

Book Recommendation System using Collaborative and Content Based Filtering with Web Scraping

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Abstract: *A recommender system, or a recommendation system, is a subclass of information filtering system that provide suggestions for items that are most pertinent to a particular user. Typically, the suggestions refer to various decision-making processes, such as what product to purchase, what music to listen to, or what online news to read. Recommender systems are particularly useful when an individual needs to choose an item from a potentially overwhelming number of items that a service may offer. Recommender systems are used in a variety of areas, with commonly recognized example staking the form of playlist generators for video and music services, product recommenders for online stores, or content recommenders for social media platforms and open web content recommenders. These systems can operate using a single input, like music, or multiple inputs within and across platforms like news, books and search queries. There are also popular recommender systems for specific topics like restaurants and online dating. Recommender systems have also been developed to explore research articles and experts, collaborators, and financial services.*

Keywords: Filtering system, product recommenders, collaborators, content recommenders, decision-making process.

I. INTRODUCTION

Traditional method of finding a book of our interest is a long and time-consuming procedure, at times we may end up not getting the desired book. So, we have decided to build this book recommendation system whose main purpose is to higher the probability of finding a book without even knowing the name, this will eventually raise the chances of finding the desired book and will be time effective as well. In this we are also creating a recommendation system using a dataset that is generated using web scraping.

II. LITERATURE REVIEW

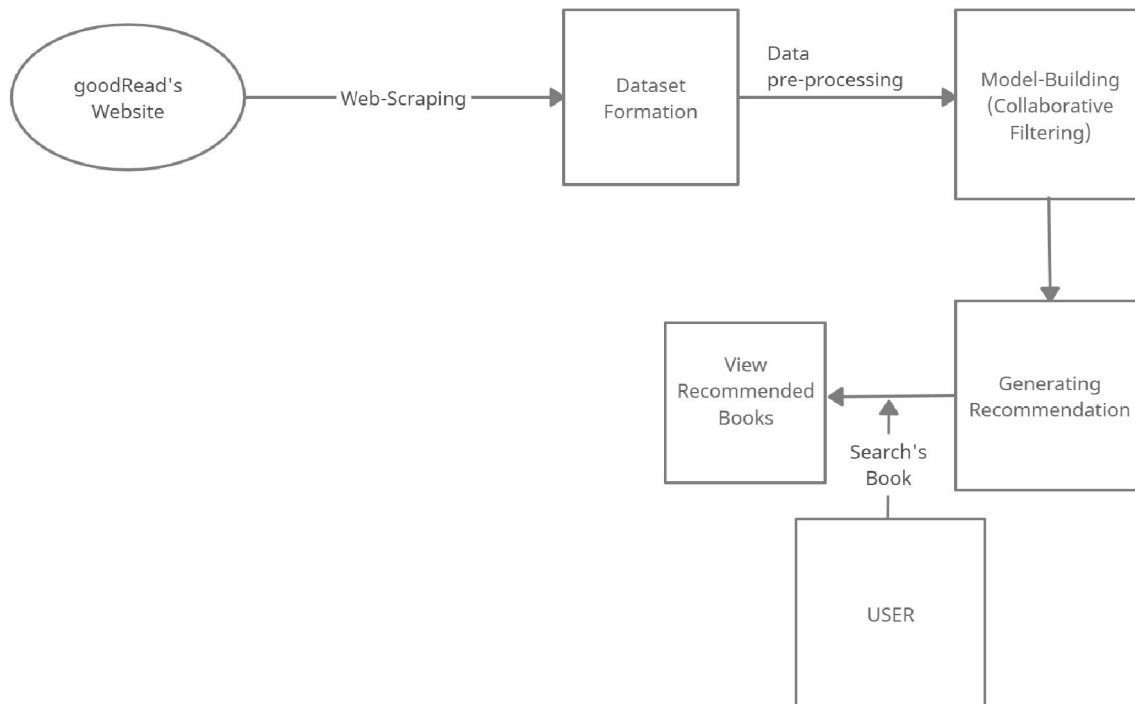
Recommender Systems (RSs) is a rapidly expanding and well-liked research area. Significant advancements in internet technology and e-commerce have also contributed to the rise in interest in this research issue. RSs are quite beneficial for e-commerce. There are three ways RSs can improve an e-commerce system: by assisting first-time online shoppers, through cross-selling related products, and by fostering a culture of client loyalty. When Amazon introduced their Collaborative Filtering (CF) approach at the end of the 1990s, successfully increasing their sales, the level of research in RSs reached its height. As a result of Amazon's popularity, other online companies began implementing RSs on their websites. Amazon has obtained a United States Patent for its CF technique. The RS field can be seen as a subset of information filtering because the primary objective of an RS is to locate the preferred information and delete information that a user dislike. After analysing a user's preferences using historical data, the data is processed using machine learning algorithms to create a prioritised list of suggestions that reflect the user's tastes.

