

Collaborative Filtering Based Approach to Recommends Movies in Online Social Networks

Sanjeev Dhawan¹, Kulvinder Singh², Neha Singh^{3*}

¹CSE Department, University Institute of Engineering and Technology, Kurukshetra University, Kurukshetra, India

²CSE Department, University Institute of Engineering and Technology, Kurukshetra University, Kurukshetra, India

³CSE Department, University Institute of Engineering and Technology, Kurukshetra University, Kurukshetra, India

*Corresponding Author: nehasaharan26@gmail.com

Available online at: www.ijcseonline.org

Accepted: 11/Jun/2018, Published: 30/Jun/2018

Abstract—Online Recommendation helps users to recommend products friends to their friends or any other but it is quite difficult to recommend something to anyone without knowing his/her interest the same difficulty is occurred while recommending movies to users. Each user has its own interest and thoughts about movies. So for this in this paper a movie recommendation technique is proposed in which collaborative filtering is used to recommend movies according to user's interests and rating. To implement proposed mechanism Python language is used and to analyze performance of proposed mechanism real dataset is used which is collected from Netflix website.

Keywords— *Online Social Networks, Netflix, Movie, Recommendation and Collaborative Filtering.*

I. INTRODUCTION

Right now as another method of ad, we utilize sets of data, for example, films, music and other type of procedure to persuade users. Innovation is growing so quick and spread of information has expanded, and in addition the necessities of purchasers that are more intricate [1]. Makers and providers experienced issues in offering items and administrations that address user issues for the accommodation of purchasing the administration on account of business which makes the opposition significantly more dynamic. In this time of rivalry, complex data causes over-burden issues which thusly are tedious. Proposal frameworks are data filtering framework that guides users in foreseeing rating or inclination of a thing under users' thought. The frameworks offer users exchange choices without working out every one of the points of interest independent from anyone else. As overpowering data blast renders looking, extraction, examination, and handling frightful and impressively tedious activities, recommender frameworks turned into an ideal choice apparatus or partner to offload such unfortunate assignments [2]. More awful yet, exercises including human are unavoidably subject to human mistakes that can prompt poor or wrong choices. Recommender frameworks generally utilize collaborative filtering calculations or a mix of the collaborative filtering calculations and the other filtering calculations to discover users who have comparable tastes and propose things [3]. We led the motion pictures recommender framework by

utilizing collaborative filtering and k-implies which utilizes the systems of information mining to partition user in the gatherings previously going into collaborative filtering. Subsequent to going into the framework, it will process the data and give the required expectation in this way sparing the user time [4].

Collaborative filtering: in Collaborative filtering approach, we first discover the users who are like the present user and afterward compute the suggestions to the present user. The Three Columns of this approach are numerous users needs to partake in the framework and the path through which the users express their inclinations must be an easy way. This Collaborative filtering approach is for the most part characterized into two sorts they are Model based approach and Neighborhood based approach. The first neighborhood based collaborative filtering method approach [5] we will utilize the user thing rating framework keeping in mind the end goal to compute the ratings that are not appraised by the user construct up in light of comparative things or users. Henceforth this finding up of comparative users or things should be possible in two strategies for them the first is Item based collaborative filtering system and the following one is User based collaborative filtering procedure. The first Item based collaborative filtering approach strategy [6], is utilized for expectation of the obscure ratings for the user for a thing construct up in light of the comparable things for the thing for which we are foreseeing. The following User based collaborative filtering approach system is utilized to figure the expectation of the obscure ratings for the user for a thing

construct up in light of the comparable users of the user for which we are foreseeing The inverse for Neighborhood based is the Model based approach. The primary topic of this model based approach is to make a model that uses the ratings in the user thing rating network straightforwardly and after that train the model utilizing the accessible data and afterward utilized for forecast reason.

This paper is divided into five sections. In section i introduction of social networks are presented after that section ii covers related work of recent research papers with their limitations in section iii proposed mechanism is presented in detail. Section iv presents results and analysis of proposed mechanism at last section v covers conclusion of paper.

