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Movie Recommendation System using Machine Learning Algorithms

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Abstract - *Recommender systems are one of the most successful and widespread application of machine learning technologies in business. This is information filtering approach that is used to predict the preference of that user.*

The most popular areas where recommender system is applied are books, news, articles, music, videos, movies etc. In this paper we have proposed a movie recommendation system which is based on collaborative filtering approach that makes use of the information provided by users, analyzes them and then recommends the movies that is best suited to the user at that time. The recommended movie list is sorted according to the ratings given to these movies by previous users and it uses various machine learning algorithms for this purpose.

It also help users to find the movies of their choices based on the movie experience of other users in efficient and effective manner without wasting much time in useless browsing.

The presented recommender system generates recommendations using various types of knowledge and data about users from the movie dataset. The user can then browse the recommendations easily and find a movie of their choice.

***Key Words*: Recommendation systems, collaborative filtering, dataset, machine learning, user based recommendations**

1. INTRODUCTION

A recommendation system is a type of information filtering system which attempts to predict the preferences of a user, and make suggests based on these preferences.

There are a wide variety of applications for recommendation systems. These have become increasingly popular over the last few years and are now utilized in most online platforms that we use. The content of such platforms varies from movies, music, books and videos, to friends and stories on social media platforms, to products on e-commerce websites, to people on professional and dating websites, to search results returned on Google.

Often, these systems are able to collect information about a user's choices, and can use this information to improve their suggestions in the future. For example, Facebook can monitor your interaction with various stories on your feed in order to learn what types of stories appeal to you. Sometimes, the recommender systems can make improvements based on the activities of a large number of people. For example, if Amazon observes that a large number of customers who buy the latest Apple MacBook also buy a USB-C-to USB Adapter, they can recommend the Adapter to a new user who has just added a MacBook to his cart.

Two main approaches are widely used for recommender systems. One is content-based filtering, where we try to profile the user's interests using information collected, and recommend items based on that profile. The other is collaborative filtering, where we try to group similar users together and use information about the group to make recommendations to the user.

1.1 Collaborative Filtering

Collaborative filtering is a technique for predicting unknown preferences of people by using already known preferences from many users. It computes similarity on two basis: one is user and the other is the item. It uses cosine and Pearson correlation similarity approach. The main challenges that Collaborative Filtering deals with are data sparsity, scalability and cold start problem. CF introduces three main algorithms: memory-based, model-based, and hybrid CF, which are used to combine CF with other recommendation techniques and their power to deal with the challenges.

For an instance, assume two users named James and Creed, who have very comparable tastes. If the ratings, which both have stated, are very similar, then their resemblance can be determined by the fundamental algorithm. In such cases, there is a high probability that the ratings where in just one of them has definite value, are also likely to be similar. This similarity can be used to make interpretations about partly stated values.

1.2 Content Based Filtering

Another common approach when designing recommender systems is content-based filtering. Content-based filtering methods are based on a description of the item and a profile of the user's preferences. These methods are best suited to situations where there is known data on an item (name, location, description, etc.), but not on the user. Content-based recommenders treat recommendation as a user-specific classification problem and learn a classifier for the user's likes and dislikes based on an item's features.

In this system, keywords are used to describe the items and a user profile is built to indicate the type of item this user likes. In other words, these algorithms try to recommend items that are similar to those that a user liked in the past, or is examining in the present. It does not rely on a user sign-in mechanism to generate this often temporary profile. In particular, various candidate items are compared with items

previously rated by the user and the best-matching items are recommended. This approach has its roots in information retrieval and information filtering research.

2. Working

The movie recommendation system basically works by providing suggestions to the users by using the two renowned algorithms explained above. This movie recommendation system recommends movies to a user or client by evaluating IMDB ratings.

At home page user can sign up as new user or sign in with their unique user ID and password (**Fig -1: User Sign Up**) and get recommendations of the movies which are based on the results of content based filtering and collaborative based filtering algorithms.

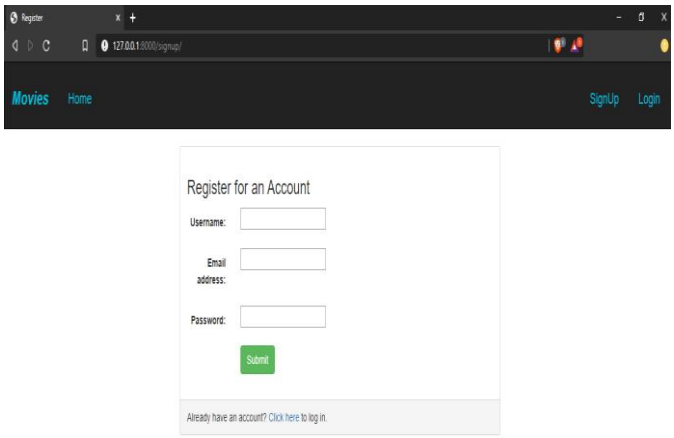

Fig – 1: User Sign up

After a new user signs up, his/her details such as which movies they have seen and its corresponding ratings are saved along other users in the dataset as shown in (**Fig -2: Rating Page**).

