PREVENTION OF ONLINE FAKE VOTING WITH COLLABORATIVE FILTERING TECHNIQUES

Dr. M. Sree Devi¹, P. Haritha², K. Ravali³

¹Computer Science, koneruLakshmaiah Education Foundation, Vaddeswaram, Andhra Pradesh, India
²Computer Science, koneruLakshmaiah Education Foundation, Vaddeswaram, Andhra Pradesh, India
³Computer Science, koneruLakshmaiah Education Foundation, Vaddeswaram, Andhra Pradesh, India

¹msreedevi_27@kluniversity.in

Abstract: Social voting engine has risen as a significant in online social networking sites. Various online social networking sites provide voting as well as opinion facility. Social voting includes opinions of various and different viewers on various and different set of products that are available online respectively. Now-a-days E-commerce and commercial sites are getting benefited a lot by using these online social voting systems. By voting system we can able to identify the scalability, sustainability and performance of any item in the online market. Due to rapid growth of internet usage many votes for any item can be emerged. It has developed various unique challenges and opportunities for recommendation systems. Information about the items and the viewer’s got overloaded because of availability of large data sets which are generated from the queries that are stated by the viewer about the item or product in the market. To overcome fake voting’s, we considered collaborative filtering method. In this paper, we proposed a recommendation system that recommends items using matrix factorization and nearest-neighbour methods.

Keywords: Recommendation systems, Online Social Networks, Collaborative Based Filtering, Content Based Filtering, Recommendation systems. Information about the items and the viewer’s got overloaded because of availability of large data sets which are generated from the queries that are stated by the viewer about the item or product in the market. To overcome fake voting’s, we considered collaborative filtering method. In this paper, we proposed a recommendation system that recommends items using matrix factorization and nearest-neighbour methods.

1. INTRODUCTION

Recommender systems have become an important research area since the appearance of the first papers on collaborative filtering in the mid-1990s.

There has been much work done both in the industry and academia on developing new approaches to recommender systems over the last decade. The interest in this area still remains high because it constitutes a problem-rich research area and because of the abundance of practical applications that help users to deal with information overloads and provide personalized recommendations, content, and services to users.

Extracting useful information from the available online resources in an effectively manner has becoming complex day-by-day because of the rapid growth of internet usage. This huge amount of data has made the evolution of mechanisms for efficient information filtering.

1.1 Online Social Networks (OSN)

Online social network which are also called as social networking site, OSN or Social Media is basically an online platform that people use frequently in order to develop social networking, social relations with other remote area people who includes common personal and career goals, having similar passions, backgrounds and also real-life interactions.

1.2 Recommendation Systems

Recommender systems also known as recommender engine analyses the large amount of data provided and recommends a valid thing. It recommends based on the data-driven decisions considered. The data is most important crucial aspect for any information processing system. The data that we consider is about the items to suggest and the users who will get the recommendations. The input data collection includes activities of users, user’s basic information, product information, user ratings, brand preferences, selected budget, surfing history, time of the day of purchase, season, country etc. By considering all the basic information and also any additional information as needed, the recommendation systems will done its recommendations.

In recent years, recommender systems usage has been increasing a lot because of its feature of recommendation. It is used in various areas like cinemas, music playlists, news reports, books, e-book research journals, search questions, social hashtags and e-commerce products. We can have recommender systems for expert users, collaborators, jokes, hotels, jewellery, financial support, life insurance policies, twitter twits and trending pages.

Recommender engines mainly generate a list of recommendations by considering two methods. One way of having recommendations is through collaborative filtering. Another way of generating recommendations is through content based filtering. Content based filtering method otherwise called as personality-based filtering method. Generally, this filtering technique makes use of series of discrete and properties of the particular item in order to recommend items which have similar characteristics like the items we selected. Collaborative filtering method generates a prototype from the user's previous behaviour. Past behaviour indicates items that are past purchased or selected and also mathematical ratings that are given to items. This method considers familiar decisions done by different users. By including all the information collaborative filtering
method recommends the items or recommend ratings for items that the user’s interested in.

We also have another method of recommendation i.e., Hybrid Recommender Systems which makes use of both the behaviours of content and collaborative based filtering techniques.

2. LITERATURE SURVEY

According to authors, In paper [1], presented a recommendation system for social voting system based on matrix factorization and nearest-neighbour methods. Through various investigation and experimental analysis with real time data, combination of both social networking site information and group affiliation information can remarkable increase in accuracy and efficiency of social voting recommendation systems, mainly for cold participating users, and social networking information controls group affiliation information in Nearest-Neighbourhood-based approaches. This paper states and explains that social networking and group control information is very important required to improve recommendation engine accuracy for cold participation users than for heavy participation users. In the investigation, simple metapath-based Nearest-Neighbourhood prototypes perform better than computation intensive Matrix-Factorization prototypes in hot-rating recommendation systems, while users’ enthusiasm for non-hot voting’s can be better mined by Matrix-Factorization models.

According to authors, In this paper [2], introduced a method to join voting and reviews given by the viewer to construct better and relevant recommendation experience for viewer. The reviews are examined and processed to identify aspects and attributes that are necessary for viewer and item. Viewer domain is predicted and generated depending upon on viewers feedback on various similar items and item domain is predicted and generated on items feedback by different and various users. Decision making tree approach is used for identifying and predicting unrated. Recommendation engine provide recommendation based on ratings or voting provided by various users on various items and different items. Thus stated approach handle drawbacks of traditional collaborative filtering like scalability, sparsity and cold start problems.

According to authors, In this paper [4] for collaborative filtering recommendation engine they used similarity computation method among the users and items. In the computation of recommendation, in this approach they considered the viewer’s likes and dislikes and selection of the items and voting for the items. Experimental results show that the stated approach in this paper is far better and superior to the compared approach.

3. FLOW CHART

![Flow Chart](image_url)

4. ALGORITHM

**Data:** Online Movie Rating Datasets.

**Result:** Predicted Rating.

1. Start
2. Load Online Movie Rating datasets.
3. Create N Dimensional Matrix
4. Do Regression Analysis on X and Y axis based Online Movie Rating Datasets
   4.1 Remove Outliers
   4.2 Do Nearest Neighbouring
5. Do Correlation based on above values to get Rating
6. Store the rating into N Dimensional Matrix
7. End
5. CONCLUSION
In this paper, we have introduced social voting recommendation systems that can able to prevent any fake voting’s for any movie listed, by using collaborative filtering method. Algorithms like Matrix-Factorization and Nearest-Neighbourhood has been used in this project since they follow collaborative filtering method. This recommendation system can able to discover online fake voting’s. This allows movie owners, viewers etc., to keep total trust upon the ratings given by people. By considering several investigations and experimental analysis with respect to real time data, we discovered that by combining both social networking and group affiliation information we can able to generate accurate and efficient popularity-based social voting recommendation systems. This project explains that both social networking and group control information is very important in order to generate recommendations and also to improve recommendation engine accuracy for cold participation users than for heavy participation users. This is mainly due to the fact that cold participation users tend to participate in popular rating or voting’s of the items. In our study, simple metapath-based Nearest-Neighbourhood prototypes perform better than computation intensive Matrix-Factorization prototypes in hot-rating recommendation systems, while users’ enthusiasm for non-hot voting does can be better mined by Matrix-Factorization models.

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