This system uses features of collaborative filtering to produce efficient and effective recommendations. Collaborative recommendation is probably the most familiar, most widely implemented and most mature of the technologies. Collaborative recommender systems aggregate ratings of objects, recognize commonalities between users on the basis of their ratings, and generate new recommendations.

I. INTRODUCTION

Recommendation system filters information by predicting ratings or preferences of consumers for items that the consumer would like to use. It tries to recommend items to the consumer according to his/her needs and taste. RS mainly uses two methods to filter information - Content-based and Collaborative filtering. Content-based filtering involves recommending those items to a consumer which are similar in content to the items that have already been used by him/her. First, it makes a profile of the consumer, which consists of his/her taste. Taste is based on the type of books rated by the consumer. The system analyses the books that were liked by the consumer with the books he had not rated and looks for similarity. Out of these unrated books, the books with the maximum value of similarity index will be recommended to the consumer. Paul Resnick and Hal Varian were the ones who suggested Collaborative filtering algorithm in 1997. It became popular amid the various frameworks available at that time. A complete RS contains three main things: user resource, item resource and the recommendation algorithm. In the user model, the consumers' interests are analysed, similarly, the item model analyses the items' features. Then, the characteristics of the consumer are matched with the item characteristics to estimate which items to recommend using the recommendation algorithm. The performance of this algorithm is what affects the performance of the whole system

II. PROBLEM DEFINITION

Recommendation systems are tools in e-commerce websites which helps user to find the appropriate products. With the rapid development of internet technologies the number of online book selling websites has increased which enhanced the competition among them.

III. METHODOLOGY

Okon et.al. (2018) [1] proposed a model that generates recommendations to buyers, through an enhanced CF algorithm, a quick sort algorithm and Object Oriented Analysis and Design Methodology (OOADM). Scalability was ensured through the implementation of Firebase SQL. This system performed well on the evaluation metrics.

Kurmashov et.al. (2015) [2] used Pearson correlation coefficient based CF to provide internet based recommendations to book readers and evaluated the system through an online survey.

Mathew et.al. (2016) [3] proposed a system that saves details of books purchased by the user. From these Book contents and ratings, a hybrid algorithm using collaborative filtering, content-based filtering and association rule

generates book recommendations. Rather than Apriori, they recommended the use of Equivalence class Clustering and bottom up Lattice Transversal (ECLAT) as this algorithm is faster due to the fact that it examines the entire dataset only once.

Parvatikar et.al. (2015) [4] proposed item-based collaborative filtering and association rule mining to give recommendations. Similarity between different users was computed through Adjusted Cosine Vector Similarity function. Better recommendations were obtained as through this method data sparsity problem was removed.

Ayub et.al. (2018) [5] proposed a similarity function similar to Jaccard Similarity to locate alike items and users for the enquiring item and user in nearest neighbour based collaborative filtering. They proposed that absolute value of ratings should be taken as against the ratio of co-rated items taken in Jaccard Similarity. They also compared performance of their method with other similarity measures.

Gogna and Majumdar [6] suggested the use of buyer's demographic and item category to overcome data sparsity and cold start problems in their movie recommendation system. Latent Factor Model (LFM) was used. They developed a matrix to match the buyer and user information to get a dense user and dense item matrix. Label Consistency map, the outcome of this system was used to suggest unrated and other items to new buyers.