Summary of Review Paper [DOI: 10.1109/IC3I.2016.7917939]

Almost all e-commerce websites generate recommendations for their users but most of them are irrelevant. Collaborative filtering is one of the most widely used recommendation generation technique by e-commerce websites. Collaborative filtering generates recommendations for the target user from the collaboration of the other users who have the similar interest derived from their ratings.

This paper proposes a book recommendation system that generates recommendations from the collaboration of trusted friends of the target user and uses association rule mining to capture current reading trend of users in the network. Almost all people are considering the advice of their friends, whenever they are going to do new purchases. This recommendation system has realized this aspect of the people in the form of trust. Much established recommendation technique collaborative filtering is used to find the similarity between the two users and predicting the ratings of the recommended books

III. SYSTEM ARCHITECTURE



3.1 Algorithm Used

Collaborative Filtering

In Collaborative Filtering, we tend to find similar users and recommend what similar users like. In this type of recommendation system, we don't use the features of the item to recommend it, rather we classify the users into the clusters of similar types, and recommend each user according to the preference of its cluster.

Most websites like Amazon, YouTube, and Netflix use collaborative filtering as a part of their sophisticated recommendation systems.

Thus, collaborative filtering focuses on relationships between the item and users; items' similarity is determined by their rating given by customers who rated both the items.

How Recommendations happens?

When a user enters name of book, the ML model looks for it in the plane and finds it.

Then after finding the book in the plane models checks for 5 closest points around it and gathers the information of those 5 points.

After getting the information of those 5 books model recommends or sends that information on the webpage.

Finally, the user is able to view 5 most similar books of the book he/she has queried for.

	Item 1	Item 2	Item 3	Item 4	Item 5
User 1	0	3	0	3	4
User 2	4	0	0	2	0
User 3	0	0	3	0	0
User 4	3	0	4	0	3
User 5	4	3	0	4	4

Content Based Filtering

A content-based recommendation system is a type of recommendation system that suggests items to users based on the similarity of their features or attributes.

In a content-based system, the system first learns the preferences of the user based on their previous interactions with the system. Then, the system recommends items that have similar features or attributes to the items the user has interacted with in the past.

