

# Movie Recommendation Framework Based on Users Interests for Online Social Networks

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**Abstract-** Social Networks are networks which provides platform to different users to share their thoughts and make new friends also recommend some products, movies and friends to their friends or any other new users. In today's environment it is very difficult to suggest a friend to watch what kind of movie on the basis of their interest. To overcome this kind of problem in this paper an attempt has been made to propose a mechanism to recommend a movie to friends based on their interest. The proposed mechanism is assessed using weka tool. This paper is divided into six sections. In section i brief introduction of social networks and recommendation has been discussed, in section ii existing recommendation techniques with their challenges has been presented, section iii covers modern recommendation techniques after that in section iv challenges and issues of different recommendation techniques has been studied in section v proposed mechanism has been presented section vi covers results and analysis of proposed work with weka tool.

**Keywords-** Online Social Networks, Recommendation, Collaborative filtering, Rating and Weka

## I. INTRODUCTION

With the beginning of the Web 2.0 period, the web began growing up and making with massive speed. Various open entryways, for instance, sharing learning, information, and notion with various users, turned out. This supported the change of social networks like Facebook. These days, writers can impart their manifestations to a huge number of perusers around the world [1].

Trainee performers can get celebrated quicker than any time in recent memory just with transferring their tracks. Business world have discovered more clients and benefit in the web. The assortment of online shops, sell-offs or insect markets opened up in the web.

Truth be told, there is relatively interminable place. The measure of data and items got to a great degree tremendous, prompting a data over-burden. It creates issues for searching in WWW. Web search tools halfway tackled that issue, still personalization of information was not known. So designers found an solution in Recommendation Mechanism.

Recommender systems are devices for sifting and arranging items and data. Recommendation helps users to recommends product , movies or anything to their friends or other user on online social networks platforms.

Two of them turned out to be extremely prevalent: synergistic sifting and content-based separating. They are utilized as a base of most present day recommender systems. Recommender System or Recommendation framework is a subclass of data sifting framework [2] that search for to

foresee "rating" or "inclination" that user would provide for a specific item.

## II. EXISTING RECOMMENDATION TECHNIQUES

- a. Content-based filtering  
Content-based filtering technique works based on filtering of content or information of users. It gives recommendation n the basis of users past interests [3].
- b. Collaborative filtering  
Collaborative filtering ended up a standout amongst the most inquired about methods of recommender systems. The possibility of collaborative filtering is in discovering users in a group that offer thanks [4]. In the event that two users have same or relatively same appraised items in like manner, at that point they have comparative tastes. Collaborative filtering is further divided into three categories called user-based, item-based and model based filtering.
  - i. User based approach: In the user-based approach, the users play out the principle part. On the off chance that specific larger part of the clients has a similar taste then they join into one gathering. On the off chance that the item was emphatically evaluated by the group, it will be prescribed to the user. In this manner in the user-based approach the items that were at that point appraised by the user before assume a critical

part in looking through a gathering that offers thanks with him.

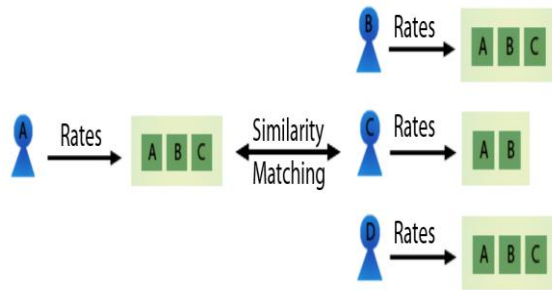


Fig. 1: User-based collaborative recommender system[4]

- ii. Item-based approach: in this approach rating will be assigned to items directly based on neighbor's decisions.

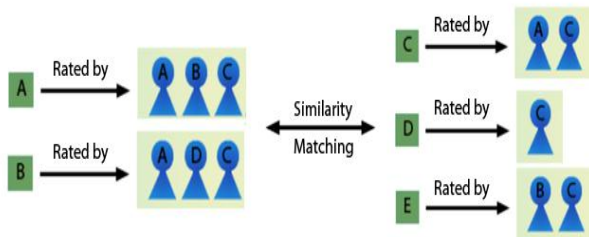


Fig. 2: Item-based collaborative recommender system[4]

#### c. Hybrid recommendation approaches

For better outcomes some recommender systems consolidate distinctive methods of collaborative methodologies and content based methodologies. Utilizing hybrid methodologies we can stay away from a few constraints and issues of unadulterated recommender systems, similar to the cool begin issue. This approach Utilize a few standards of content based filtering in collaborative approach. It makes a bound together recommender framework that unites both methodologies. CinemScreen is a case of a recommendation operator that gives its users recommendations based on hybrid filtering about the motion pictures that are appeared in silver screens. On the site a user can make a record and assess all motion pictures he/she has found in silver screens. At first the framework utilizes collaborative filtering. On the result of collaborative filtering it applies content based filtering [5].

