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Online Social Voting Techniques in Social Networks Used for Distinctive Feedback in Recommendation Systems

G.N.P.S. Kranthi[1], B.V. Ram Kumar[2]
[1]M.Tech Scholar, Department of Computer Science & Engineering,
[2]Professor, Department of CSE, BVC Institute of Technology & Science, Batlapalem, Amalapuram, AP, India.

Abstract

Internet voting is the process of collection of opinions on a particular, characterized issue to collect data about items like individuals, items, and administrations et cetera. A voting method can be utilized as a rating process by adding another measurement to it as far as the gathering meaning of ratable articles. Social networks like Twitter, LinkedIn, Facebook, and Google+ have increased noteworthy consideration as of late. Individuals began depending more on a social network for complex data prerequisites. Voting help applications are fundamentally used to prompt voters in choosing the correct option. Vote recommendation frameworks typically abused amid decisions, might be reached out to the choice of appropriate items and administrations in light of user inclinations, ratings, reviews, and profiles. Suggested System misuses relationship among users by the method for item recommendation. Mining the productive reviews from the user comments, votes, and inclinations is an intriguing territory of research as of late. The advanced patterns of information and the materialness of the recommendation procedures to fulfill the present data needs is pointed. The extensibility of the voting prompting systems/recommendation strategies in different settings is talked about alongside the proposition for new methodology that suit the present data needs.

Keywords: Collaborative filtering, social voting, similarities, recommender systems.

I. Introduction

Because of the vast measure of data accessible on the Internet, in some cases it is troublesome for users to locate the substance that they truly require in a fast and simple way. The user tends to: look for recommendations from other people who have already had similar needs; or select those items that are nearest to what they were searching for [1]. The utilization of recommender framework as a data recovery strategy endeavors to take care of the issue of information over-burden. They channel the data accessible on the web and help users to discover all the more fascinating and significant data [2-4]. For recommendation frameworks to be more successful we trust that is important to figure out which method is more reasonable for the input process. The most well-known arrangements and more extensive spread methods are those in light of unequivocal ratings. Which two principle methods are "5 stars" and "Like". In this sense we will likely figure out which method is favored by the users. More precise, way to deal with finding items of intrigue is given by ratings-based communitarian separating frameworks, which use past ratings to anticipate items the user may like. Such frameworks foresee which items a given user will be occupied with in light of the data gave in their user profile. These profiles comprise of votes or ratings for items in the framework that the user has just seen and assessed. The profiles of different users are every now and again likewise abused to enhance forecasts for the objective user. Profiles are for the most part developed expressly from user ratings, they may likewise be aggregated certainly by thinking about a user's buy or bookmark history. Express ratings frameworks are regularly found on film and music recommendation locales, for example, MovieLens or imdb where users can give every item a rating from 0 to 5 stars. Zero shows that the user emphatically loathes the item and five demonstrates that they extremely like the item, anyway any discrete arrangement of qualities could be utilized. Understood frameworks can likewise be utilized, for instance in online retail locations, for example, Amazon where users buy items or add them to a \wish list", show that they are occupied with that sort of item. The advancement of recommender frameworks has been animated by the quick development of data on the Internet. For data sifting,

recommender frameworks can consequently prescribe the couple of ideal items, which users may like or have premiums to purchase by taking in the user profiles, users' past exchanges, the substance of items, and so forth. In the ongoing 20 years, a wide range of sorts of recommender frameworks, for example, cooperative separating based methods, content based methodologies and half breed approaches have been produced.

II. Related Work

Human conduct is accepted to unfurl through up close and personal social networks, anyway it's difficult to spot social impact impacts in information based studies9– 13, and its obscure regardless of whether on-line social networks work inside the same way14– 19. Here we tend to report comes about because of an unpredictable controlled preliminary of political activation messages conveyed to sixty one million Facebook users all through the 2010 America council races. The outcomes demonstrate that the messages specifically affected political style, information chasing and true pick conduct of voluminous people. Also, the messages not exclusively affected the users United Nations organization got them anyway moreover the users‟ companions, and companions of companions. The consequence of social transmission on genuine pick was greater than the immediate aftereffect of the messages themselves, and about all the transmission happened between „close friends‟ United Nations organization were extra likely to possess a vis-à-vis relationship. These outcomes direct that vigorous ties are instrumental for spreading each on-line and true conduct in human social networks. This paper exhibits a blueprint of the circle of recommender frameworks and depicts the present age of exhortation ways that are normally arranged into the ensuing 3 fundamental classes: content-based, agreeable, and half breed recommendation approaches. This paper moreover portrays various constraints of current recommendation ways and talks about achievable augmentations which will enhance recommendation capacities and fabricate recommender frameworks pertinent to a decent more extensive shift of utilizations. These expansions exemplify, among others, A change of comprehension of users and things, joining of the talk information into the guidance method, bolster for multi criteria ratings, and an arrangement of extra adaptable and less nosy styles of recommendations Recommender strategies ar an essential a piece of the learning and online business framework. They speak to a strong method for empowering users to channel by recommends that of immense information and items zones. Much many years of investigation on helpful separating have diode to a shifted set of calculations and a chic collection of instruments for assessing their execution. Particular errands, information wants, and item areas connote unmistakable issues for recommenders, and style and investigation of recommender's wants to be expert bolstered on the user assignments to be upheld. Compelling organizations need in the first place watchful examination of forthcoming users and their objectives. Bolstered this examination, method planners have a bundle of decisions for the determination of algorithmic program and for its inserting inside the including user skill. This paper examines a vast type of the choices open and their suggestions, intending to give each expert and specialists with a prologue to the most issues hidden recommenders and current prescribed procedures for tending to these issues.

