

A Survey of Seasonal-based Movie Recommendations Using Machine Learning Through a Hybrid Approach with User Interest in Various OTT Platforms

B. Sriram*

Abstract

No matter their age, gender, race, color, or region, everyone enjoys watching films particularly during festival season. We are all, in the most basic sense, connected to one another through this beautiful medium, but what really grabs attention is the fact that, regardless of how unique our choices and combinations are in terms of picture show preference, one thing remains constant. Certain people have a preference for certain types of movies, such as romance, sci-fi, or thrillers, while others focus on lead actors and directors. Having said that, a certain segment of the public continues to enjoy seeing such films. In this paper, the recommendation towards seasonal-based shows, such as Christmas eve, New Year, Valentine's Day, Independence Day, Halloween, etc., are discussed using hybrid approach with user interest in various OTT (over-the-top) platforms.

Keywords: Recommendation system, seasonal, hybrid approach, over-the-top (OTT) platform, Machine learning, CBF algorithms

INTRODUCTION

Machine learning, a field that allows computers to learn without direct programming, grants these devices the captivating capability to acquire knowledge on their own. This gives computers an advantage over humans. These days, machine learning is being actively applied, possibly more frequently than one might think.

Recommender systems are made to make recommendations to the user based on a variety of alternative factors [1].

Several popular methods for recommended systems include the following:

1. Content-based filtering
2. Collaborative filtering
3. Hybrid filtering

*Author for Correspondence

B. Sriram

E-mail: sriramhoo@gmail.com

PG Student, Department of Artificial Intelligence and Data Science, Sri Manakula Vinayagar College of Engineering and Technology, Puducherry, India

Received Date: February 16, 2024

Accepted Date: February 27, 2024

Published Date: April 04, 2024

Citation: B. Sriram. A Survey of Seasonal-based Movie Recommendations Using Machine Learning Through a Hybrid Approach with User Interest in Various OTT Platforms. Journal of Multimedia Technology & Recent Advancements. 2024; 11(1): 24–29p.

Content-Based Filtering

This approach arranges items based on the user's individual preferences. The user's previous ratings are used to determine the result shown in Figure 1. Content-based filtering depends on the item's description and the user's preference profile. In content-based filtering, we employ keywords other than the user's profile to describe goods and convey the user's likes and dislikes. Put differently, content-based filtering algorithms suggest products that are either identical to or similar to those that customers

have previously found appealing. It examines items that have been rated before and recommends the one that closely aligns with those ratings [2, 3].

Collaborative Filtering

Collaborative filtering provides a result based on all users and is dependent on people with similar interests as shown in Figure 2.

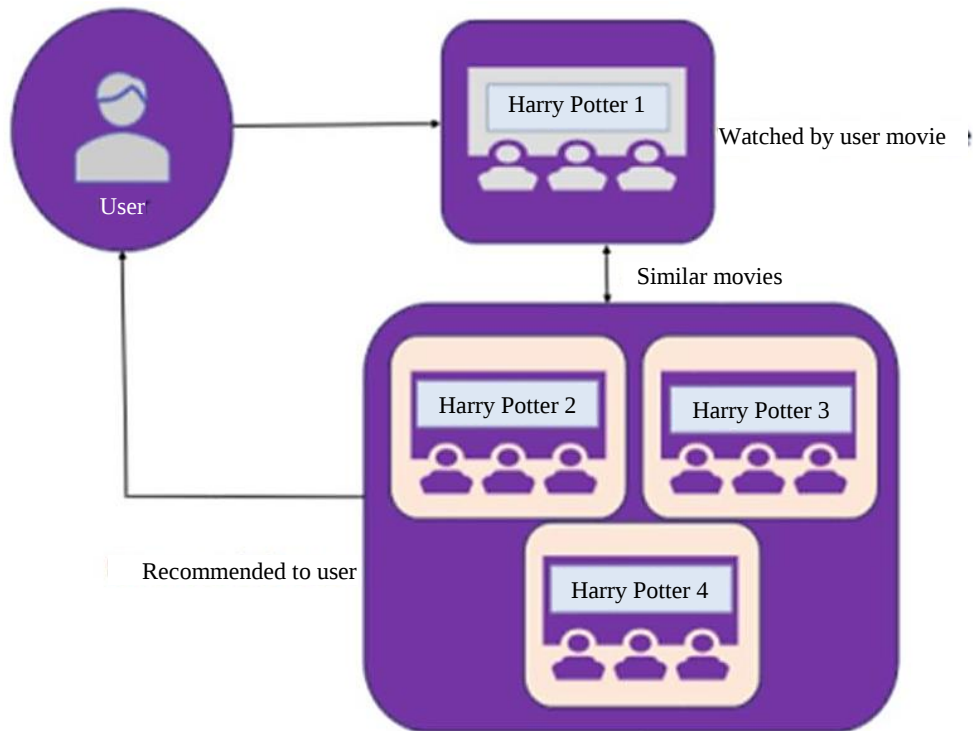


Figure 1. Content-based filtering movie recommendation to user A.