II. RELATED WORK

In 2016, Ponnam et al. [7] figured out that Recommendations for current users are generated using Item based Collaborative Filtering Technique and is easy to implement even for data at large scale and results are reliable and defensible. If users are far greater than number of items then item based filtering approach is favorable whereas other techniques like content based suffers from poor accuracy, data scarcity, scalability and big error prediction. Due to data scarcity the collaborative filtering approach performance was affected so they evaluated that the need for this Recommender system is intensely increasing in order to increase its performance. They computed recommendations for users using an item based collaborative filtering technique by first examining the user item rating matrix and by identifying the relationships among various items and then use these relationships for computing the recommendations for users. Moreover on 2017 Jena et. al. [8] explores the different characteristics and potentials of two different prediction techniques which include Collaborative Filtering and Content based Filtering in recommendation systems in order to serve as a compass for research and practice in the field of recommendation systems. An improved opinion spreading approach on predicting online rating of recommender systems was developed by Ai et al. [9] in 2017. The proposed method provides a solution to zero-value problems of normalized user rating, which was ignored in many existing publications. In proposed work, the similarity of items was defined as the number of corresponding reviews which a user has given and differences between those viewpoints spreading in complex network model. In 2017, Daniel and Sundarraj [10] proposed a recommender system that combines the content and collaborative approaches of extracting features and generating latent user preferences to deliver personalized recommendation to users. In 2017, Belgur et al. [11] described how Statistical Analysis on Movie Reviews and Ratings could be done. PEOPLE's

opinion was one of the most important sources for different services. Soni et al. [12] in 2017 proposed a three way Hybrid Movie Recommendation System and suggested that if movies are recommended by considering only factors like ratings, reviews and similar preferences by user then system for movie recommendation lacks efficiency and accuracy.

III. PROPOSED WORK

In this we will utilize the collaborative filtering approach procedure. The Data set that we have used is the Netflix Data set. This Netflix informational index is accessible in the Group Lens which has gathered and made open of this user thing rating informational indexes from the Movie Lens site. For the present framework we will utilize the Stable benchmark informational collection which comprise of around One million ratings from 1770 users on 5050 films. For ascertaining the similitudes between the things we will utilize balanced cosine likeness. At that point we utilize these likeness weights figured to ascertain the anticipated rating of the films or things that are not evaluated by the user and after that give The best most N number of suggestions to the users as proposals which will be the yield.

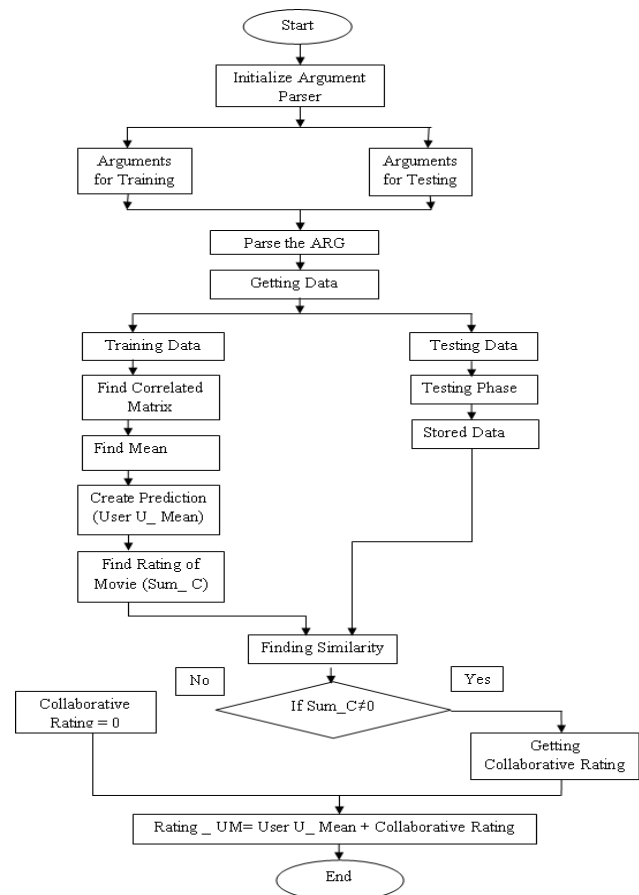


Fig 1 flow diagram of proposed mechanism

Fig1 illustrates working of proposed mechanism. Here first collected real dataset is faded into database and distinguish arguments into two categories called argument for training and argument for testing. In testing phase arguments are used to test the rating of user and movies. In training phase parse the dataset and calculate correlated matrix, find mean and create prediction of movie based on correlation matrix and mean parameters. After calculating prediction next step is to compute rating of movie. Now combine the rating of movie and data coming from testing database and calculate similarity between ratings and predictions. If rating is not equal to zero, then collaborative rating is set to zero otherwise getting some value of collaborative rating. Now final rating of movie is computed by adding collaborative rating and prediction value i.e. U_Mean value. In this way proposed mechanism can recommend movies to each user on the basis of their interests.

IV. RESULTS

To implement proposed mechanism Python 2.7 is used and to analyze performance real dataset is downloaded from Netflix Web.

