Movies Recommendation System

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Abstract : Recommendation System are the systems provide suggestions to the user(Recommends the content). Contents like Books, Movies, Smart Phones, Vehicles. While movie recommendation systems suggest the user movies that are based on the previous movie's attributes liked by the user. These recom- mendation systems are very helpful in companies, websites, stores where the amount of the content is large as well as number of customer (consumer) is huge & content is diverse. Designing such a system lot of factors are considered, mainly the genre of movie, While other factors may include the actors, language, director of the movie. Multiple factors may affect the suggestions, while Some factor might play bigger roles than other based on the user's history of selection. This paper proposes a system that uses the K-Nearest Neighbors Algorithm, In injunction with Collaborative filtering. The data-set used for this system is TMDB. The data analysis tool used is Python.

INTRODUCTION

Today we see that everyone has access to lot of information with the help of Internet. Devices like Smartphones & Mobile Computers have made it easier for people to produce & consume the con- tent over the internet. But just because anyone can access the content all over the world. Doesn't mean that the content is useful to that specific user. Due to huge variety in the content most of the Content over the internet is not preferred by the users. Without proper processing of the Content huge amount of the content becomes in- accessible to the user, Just because of the time it would require user to find the content they are looking for. Finding a content would require user to search multiple times just to find some relevant content user intends to find.

To solve this issue which not only makes accessing the content less efficient but also consumes user's time Recommendation Systems are intro- duced by Researchers. A Recommendation sys- tem takes user in consideration & the history of the user's consumption of the content. Content is filtered, sorted & personally customized per user basis. Since internet connectivity is evolving time and time making internet and content over it accessible to more and more users. Need of recom- mendation system is increasing.

These days almost all content oriented websites have their own version of recommendation sys- tem. Not only because of the popularity of the recommendation system but these systems pro- vide very efficient & effective way to provide con- tent to the user's (content consumer). Recom- mendation system can be modified to work with various areas of content like movies, books, news & product in general. Recommendation systems can be classified on 3 ways based different meth- ods they use Content-Based, Collaborative & Hy- brid. Content based recommendation system con- siders the user's past behavior and finds the pat- terns in them to recommend the content to the user. Collaborative based recommendation sys- tems analyses the user's past behavior and com- pares it to the other users to find the similarities, Based on the most similar user recommendations are made. Both of these systems have their ad- vantages & limitations. So resolve this a hybrid method is used in recommendation systems which combines the advantages of both systems.

LITERATURE SURVEY

K-Nearest Neighbor

K-Nearest Neighbor also known as KNN algo- rithm is a classification algorithm. The core idea of the KNN algorithm is if the majority of the k most similarity neighbors of sample in feature space belong to a certain category then the sample is considered that is belonged to that category.[1]
As shown in Figure 1 majority of neighbors of Item belongs to category A; even though some belong in Category C the item Is nearest to Cat- egory A and belong in Category A.

Collaborative Filtering Algorithm

In this paper we mainly focus on user-based col- laborative filtering algorithm. The main principal of user-based collaborative filtering algorithm is to use information from the user that is similar to the user we need to find information for.
As shown in Figure 2 User D has already chosen Movie C & Movie D. Now based on that we have to recommend a movie to User D. Compare User D's previous selection with other Users we found that User A has 2/3 matching selections (Movie