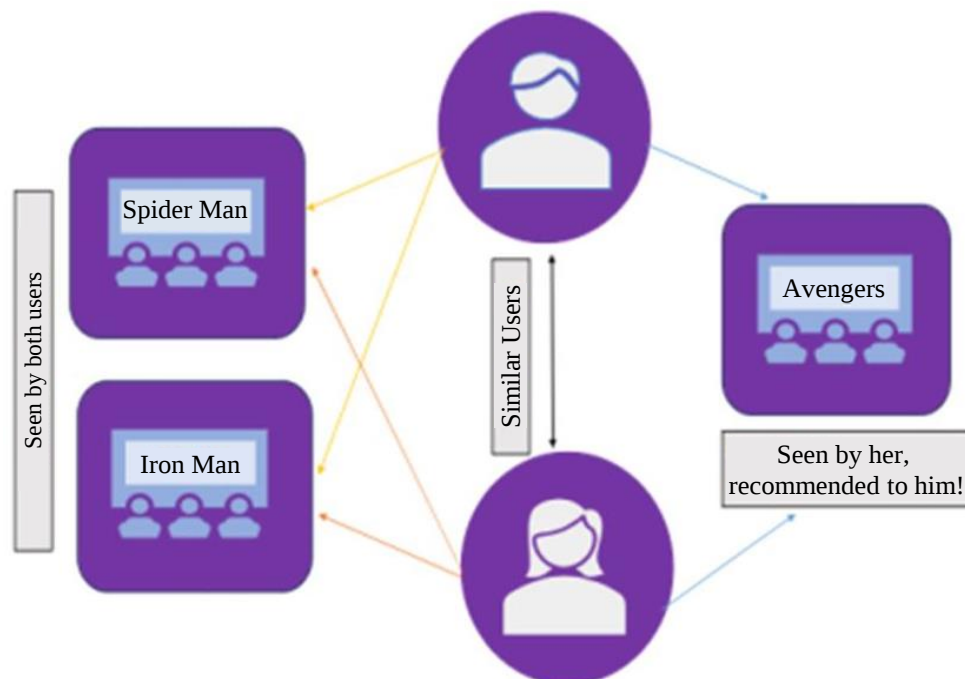


Figure 2. Collaborative filtering movies watched by user A are recommended to user B.

User-based: It is assumed that a user will enjoy products that are enjoyed by other users who share similar tastes in user-based collaborative filtering.

Item-based: Items are suggested using a collaborative filtering mechanism based on user and/or item similarity metrics. The system suggests products based on what other users who are similar to you have chosen.

This type of collaborative filtering is distinct in that it anticipates users to favour items that are connected to those they have already shown interest in [2, 3].

Hybrid Filtering

Hybrid filtering, widely recognized as the prevailing technique today, entails integrating both collaborative filtering and content-based filtering. This approach effectively addresses the shortcomings inherent in each individual recommender technique depicted in Figure 3 [2, 3].

LITERATURE REVIEW

The first recommendation system was created in 1990 and was based on the tapestry, an e-commerce recommender. Grundy, a computer-based librarian, first used the term "recommender system" in 1979. Following that, a number of recommendation systems utilizing diverse technologies were developed. Recommendation systems using various technologies are widely accessible nowadays and can be found in a variety of sectors.

An overview survey that includes all the recommendation system's details was proposed. Sharma and Dutta [1] and Singh et al. [2] introduced the recommendation system by utilizing the K-nearest neighbor (KNN) algorithm in conjunction with the cosine similarity notion. This time, we looked into cosine similarities.

A collaborative filtering approach-based movie recommendation system called MOVREC was proposed, in which recommendations are generated by collaborative filtering by using data collected from all users [3–5]. The authors suggested a collaborative recommender system based on space-time similarities in this work [6].