Performance Metric Used:

Elapsed time: It is the total time taken to recommend movies to each user according to their interests.

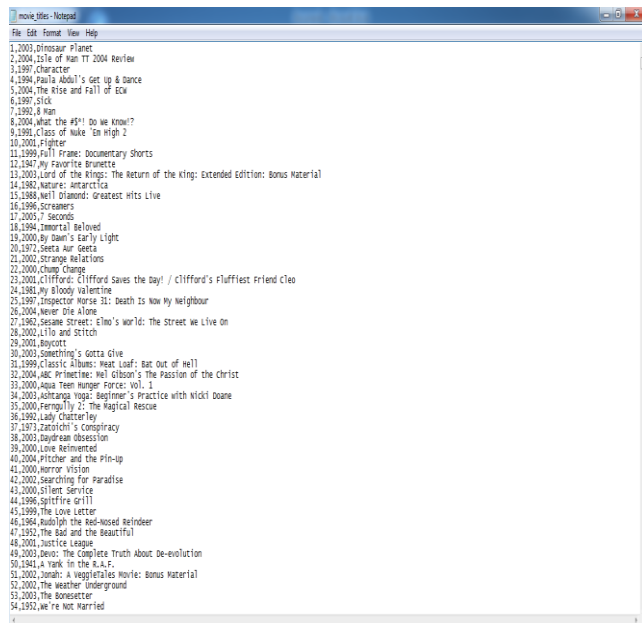


Fig shows input dataset which is used to analyze the proposed mechanism. The dataset which is used in this paper is downloaded from NETFLIX website which provides real dataset of Movies.

Fig 5.3 Input dataset

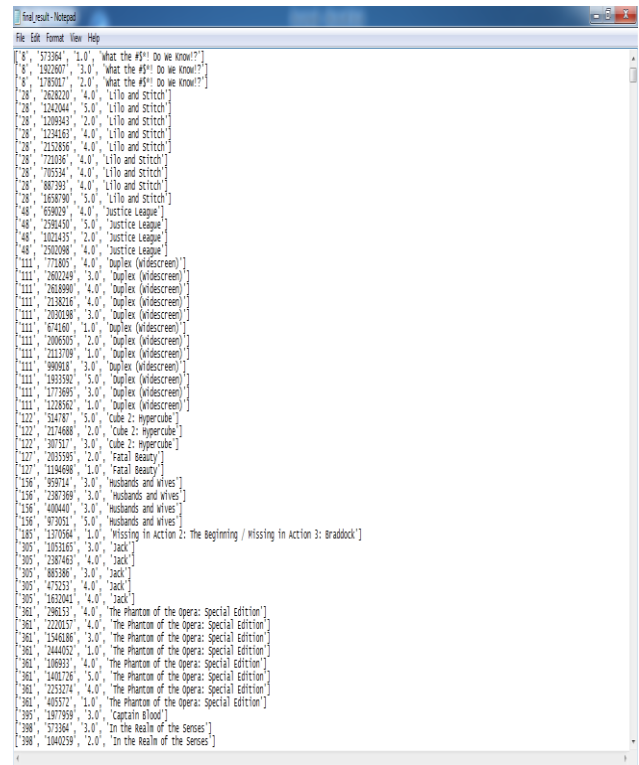


Fig 5.4 Output dataset

Fig depicts output window that shows recommendation of movies to each user according to user’s interests.

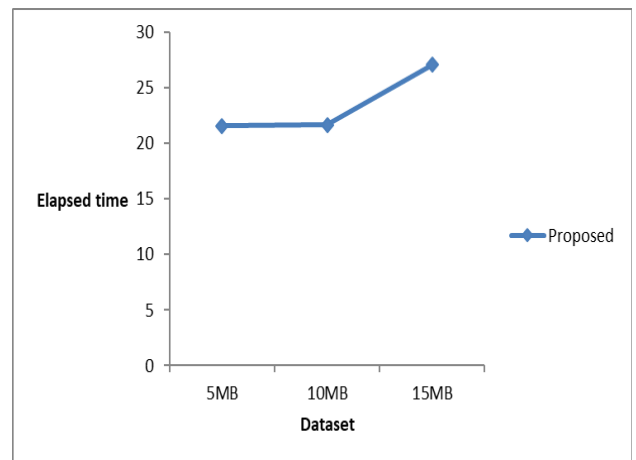


Fig shows elapsed time to recommend movies by proposed technique. Fig shows as data size increase then time of execution also increases. Here we varied size of dataset from 5MB to 15MB. x axis shows dataset size whereas y axis shows elapsed time which is in seconds. When dataset of 5MB is used then elapsed time is around 22 sec while dataset size is 15MB

then it is approximate 27sec. so it is clear that as we increases size of datasets then elapsed time also increases.