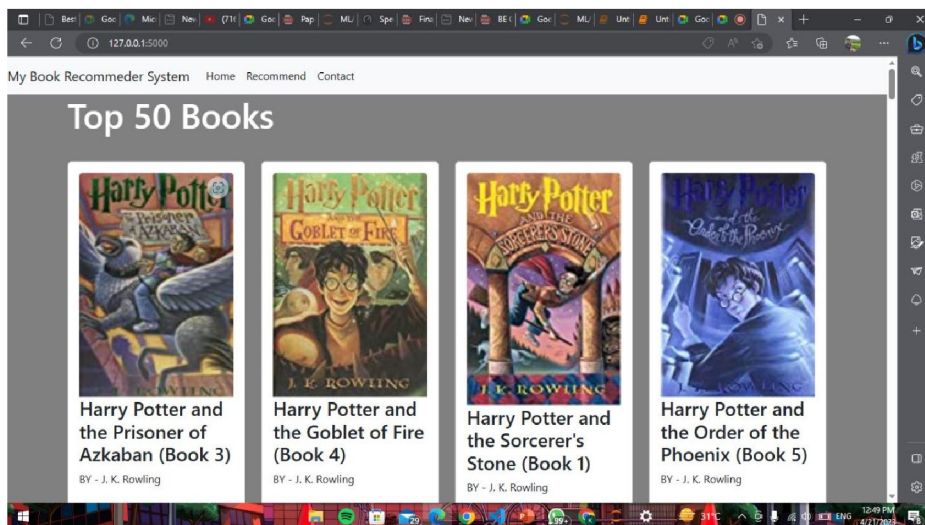
For example, in a movie recommendation system, the system can recommend movies to a user based on the genre, actors, directors, and other attributes of the movies the user has previously watched and liked. The system learns the user's preferences for these attributes and then recommends movies that have similar attributes.

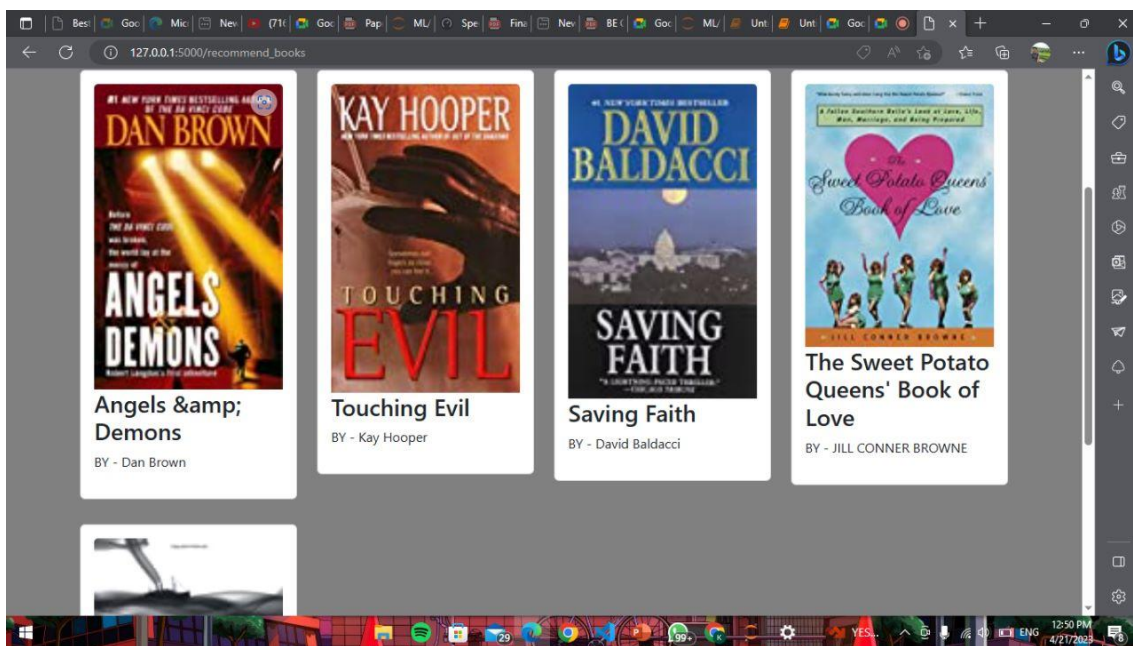
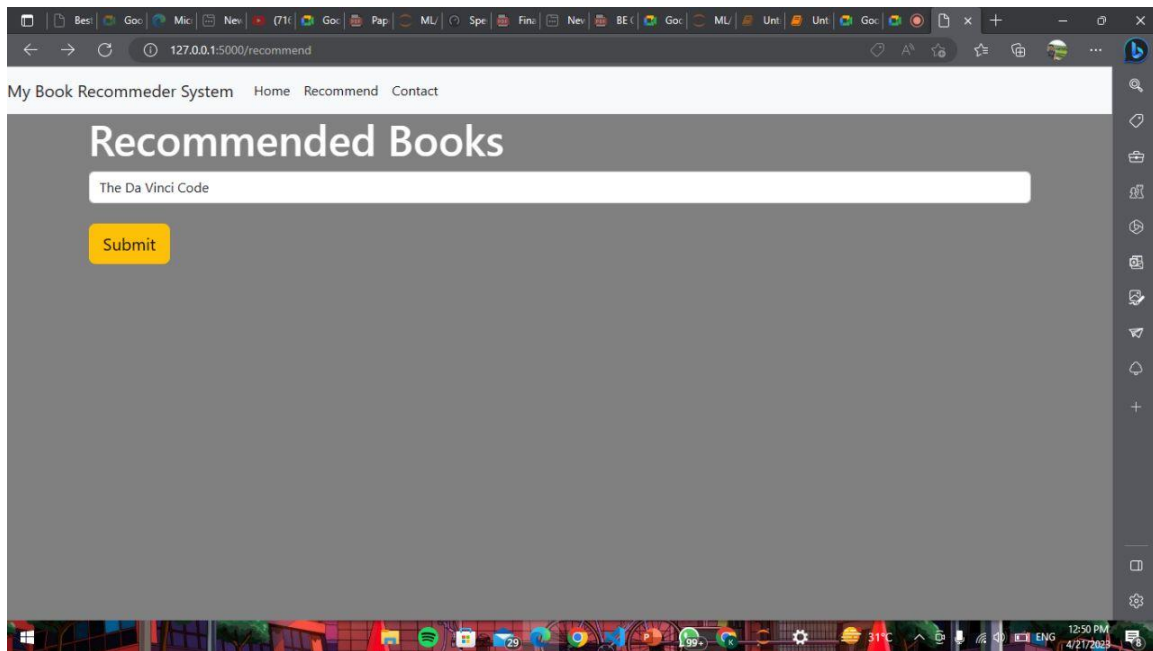
Web Scraping

