RECOMMENDER SYSTEM

MINI PROJECT – II

<u>SYNOPSIS</u>

Department of Computer Science & Application **Institute of**

Engineering & Technology

SUBMITTED TO: -   **SUBMITTED BY:-**

Mr. Sumit Nagar   *Divyansh Bhargava (**201500231**)*
(Technical Trainer)   *Anurag Singh (**201500127**)*

          *Aryan Gupta (**201500150**)*

<u>Acknowledgment</u>

It gives us a great sense of pleasure to present the synopsis of the B.Tech mini project undertaken during B.Tech III Year. This project is going to be an acknowledgement to the inspiration, drive and technical assistance will be contributed to it by many individuals. We owe special debt of gratitude to Dr Sumit Nagar, Technical Trainer, for providing us with an encouraging platform to develop this project, which thus helped us in shaping our abilities towards a constructive goal and for his constant support and guidance to our work.

His sincerity, thoroughness and perseverance has been a constant source of inspiration for us. We believe that he will shower us with all his extensively experienced ideas and insightful comments at different stages of the project & also taught us about the latest industry-oriented technologies. We also do not like miss the opportunity to acknowledge the contribution of all faculty members of the department for their kind guidance and co-operation.

1. Divyansh bhargava (*201500231*)
2. Anurag Singh (*201500127*)
3. Aryan Gupta (*201500150*)

<u>ABSTRACT</u>

The project aims to generate meaningful recommendations to a collection
of users for movies or books that might interest them.
Recommender system tries to filter the users' data to come up with
the exact amount of information required according to the needs and
preferences of the users. Hence there is an increase in the demand
of recommender system to tackle the data overload.
The ML algorithms for these recommendation systems use the data about
this user from the system's database

The algorithm is designed to provide the resources in a more easy way so
that the user doesn't have to search for any movie or book.

Through this, the user can save time and see/read their favourite
movies/books more efficiently.

The technologies we have used are HTML, CSS, JavaScript and Python.

CONTENTS

<u>INTRODUCTION</u>

 In this, we will build one interesting application that will related with the recommendations provided to the users.To build this applicationwe will use HTML, CSS, JavaScript and Python. This is one of the exciting and thrilling applications. While building this application we have used various libraries.

In our Project, there are two recommendation systems, one of which isfor Movies and the other one is of Books. In the Movies section, the userhave to search the movie in the search bar, based on the type of the moviesearched and user personality, the system will show the recommendedmovies to the user.

Similarly, goes with the Books section, the user have to give the name of the book, based on the above parameters, the system will recommended the resulting books

DATA SET

1)FOR BOOK RECOMMENDER

The Book-Crossing dataset comprises 3 files.

Users : Contains the users. Note that user IDs (User-ID) have been anonymized and map to integers. Demographic data is provided (Location, Age) if available. Otherwise, these fields contain NULL values.

Books : Books are identified by their respective ISBN. Invalid ISBNs have already been removed from the dataset. Moreover, some content-based information is given (Book-Title, Book-Author, Year-Of-Publication, Publisher), obtained from Amazon Web Services. Note that in the case of several authors, only the first is provided. URLs linking to cover images are also given, appearing in three different flavors (Image-URL-S, Image-URL-M, Image-URL-L), i.e., small, medium, large. These URLs point to the Amazon website.

Ratings : Contains the book rating information. Ratings (Book-Rating) are either explicit, expressed on a scale from 1-10 (higher values denoting higher appreciation), or implicit, expressed by 0.

2)FOR MOVIE RECOMMENDER

The movies Dataset: Consists of 26,000,000 ratings and 750,000 tag applications applied to 45,000 movies by 270,000 users. Includes tag genre data with 12 million relevance scores across 1,100 tags.

The cast_crew Dataset: Comprises of 100,000 ratings and 1,300 tag applications applied to 9,000 movies by 700 users.it gives the details of all cast and crew of the movies dataset.

Technology Used

HTML (Hyper Text Mark-up Language)

CSS (Cascading Style Sheets)
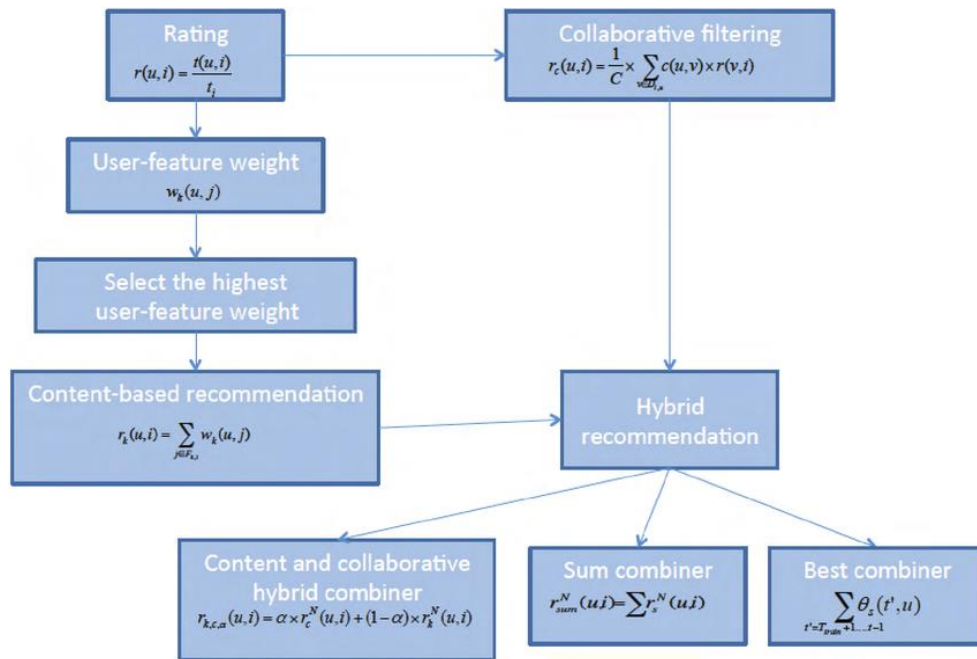
JAVASCRIPT

PYTHON

Software and Hardware Requirements

- WebSphere Application Developer (WSAD)
- Oracle8i
- 512 MB RAM
- Window 10
- Ethernet Adapter