C & Movie D). hence we consider User A to be most similar to User D. based on that we recommend other movies selected by User A to User D. which is Movie A.
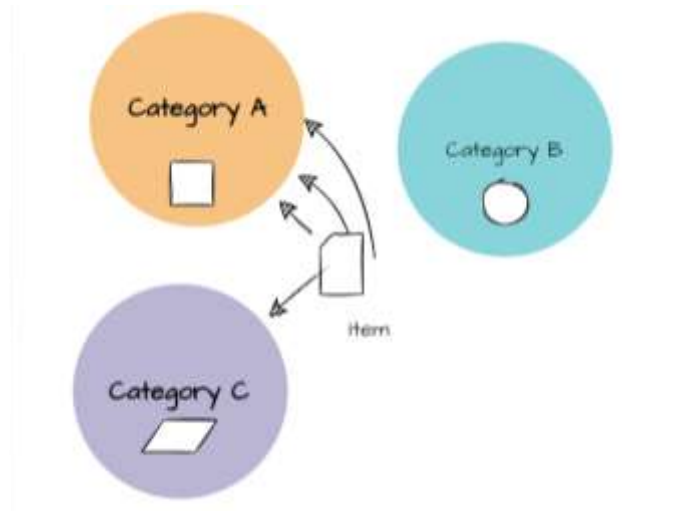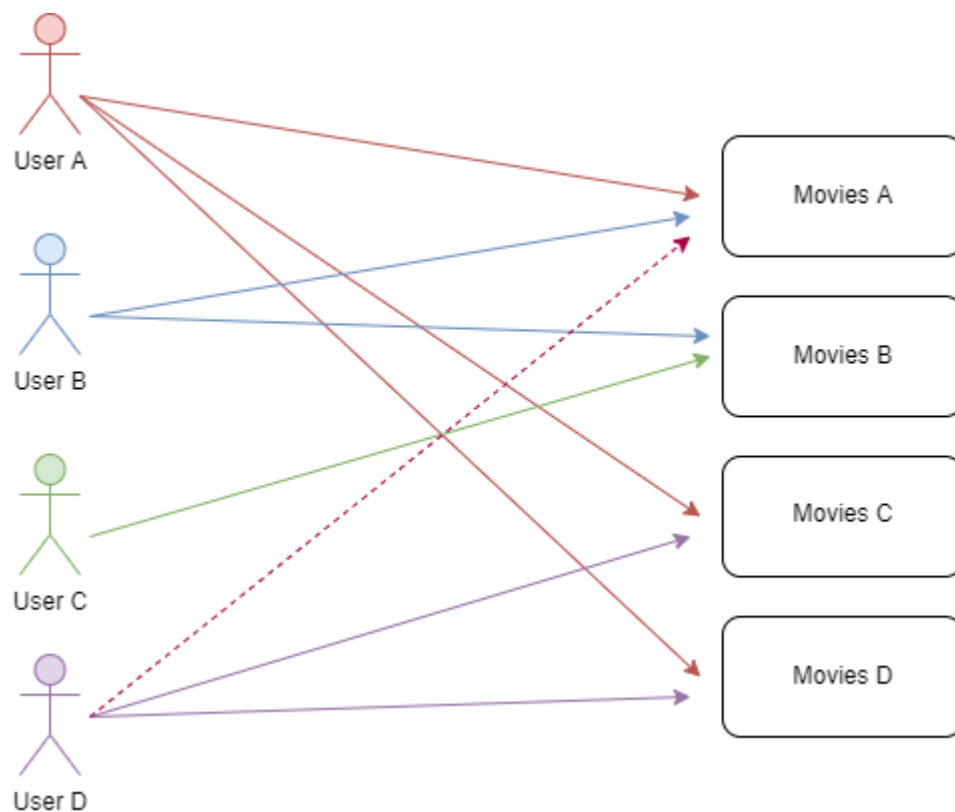

Figure 1: Example of Knn algorithm

Figure 2: User-based Collaborative Filtering

KNN- Collaborative Filtering

KNN- collaborative filtering algorithm is an al- gorithm which is a collaborative algorithm with Knn algorithm. It uses KNN algorithm to find the near neighbor. It involves methods like user similarity calculation. Knn the nearest neighbor selection & score prediction calculation.[2]

User Similarity Calculation

User similarity is calculated using analyzing the value of items(Movies) between two users.[3]

As show in Figure 3 user U1 and User U4 have values(Ratings) given for movies (M1, M3, M5,M6) & movies (M1, M4, M5, M6) respectively. Hence, they are more similar when compared to other user's ratings.

KNN the nearest neighbor selection

After, calculating the user similarity KNN se- lects the user with most K similarity regardless of the highest similarity of user[4]

U\M	M1	M2	M3	M4	M5	M6
U1	1		2		3	1
U2		2		2		2
U3	1			1		
U4	1		...	4	4	5

Figure 3: User Similarity Calculation Sample

CONCLUSION

Due to increase in accessibility of internet & easier access to content production equipment. The amount of content in movie sector is increas- ing. The paper proposes a movie recommendation system based on KNN collaborative filtering.

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