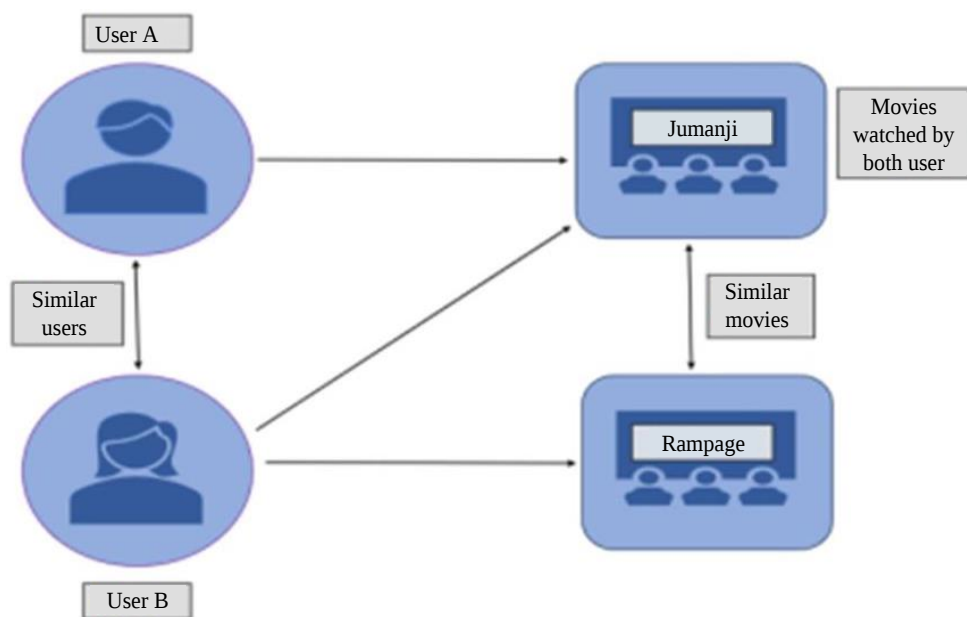


Figure 3. Hybrid approach: Movies watched by user A that are similar to movies watched by user B are recommended to user B.

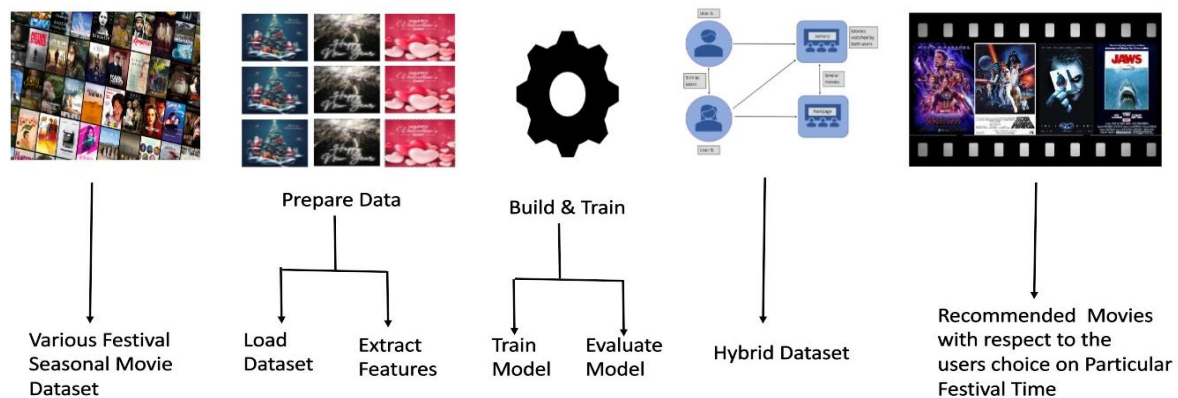


Figure 4. Architecture of seasonal-based movie recommendation.

In order to help with the ideas, a recommendation system based on percentage view criterion was suggested in this work [7]. Peng et al. [8] suggested a quick overview of the many kinds of recommender systems and how they are used. The electronic commerce recommendation system used in this paper looks similar and uses the collaborative filtering algorithm as its specialty to provide a personalized movie recommendation system [9].

In their study, Sharma and Mann [10] examined a number of recommendation strategies, including content-based, hybrid, and collaborative approaches. It delineates the advantages and disadvantages of these approaches [11], explores various techniques in generating recommender systems [12], and introduces an innovative concept for utilizing user similarity and opinion mining in recommender systems.

These papers introduce a recommender system designed for e-commerce platforms, focusing on the analysis of both traditional ensemble learning and multi-level ensemble learning in the context of recommender systems [13, 14]. The study places emphasis on the development of recommender systems, incorporating stack generalization as a key technique. Additionally, a movie recommendation survey that relies on the weighted average of attributes is presented.

PROBLEM STATEMENT

This research was inspired by the fact that users lose their precious time looking for films during the festival season [15]. To address that, this paper tries to create a system that recommends films to people at popular festival times like Halloween, Christmas Eve, New Year's Eve, Valentine's Day, Independence Day, and so on [16].

Objectives

1. To create a movie recommendation system using machine learning.
2. To reduce the amount of time customers spend searching and providing them with the most likely shows.
3. To gather information on movie preferences in various over-the-top (OTT) platforms during the festival season in order to make recommendations.

System Architecture

As shown in Figure 4, the seasonal-based movie dataset is collected and preprocessed, and then the model is trained using a hybrid approach to recommend the movie with respect to the user.

Recommendation of seasonal-based movie involves five basic steps in the proposed system architecture:

1. *Step 1:* All the various festival- and seasonal-based movie data sets are collected.
2. *Step 2:* Collected data is preprocessed, which includes data cleaning, data transformation, and data reduction.