Software Requirements:

Name of component	Specification
Operating System	Windows 98, Windows XP, Windows7, Linux
Language	HTML
Database	No
Browser	Any of Mozilla, Opera, Chrome etc
Web Server	Apache
Software Development Kit	Dreamviewer
Scripting Language Enable	Javascript

DATA FLOW DIAGRAM

- FOR MOVIE RECOMMENDATION SYSTEM

Rating
$$r(u,i) = \frac{t(u,i)}{t_i}$$

Collaborative filtering
$$r_c(u,i) = \frac{1}{C} \times \sum_{v \in U_a} c(u,v) \times r(v,i)$$

User-feature weight
$$w_k(u,j)$$

Select the highest user-feature weight

Content-based recommendation
$$r_k(u,i) = \sum_{j \in F_{k,i}} w_k(u,j)$$

Hybrid recommendation

Content and collaborative hybrid combiner
$$r_{k,c,a}(u,i) = \alpha \times r_c^N(u,i) + (1-\alpha) \times r_k^N(u,i)$$

Sum combiner
$$r_{sum}^N(u,i) = \sum r_s^N(u,i)$$

Best combiner
$$\sum_{t'=T_{train}+1,\dots,t-1} \theta_s(t',u)$$

- FOR BOOK RECOMMENDATION SYSTEM

Book Data

User Rating Data

User

Read Dataset

Pre-Processing

Input Book Names (x)

Correlation Process between X rating & All Books Ratings

Shortlist Books

Display Similar Books
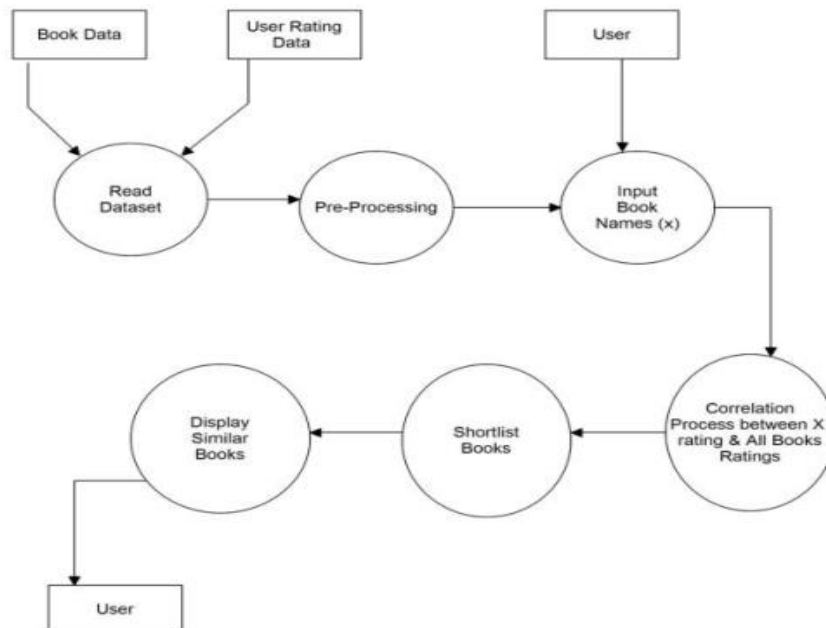
User

PROJECT DESCRIPTION

EDA - Performed exploratory data analysis on numerical and categorical data.
Data Cleaning - Missing value imputation, Outlier Treatment
Feature Selection - Used User-ID , ISBN and Books-Rating for model development.
Model development - Tried Popularity based model and Collaborative filtering (Both Memory based and Model based).

WORKING

In our Project, there are two recommendation systems, one of which is for Movies and the other one is of Books. In the Movies section, the user have to search the movie in the search bar, based on the type of the movie searched and user personality, the system will show the recommended movies to the user.

Similarly, goes with the Books section, the user have to give the name of the book, based on the above parameters, the system will recommended the resulting books.

The algorithm is designed to provide better recommendations to the user.

Conclusion

A recommendation system helps an organization to create loyal customers. The recommendation system today are very powerful that they can handle the new customer too who has visited the site for the first time. They recommend the products which are currently trending or highly rated and they can also recommend the products which bring maximum profitto the company.

FUTRE SCOPE

Given more information regarding the books dataset, namely features like Genre, Description etc, we could implement a content-filtering based recommendation system and compare the results with the existing collaborative-filtering based system.

We would like to explore various clustering approaches for clustering the users based on Age, Location etc., and then implement voting algorithms to recommend items to the user depending on the cluster into which it belongs.

REFERENCES

Books:

- *HTML & CSS: The Complete Reference*
- *JavaScript for Modern Web Development*
- *CSS Mastery*

Websites:

- www.google.com
- www.w3school.com
- www.javaworld.com
- www.projectdevelop.com

- https://www.themoviedb.org
- www.wikipedia.com

Faculty Guidelines:

- *Mr. Sumit Nagar*(Technical Trainer at GLA University)
-

Google Drive link:

https://drive.google.com/drive/folders/1fsOxs2j7LV4XhBtcV2bghUlmi0Di54s6?usp=sharing