



## A Two Way Group Similarity Analysis Based Hybrid Recommendation System under Temporal Vector

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**ABSTRACT:** *This Review paper describe about recommender system based on hybrid recommendation approach using temporal vector. The recommender system is some kind of predictive system that actually analyzes the users or the customer behavior and based on this analysis; recommend some product or service to the user. . The recommender system is also defined as the approach that guide the user in a personalized way so that he can select the most useful item from the large set of available alternatives. . In this work, the recommendation will be applied on user side as well as movie side. Hybrid recommendation system will unite the functionality of content based as well as collaborative recommender system. At the later stage, a weighted approach will be defined on content based and collaborative methods to perform the recommendation. This two level hybrid approach will give more precise results.*

**KEYWORD:** *Recommender system; content based filtering; collaborative filtering; hybrid approach; group similarity*

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### I. INTRODUCTION

Today most of the available product or service providers are connected through the web. These all users get the feedback or the reviews from the users in an online system. These products or services are available online. Based on the user interest analysis to these products or services, a recommender system suggests some product or service to the user based on user feature analysis. It actually compare the new user features with existing user features so that the decision regarding the product or service purchase. The recommender system is also defined as the approach that guide the user in a personalized way so that he can select the most useful item from the large set of available alternatives. There are number of online recommender systems adapted by different web service providers such as Amazon uses the recommender system to guide the users about the book or article purchase. In this research work we have defined a hybrid recommender system by combining the content based and collaborative recommendation as the single unit.

### II. REVIEW OF LITERATURE

Adomavicius Gediminas and Alexander Tuzhilin [1] in their paper entitled "*Towardsthe Next Generation of Recommender Systems: A Survey of the State-of-the-Art and Possible Extensions*", have presented an overview of the field of recommender systems along withdescription of the current generation of recommendation methods that are usually classified into the following three main categories: content-based, collaborative, and hybrid recommendation approaches. They have evaluated the limitations of various approach and suggested the possible extensions for making better recommendations

**Prodan Andrei-Cristian** [7] discussed general aspects of a recommender system andcollaborative filtering in detail in paper "*Implementation of a Recommender SystemUsing Collaborative Filtering*" without dealing with the major issues of recommendersystem i.e. sparsity and scalability.

**Maltz and Ehrlich** [4] describe active CF as new technique in which people who findinteresting documents actively send pointers to those pointers to their colleagues. A "pointer" contains a hypertext link to the source document as well as contextual information to help the recipient determine the interest and relevance of the document prior to accessing it.

**Badrul Sarwar, George Karypis, Joseph Konstan, and John Riedl** [8] proposed Itembased collaborative filtering that relies on Item-Item similarity in paper entitled as "*Item-Based Collaborative Filtering Algorithms*". Although the approach provides qualitypredictions and performs fairly well than user-based approach still it is quite static approach while the recommendation system deals with the dynamic information.

**SongJie Gong** [9] proposes an extension to traditional CF approach that considers usersimilarity as well as item similarity considering both rating and attribute information. The approach is implemented on Movielens and IMDB datasets and results evidenced that it can alleviate sparsity problem.

Zheng Wen [5] presented several CF algorithms (Item-based k nearest neighbor, sparseSVD algorithm etc) for RS and test the performance of each algorithm and their mixtures on part of the Netflix data.

Michael J. Pazzani and Daniel Billsus [10] in their paper entitled “Content Based Recommendation Systems” have discussed systems that recommend an item to a user based upon a description of the item and a profile of the user’s interests. However, such systems work only when sufficient amount of content information is available i.e. they suffer from problem of lack of content information.

Michael J. Pazzani discusses an approach to combine recommendations from multiple sources viz., CF, CB and demographic information. CF and CB methods can also be combined under a single unifying model.

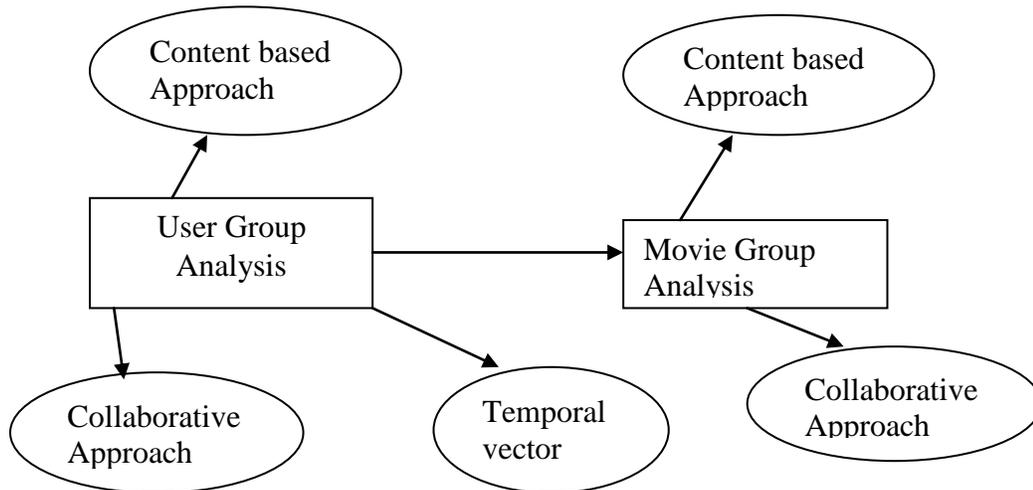
which leads to less parameters and more reasonable prediction Hydra: A Hybrid Recommender System [17] discusses the combination of CF and CB approaches in the context of web-based recommendations. This hybrid approach is special in that rating data as well as content information are joined in a unified model, results.