### III. MODERN RECOMMENDATION TECHNIQUES

#### a. Context-aware methodologies

Context is the data about the earth of a user and the subtle elements of circumstance he/she is in. Such subtle elements may assume substantially more huge part in recommendations than ratings of items, as the

ratings alone dont have itemized data about under which conditions they were given by users. A few recommendations can be more reasonable to a user in night and doesn't coordinate his inclinations early in the day at all and he/she might want to complete one thing when it's chilly and totally another when its hot outside. The recommender systems that focus and use such data in giving recommendations are called context-aware recommender systems[6].

#### b. Semantic based methodologies

The greater part of the portrayals of items, users in recommender systems and whatever remains of the web are exhibited in the web in a printed frame. Utilizing labels and watchwords with no semantic implications doesn't enhance the exactness of recommendations in all cases, as a few catchphrases might be homonyms. That is the reason comprehension and organizing of content is an extremely critical part recommendation. Conventional content mining approaches that base on lexical and grammatical investigation demonstrate portrayals that can be comprehended by a user however not a PC or a recommender framework. That was a reason of making new content mining systems that were based on semantic examination. Recommender systems with such procedures are called semantic based recommender systems.[7]

#### c. Cross-domain based methodologies

Finding comparative users and building a precise neighborhood is a critical piece of prescribing procedure of collaborative recommender systems. Similarities of two users are found based on their thanks of items. In any case, comparative thanks in one domain don't most likely imply that in another domain valuations are comparable too. Users sharing inclinations in comedies are not by all methods like a similar kind of abhorrence's in cross-domain systems likenesses of users figured domain-subordinate. A motor makes nearby neighborhoods for every user as indicated by domains. At that point, registered closeness esteems and limited arrangement of closest neighbors are sent for general likenesses calculation [8].

### IV CHALLENGES AND ISSUES IN RECOMMENDATION SYSTEM

- a. Cold-start: issue introduces an aggregate issue of new thing and new client to RSs24. Another thing can't be prescribed at first when it is presented to a CF framework without any evaluations. [9].
- b. Trust: The voices of people with a short history may not be that pertinent as the voices of the people who have rich history in their profiles. The issue of trust rises towards evaluations of a particular customer. The issue could be lit up by scattering of requirements to the users [10].

- c. Scalability: One key and principal issue of RSs today is the adaptability of calculations with expansive genuine datasets. It is getting to be trying to bargain with colossal and dynamic informational collections created by thing clients connections, for example, inclinations, evaluations and surveys.
- d. Sparsity: Generally, larger part of the clients doesn't rate a large portion of the things and thusly the appraisals framework turns out to be extremely meager. Because of this, the information sparsity issue emerges that decreases the odds of finding an arrangement of clients with comparative appraisals [11]
- e. Privacy: Protection has been the most basic issue. With a particular ultimate objective to get the most exact and right recommendation. Regularly, the subject of enduring quality, security and mystery of the given information rises. Various online shops offer reasonable confirmation of insurance of the users by utilizing specific counts and tasks [12].

**V. PROPOSED WORK**

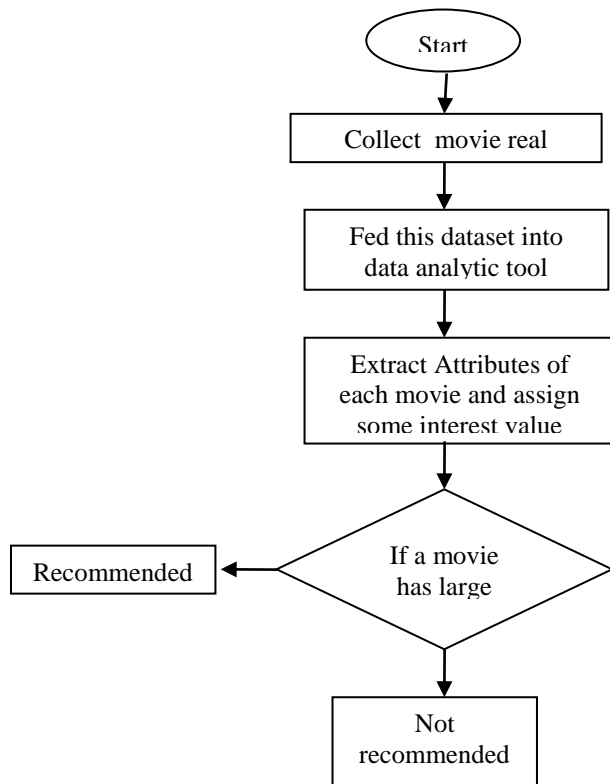


Fig 3 shows proposed framework in which a movie recommendation mechanism based on users interest has been presented. Firstly, collect the real dataset from DATAWORLD and fed this dataset into data analytic tool.