V. CONCLUSION

Collaborative filtering based movie recommendation technique is presented in this paper. In proposed mechanism dataset is divided into two phases called training phase and testing phase. In training phase calculate rating of movies and recommend movies based on the rating. The proposed mechanism is implemented using Python and results shows that proposed mechanism can recommend movies to each user according to their interest with less mean square error rate and less execution time. In future try to prose or enhanced this work to get better results and apply this technique in other recommendation like friend recommendation and product recommendation

REFERENCES

- [1] Yashar Deldjoo, Mehdi Elahi and Paolo Cremonesi, "Using Visual Features and Latent Factors for Movie Recommendation", in proceedings of "CBRecSys", pp: 1-4, Boston, MA, USA, 2016.
- [2] Khyati Aggarwal and Yashwardhan Soni, "Movie Recommendations using Hybrid Recommendation Systems", "International Journal on Recent and Innovation Trends in Computing and Communication", Vol. 4 No. 12, pp: 206-209, 2016.
- [3] Jiaxin Zhu, Yijun Guo, Jianjun Hao and Jianfeng Li, "Gaussian Mixture Model Based Prediction Method of Movie Rating", in proceedings of "2nd IEEE International Conference on Computer and Communications", pp: 2114-2118, Chengdu, China, 2016.
- [4] Sieg. B. Mobasher, and R. Burke, "Improving the effectiveness of collaborative recommendation with ontology-based user profiles," in Proceedings of the 1st International Workshop on Information Heterogeneity and Fusion in Recommender Systems, ser. HetRec '10. New York, NY, USA: ACM, 2010, pp. 39-46.
- [5] Jyoti, Sanjeev Dhawan and Kulvinder Singh, "Analysing user ratings for classifying online movie data using various classifiers to generate recommendations", in proceedings of "IEEE International Conference on Futuristic Trends on Computational Analysis and Knowledge Management (ABLAZE)", pp: 295-300, Noida, India, 2015.
- [6] Sanjeev Dhawan, Kulvinder Singh and Jyoti, "High Rating Recent Preferences Based Recommendation System", in proceedings of "4th International Conference on Eco-friendly Computing and Communication Systems", pp: 259-264, Kurukshetra, India, 2015.
- [7] Lakshmi Tharun Ponnamp, Sreenivasa Deepak Punyasamudram, Siva Nagaraju Nallagulla and Srikanth Yellamati, "Movie Recommender System Using Item Based Collaborative Filtering Technique", in proceedings of "International Conference on Emerging Trends in Engineering, Technology and Science (ICETETS)", pp: 1-5, Pudukkottai, India, 2016.
- [8] Kartik Chandra Jena, Sushruta Mishra, Soumya Sahoo and Brojo Kishore Mishra, "Principles, Techniques and Evaluation of Recommendation Systems", in proceedings of "IEEE International Conference on Inventive Systems and Control", pp: 1-6, Coimbatore, India, 2017.
- [9] Jun Ai, Linzhi Li, Zhan Su and Chunxue Wu, "Online-rating prediction based on an improved opinion spreading approach", in proceedings of "29th Chinese Control And Decision Conference IEEE 2017", pp: 1457-1460, Chongqing, China, 2017.
- [10] Dixon Prem Daniel and Rangaraja P Sundarraj, "A Latent Factor Model based Movie Recommender using Smartphone Browsing History", in proceedings of "International Conference on Research and Innovation in Information Systems IEEE" 2017, pp: 1-6, Langkawi, Malaysia, 2017.
- [11] Veeresh Belgur, Aniket Karande, Nikhil Kulkarni, Pranil Nalawade and Aniket M. Junghare, "Statistical Analysis on Movie Reviews and Ratings", "International Journal of Science, Engineering and Technology Research (IJSETR)" Vol. 6, Issue.4, ISSN: 2278 - 7798, pp: 508-510, 2017.
- [12] Karan Soni, Rinky Goyal, Bhagyashree Vadera and Siddhi More, "A Three Way Hybrid Movie Recommendation System", "International Journal of Computer Applications", Vol. 160, No. 9, pp: 29-32, 2017.

Authors Profile

Neha has completed Bachelor of Technology from Geeta Institute of Technology and Management in 2014. She is currently pursuing Master's Of Technology in Computer Science and engineering from University Institute of Engineering Technology, Kurukshetra, Haryana.