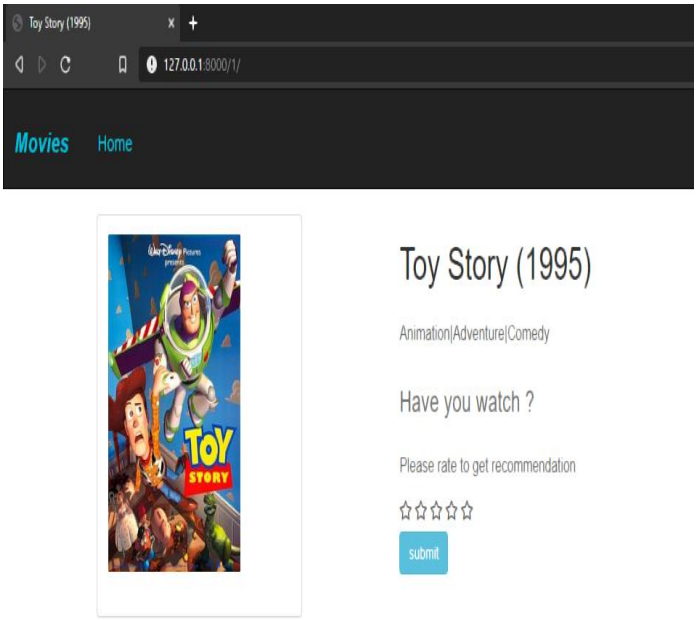

Fig -2: Rating Page

After finding out the similar users from the dataset using collaborative filtering and content based filtering, recommendations are generated for a particular user 'XYZ' (**Fig – 3:Collaborative filtering Recommendations**).

Out[20]:

title	rating	no
Empire Strikes Back, The (1980)	4.750000	16
Schindler's List (1993)	4.750000	12
Usual Suspects, The (1995)	4.666667	12
Close Shave, A (1995)	4.666667	12
Aliens (1986)	4.642857	14
Boot, Das (1981)	4.611111	18
Raiders of the Lost Ark (1981)	4.600000	20
Star Wars (1977)	4.588235	51
Alien (1979)	4.545455	11
Secrets & Lies (1996)	4.538462	13

Fig -3: Collaborative filtering Recommendations

3. CONCLUSION

Watching movies is one of the popular entertainments in the modern society, and these days, people can watch movies anytime and everywhere—at work, at home, or in their cars. However, following the normal supply and demand curve, in the calendar year of 2019, there were 7,547 most popular

English-language movies released. To save time and efforts in searching for a good movie which suits our taste, this movie recommendation system can be used. Even though no recommendation or prediction is 100% accurate, using machine learning algorithms recommendations are generated which are fairly accurate.

REFERENCES

[1] Kumar Manoj, D.K. Yadav, Singh Ankur, Kr Vijay, "A Movie Recommender System: MOVREC", 2015 International Journal of Computer Applications, vol. 124, pp. 7-11.

[2] A. V. Dev, A. Mohan, "Recommendation system for big data applications based on set similarity of user preferences", 2016 International Conference on Next Generation Intelligent Systems (ICNGIS), pp. 1-6, 2016.

[3] Koen Verstrepen, Bart Goethals, "Unifying nearest neighbors collaborative filtering", Proceedings of the 8th ACM Conference on Recommender systems, October 06-10, 2014.

[4] A. Jain, S. K. Vishwakarma, "Collaborative Filtering for Movie Recommendation using RapidMiner", International Journal of Computer Applications, vol. 169, no. 6, pp. 0975-8887, July 2017.

[5] Giles C.L., Bollacker K.D., and Lawrence S., "CiteSeer: An automatic citation indexing system," in Proceedings of the third ACM conference on Digital libraries, 1998, pp. 89–98.

[6] Seroussi Y., "Utilising user texts to improve recommendations," User Modeling, Adaptation, and Personalization, pp. 403–406, 2010.

[7] Beel J., Langer S., and Genzmehr M., "Mind-Map based User Modelling and Research Paper Recommendations," in work in progress, 2014.

[8] MacQueen J.. Some methods for classification and analysis of multivariate observations. In Proc. Of the 5th Berkeley Symp. On Mathematical Statistics and Probability, pages 281-297. University of California Press, 1967.