3. *Step 3*: The data set is trained and tested.
4. *Step 4*: Using a hybrid approach, the dataset is classified.
5. *Step 5*: A recommendation to the user is provided with respect to their choice on the corresponding festival occasion.

PROPOSED WORK

During festival season, users can search for movies related to the corresponding festival. The user will get a recommendation with respect to the movies watched during the festival season by various users previously. In this, using hybrid approach of recommendation model the data is trained and recommended to the user. Figure 4 explains the process involved in the seasonal-based recommendation of movies.

Applications

- i It is compatible with a variety of OTT services, including HBO, Amazon Prime, Jio Cinema, Netflix, YouTube, Hot Star and so on.
- ii It is capable of predicting recommendations that are roughly or almost correct.
- iii The recommendation system will also be utilized in a variety of industries, including e-commerce, books, music, fashion, jobs, and the medical area.

CONCLUSION

In our study, we introduced a movie recommendation system leveraging machine learning techniques. It gives the user the option to select from a predefined list of criteria among different seasonal films, and then it makes recommendations depending on the selections made by the user. Because there are no appropriate or inappropriate suggestions in our system, evaluating performance is a challenging procedure. It is only an issue of opinion. They gave our informal assessments of a small set of user's positive feedback. It would be better to have more data so that our system can generate more intelligent results. We also plan to compare the results of applying various machine learning and clustering algorithms.

REFERENCES

1. Sharma N, Dutta M. Movie recommendation systems: a brief overview. In: Proceedings of the 8th International Conference on Computer and Communications Management, Singapore, July 17–19, 2020. pp. 59–62.
2. Singh RH, Maurya S, Tripathi T, Narula T, Srivastav G. Movie recommendation system using cosine similarity and KNN. *Int J Eng Adv Technol*. 2020; 9 (5): 556–559.
3. Kumar M, Yadav DK, Singh A, Gupta VK. A movie recommender system: MOVREC. *Int J Computer Appl*. 2015; 124 (3): 7–11.
4. Kashyap A, Sunita B, Srivastava S, Aishwarya PH, Shah AJ. A movie recommender system: MOVREC using machine learning techniques. *Int J Eng Sci Comput*. 2020; 10 (6): 26195–26200.
5. Tejaswi GV, Krishna SR, Madhuri GL, Prasanna C. A framework to enhance the movie recommendation system by using data mining. *Iconic Res Eng J*. 2021; 5 (3): 47–60.
6. Nakhli RE, Moradi H, Sadeghi MA. Movie recommender system based on percentage of view. In: 2019 5th Conference on Knowledge Based Engineering and Innovation (KBEI), Tehran, Iran, February 28–March 1, 2019. pp. 656–660.
7. Wang G, Liu H. Survey of personalized recommendation system. *Jisuanji Gongcheng yu Yingyong–Computer Eng Appl*. 2012; 48 (7): 66–76.
8. Peng X, Liangshan S, Xiuran L. Improved collaborative filtering algorithm in the research and application of personalized movie recommendations. In: 2013 Fourth International Conference on Intelligent Systems Design and Engineering Applications, Zhangjiajie, China, November 6–7, 2013. pp. 349–352.
9. Wu CSM, Garg D, Bhandary U. Movie recommendation system using collaborative filtering. In: 2018 IEEE 9th International Conference on Software Engineering and Service Science (ICSESS), Beijing, China, November 23–25, 2018. pp. 11–15.

-
10. Sharma M, Mann S. A survey of recommender systems: approaches and limitations. *Int J Innov Eng Technol*. 2013; 2 (2): 8–14.
 11. Agrawal S, Jain P. An improved approach for movie recommendation system. In: 2017 International Conference on IoT in Social, Mobile, Analytics and Cloud (I-SMAC), Palladam, India, February 10–11, 2017. pp. 336–342.
 12. Nagamanjula R, Pethalakshmi A. Novel scheme for movie recommendation system using user similarity and opinion mining: a recent study. *Recent Dev Eng Res* 2021; 12: 138–148.
 13. Jahrer M, Tösch A, Legenstein R. Combining predictions for accurate recommender systems. In: *Proceedings of the 16th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, Washington, DC, USA, July 25–28, 2010. pp. 693–702.
 14. Ghai B, Dhar J, Shukla A. Multi-level ensemble learning based recommender system. *Corpus ID*. 2018: 28239124.
 15. Wikipedia. Recommender System [Online]. Available at https://en.wikipedia.org/wiki/Recommender_system
 16. Thorave S, Sharma A, Nair S, Shinde T, Tipras M. Survey on movie recommendation system using machine learning. *Int Res J Modern Eng Technol Sci*. 2022; 4 (12): 1182–1185.