Debnath, Ganguly and Mitra [24] illustrated how weights can be assigned to the features in their paper “Feature Weighting in Content Based Recommendation System Using Social Network Analysis”. Features are assigned different weights according to their importance to users. For instance, release date of movie does not affect user’s rating to movie while genre does, so genre is given more weight as compare to release date. Weights are obtained by solving linear regression equations using n/w analysis

H. Ma, I. King and M. R. Lyu [10] focused on the memory based CF problems on two crucial factors, i.e., similarity computation between users or items using PCC and missing data prediction algorithm. Proposed method is robust against data sparsity problem as the proposed effective MDP algorithm takes information of both users and items into account and tries to fill the empty cells in the user-item matrix. MDP is time consuming and the recommendation process takes longer time as the total number of users and items increase in the system. However, the recommendation process is conducted off-line and the active user will not be aware of this process.

### III. PROPOSED WORK

In this present work, a group based recommender system is defined at two levels to estimate the user group and the movie group analysis. To perform this analysis a weighted hybrid recommendation system is suggested under three vector. The basic model of presented work is given here under



As we can see, the presented model is divided on three main vectors of recommender system that will be process on two layers of users and the movie analysis

#### Content Based Analysis

This analysis is based on the value analysis on different attribute contents for group identification. The content match will be performed on age or gender for user group analysis and the movie type analysis for movie dataset analysis.

#### Collaborative Analysis

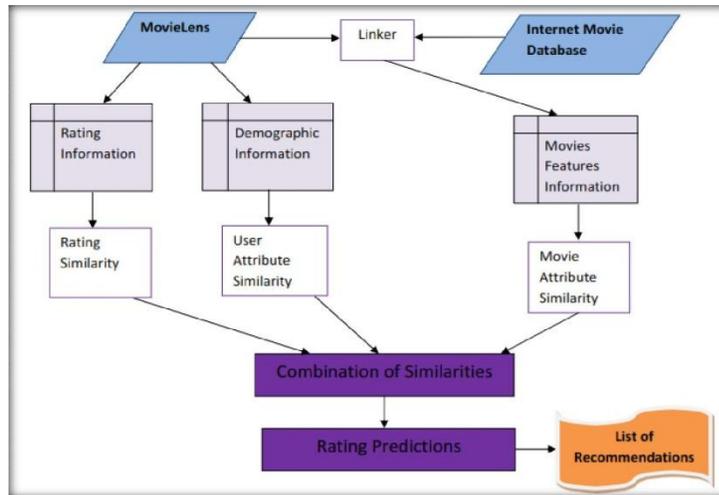
It is the statistical approach that will identify the ranking under the kernel value specification. It is distance based match that will perform the analysis over the dataset value respective to specific group.

#### Temporal Vector

Temporal vector is the time gap analysis in the user and data values so that more accurate results will be derived from the work.

### IV. PROPOSED METHODOLOGY

The first level is applied on user similarity analysis. In this a weighted content based analysis is performed. This analysis is performed on different fields like age, gender, occupation etc.



- The second level is applied on movie similarity analysis. In this a weighted analysis is applied on server side for similar movie identification. Here weighted content based analysis is performed.
- The third level is based on statistical measure here, the relationship analysis is performed using co-relation coefficient analysis.
- Use the temporal vector to get effective results

## V. CONCLUSION

In this present work we have defined a recommender system to identify the ranking assigned to a movie. In this work, we have represent a hybrid model to execute the analysis. The hybrid model performed the analysis based on content based as well as the collaborative filtering. To perform this we have taken an legitimate dataset with three tables. One for user, second for site and third for ranking. Now while predicting the ranking of a new user. At first the content based similarity match is performed to recognize the similar users in the dataset. In the second stage, the rank provides by same kind of users is analyzed under the collaborative filtering and at the final stage the collective decision is taken concerning the site rank. Another aspect included in this work is the temporal factor. It means instead of analyzing the rank of all similar users a time based range is setup in this work. The presented work is analyzed under the error rate. The obtained results show that the presented work is effective enough to provide accurate results.

## VI. FUTURE WORKS

The present work can be improved under different dimensions.

1. The main work can be done in future to condense the error rate. In this work we have used 3-4 parameters while performing the content based match. More attributes can be considered to obtain more precise results.  
The another work can be done in same neighborhood with different datasets

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