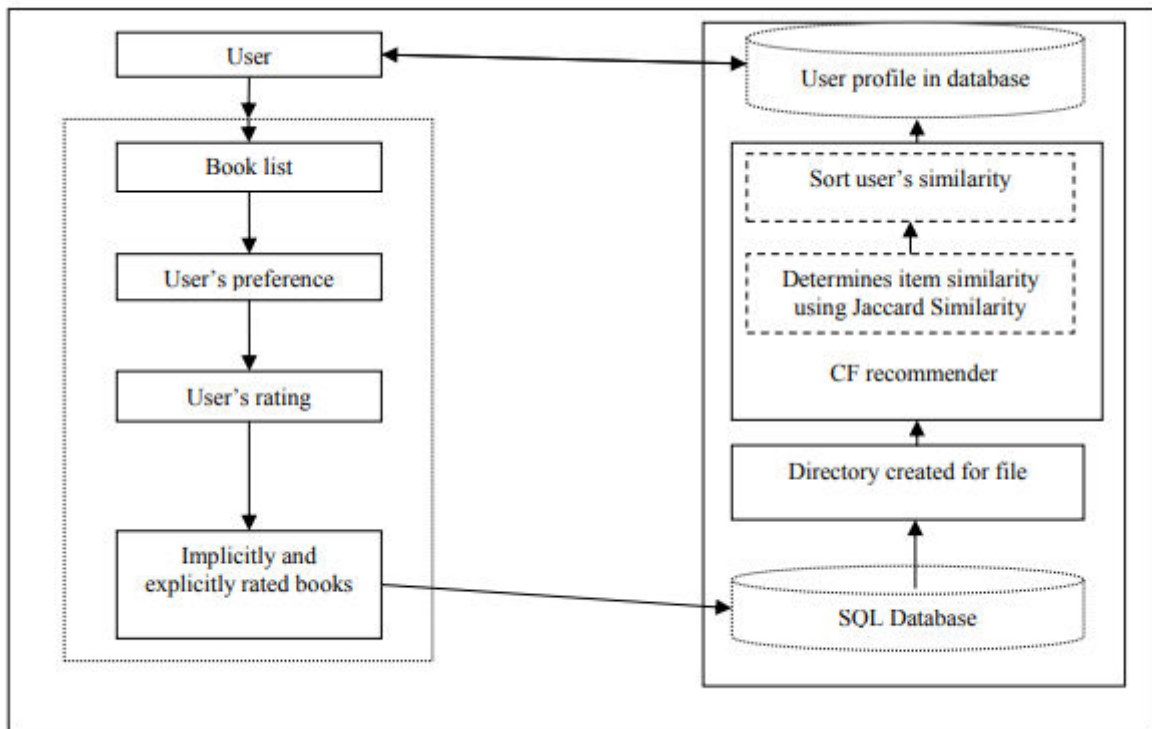
Chatti et.al. (2013) [7] suggested tag-based and rating based CF recommendation in technology enhanced learning (TEL) to resolve the data sparsity problem and extract relevant information from the rating database. Memory and model oriented 16 varied tag-based Collaborative filtering algorithms were evaluated for buyer satisfaction and accuracy of recommendations in Personal Learning Environments.

1.6. MODULE DESCRIPTION

User login: For login to the system, user will enter the Username and password, if entered details are correct then the system will redirect him to home page otherwise it will show an error message.

Registration: The user will register to the system with normal information. At the time of registration, password will be auto generated and it will be provided to user's mail.

Prediction system: It will predict the book information based on user personal information.



ADVANTAGE

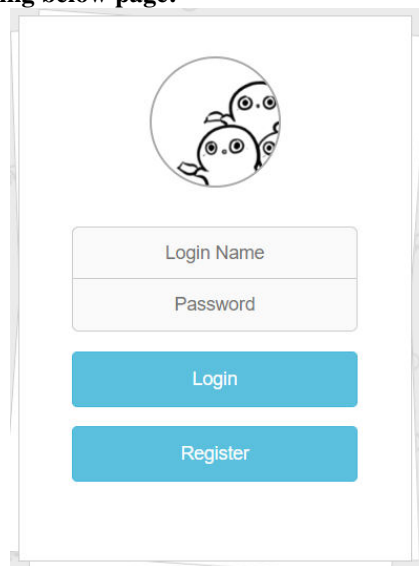
The benefits of this system are:

- This system saves the precious time of customer and very efficient to use.
- Provides large number of choices for books & also recommend for books.
- User can buy book easily by making online payment.
- The system recommending algorithm scale well with co-rated items.

PROJECT RESULT:

Login Page:

User and admin can login using below page:



A screenshot of a login page. At the top center is a circular logo containing two cartoon fish. Below the logo are two input fields: 'Login Name' and 'Password'. Underneath these fields are two blue buttons: 'Login' and 'Register'.

Browse Book Page:





Recommendation Page:

Welcome, [root](#) [Logout](#) [My Orders](#)

[Home](#) [Browse Books](#) [Users](#) [New Books](#)

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All Books (Just for Testing Browsing):

ISBN	Title	Author	Publisher	Publish_Year	Copies	Price	Format	Keywords	Subject	rate	trust_rate
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Browse Books (Case Sensitive):

Type 1 : Value 1 :

Conjunctive 1 and 2 :

Type 2 : Value 2 :

Conjunctive 2 and 3 :

Type 3 : Value 3 :

Conjunctive 3 and 4 :

Type 4 : Value 4 :

Sort By :

Results of Search

ISBN	Title	Author	Publisher	Publish_Year	Copies	Price	Format	Keywords	Subject	rate	trust_rate
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IV. CONCLUSION

This book recommendation has considered many parameters like attributes of the books and also personality based mapping of users. This recommender system also uses support and confidence measures to give stronger recommendations. They are very useful in recommending books to users according to their need and interests.

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