Then we extract attributes like comedy, horror, action, songs etc. and calculate interest value of each movie. After that on the basis of interest value, we assign ratings to each attribute and if a movie has largest interest value, then we can recommend a movie otherwise movie is not recommended.

Table 1 movies the user has watched

Movie	Baahubali 2	Tiger Zinda Hai	Dangal	Tubelight
Rating	4.2	3.2	4.3	2.1

Table 2 movies list with attributes

Movie	Comedy	Horror	Action	Songs
Baahubali 2	2	0	5	0
Tiger Zinda Hai	2.1	0	4.2	3
Dangal	1	0	2	2
Tubelight	3	0	0	0

Here Table 1 describes the ratings (1-5) assigned by the users on their interests to each movie and Table 2 describes the ratings given by the users based on different attributes like comedy, horror, action and songs.

**VI. RESULTS**

In this paper to analyze proposed mechanism weka tool is used. In weka tool real dataset of movies has been provided and apply random forest classifier to classify which movie is recommended or not to users.

Random Forest classifier: it is most popular classifier that divides the data set into a set of classes or decision trees and then aggregates the ratings from different attributes or decision trees to decide the final class of the test object.

Metrics used:

A). Confusion matrix: It gives summarized output of a classifier.

B). Recall: it is calculated by dividing the true positive value with all true positive values.

C). Precision (Positive predictive value): it is calculated by dividing the true positive value with all true positive or false positive values.

D). F-measure: F-measure is calculated by the help of Precision and Recall.

TABLE 1: Detailed Accuracy by Class

TP Rate	FP Rate	Precision	Recall	F-Measure	Class
1	0	1	1	1	Not Recommended
1	0	1	1	1	Recommended

TABLE 2: Confusion Matrix

A	B	Class
51	0	Recommended
0	48	Not Recommended

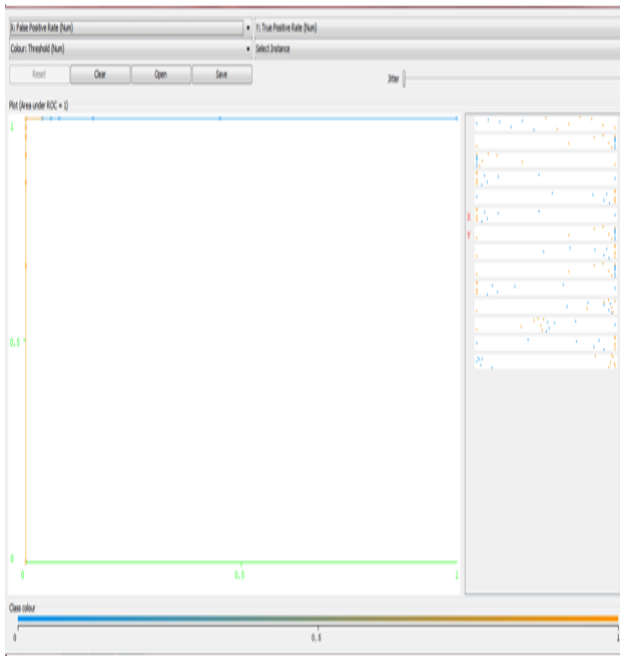


Fig.4 ROC Analysis of Random Forest Classifier Describing recommended movies

Fig 4 shows ROC curves of recommendation values of movies given by random forest classifiers. The ROC curve is generated by cut points of TP FP rates along with x axis and y axis.

## VII. CONCLUSION

In today's environment different types of movies are released in every week so it is difficult to suggest a friend which kind of movie he/she should watch or not. In this paper an attempt has been made to provide a mechanism in which movies are recommended based on users' interests. In the proposed mechanism, rating is calculated based on the different attributes such as comedy, horror, songs, and action. The movie having a rating greater than 3.5 will be recommended for friends; otherwise, it will not be recommended. The proposed mechanism is analyzed with the help of Weka tool. In the future, try to enhance the current mechanism that provides more accuracy and better results.

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