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IV. EXPERIMENTAL RESULT





V. CONCLUSION

Recommender systems are a powerful new technology for extracting additional value for a business from its user databases. These systems help users find items they want to buy from a business.

Recommender systems are being stressed by the huge volume of user data in existing corporate databases, and will be stressed even more by the increasing volume of user data available on the Web. New technologies are needed that can dramatically improve the scalability of recommender systems.

This recommender system will help many E-commerce websites like Amazon, Flipkart, Crossword which will in turn help them in increasing their sales.

Our Book recommendation system also intends to allows user to search from a wide variety of books and recommend the end person with most similar book.

The Book recommendation system will accurately recommend books to the users using methods of collaborative filtering, content-based filtering and webscraping.

VI. FUTURE SCOPE

- E-Commerce: It is an industry where recommendation system is first widely used. With millions of customers and data on their online behaviour, e-commerce companies are best suited to generate accurate recommendations.
- Media: Similar to e-commerce, media businesses are one of the first to jump into recommendation. It is difficult to see a news site without a recommendation system.
- Education Purpose: Book efficiently system can be used in school libraries to find a desired book efficiently and quickly.
- Given more information regarding the book's dataset, namely features like author, ratings etc. we could implement a collaborative-filtering based recommendation system.
- Recommender systems can be a very powerful tool in a company's arsenal, and future developments are going to increase business value even further. Some of the applications include being able to anticipate seasonal purchases based on recommendations, determine important purchases, and give better recommendations to customers which can increase retention and brand loyalty.
- Most businesses will have some use for recommender systems, and I encourage everyone to learn more about this fascinating area.

VII. ACKNOWLEDGMENT

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