III. Recommendations Systems

The use of recommendations system as an information retrieval technique attempts to solve the problem of data overload. They filter the information available on the web and help users to find more interesting and valuable information [2-4].

In general, a recommendation system is defined by [5] as "A system that has as its main task, choosing certain objects that meet the requirements of users, where each of these objects are stored in a computer system and characterized by a set of attributes."

Recommendation systems consist of a series of mechanisms and techniques applied to information retrieval with the purpose to solve the problem of data overload on the Internet. These help users to choose the objects that can be useful and interesting for them, these objects can be any type, such as books, movies, songs, websites, blogs [6].

Recommendation systems are based on personalized information filtering, used to predict whether a particular user likes a particular item (prediction problem), or identify a set of N items that may be of interest to certain users (top-N recommendation problem) [7].

Feedback techniques

The information feedback is a fundamental process of the recommendation systems, and the reason is that it provides the information these systems need to make recommendations to the users. In this sense the feedback techniques are classified into two types: Implicit and Explicit feedback [7-9], being the last one the most used in the recommendation systems in force, this is caused because is the user himself whoever value the importance of interest objects.

Implicit feedback

This process consists on evaluate the objects without users interventions. This evaluation is performed without the user being aware, capturing the information obtained from the actions made by the users in the application. For example,

When the user accesses to news or read an article online, according to the time it takes for reading, the system could automatically infer whether the content is on its interest.

Explicit feedback

Through a survey process, the user evaluates the system by assigning a score to an individual object or a set of objects. Explicit feedback provides users with a mechanism to unequivocally express their interests in objects [2]. Figure 1**¡Error! No se encuentra el origen de la referencia.** shows the most common explicit feedback system used by users on the web to express their interest by objects.



Figure 1: Most common explicit feedback systems.

For example, Amazon online store, Film affinity, Movies and other, use the “5 stars” ratings system that allows users to indicate which products are of their interest.

On the other hand, social networks as Facebook, YouTube and others use the “Like” rating system to allow the users to rate the contents.

Finally, Google+1 is a new feature that Google added to its search engine so users can evaluate explicitly the websites they like. So, they recommend websites to their contacts.

Although there are different ways of explicit rating, the most used in the majority of applications are:

Explicit rating “5 stars”

As shown in Figure 2, through the explicit rating “5 stars”, the users gives each content a value between 1 and 5 stars.

These values are defined as follows:

- One star: The content is not interesting.
- Two stars: The content is a bit interesting.
- Three stars: The content is interesting.
- Four stars: The content is very interesting.
- Five stars: The content is essential.



Figure 2: Explicit rating “5 stars”

Explicit rating “Like”

As shown in figure 3, through the explicit rating “Like”, the users gives a positive or negative rating to contents. If this method of rating is compared with the “5 stars" method it could be said, that it uniquely assign values of 1 or 5 stars.

When the user push the button “Like”, it means that user likes the content, but if the users push the button "Unlike" it means that content does not like to user. The Figure 3 shows the buttons used in this type of rating.



Figure 3: Explicit rating “Like”

IV. Methodology

A. Mining Social Networks

Because of the popularity of the social network many research community has shown keen interest. ArnetMiner is the most popular research journal repository. It is the popular publication and search engine to search for research papers. In [7] [8] the authors present a software name LikeMiner which is

used to capture and represent the objects. The software works by mining the "like" graph by taking the facebook data. Another research work on the same topic is presented in [9] where the authors utilize what they define as social endorsements networks in order to assign tags to entities existing in social systems like Twitter.

B. Voting Advice Applications

Voting advice application is used for the electronic political campaign. Research on VAA was mostly taken by the political scientist [10]. The VAA help the users to decide to whom to vote. The user's analysis the policy which are relevant to them. But research has taken up so as to improve the design of the VAA. The VAA work with the mathematic algorithms. In [11], Mendez compares four models for calculating the user-party congruence and argues that algorithms based on a directional logic perform best. In [12] the authors share that the output of voting assistance tools might be manipulated by political entities. The drawback of the VAAs is that most it is dominated by the political science approach and a little has been done towards the voter community by enabling the collaborative vote suggestions and voters interactions through the comments.

The best example of the VAAs is the Choose4Greece [8]. Choose4Greece Voting advice application was developed by Preference Matcher team. Some of the features of Choose4Greece [8] are

- In Choose4Greece blog, user has the option to comment or leave a feedback. Through mean of this blog, the user can communicate with the research team.
- By taking into the consideration of voter-party similarity, the application is able to provide with community-based recommendations.
- Another feature of Choose4Greece in which the users can compare the political views with each other by using a public PIN that can be sent to other users for comparison. Here the Users can get similarities and dissimilarities of the political views with each other. Each user is assigned a unique private Personal Identification Number to save the results.

C. Recommendation Systems

As Recommended system is the system which suggests item like movies, books etc to the users. The two methods which are categorized are:

- Collaborative-filtering: Users are recommended with the items that people with similar preferences liked in the past [3] [4].
- Content-based: Users are recommended with the identical type of items which they preferred in the past [5] [6].

V. Proposed Method

We consider top-k voting recommendation social networks. For each user, the recommender system has suggested a small number, say votings from all existing votings. Matrix factorization approaches were found to be very competent in general top-k recommendation. Moreover, social network evidence can be demoralized to improve the accuracy of top-k recommendation. For this reason, we start with matrix factorization approaches using both social network evidence and group information. We propose a multi-channel matrix factorization model, which factorizes user relations, use to user and user to group interactions concurrently, gearing to improve top-k first develop neighborhoods by navigate types of met paths in the Weibo heterogeneous information network. We then explore user neighborhoods in the hidden feature space derived from matrix factorization models.

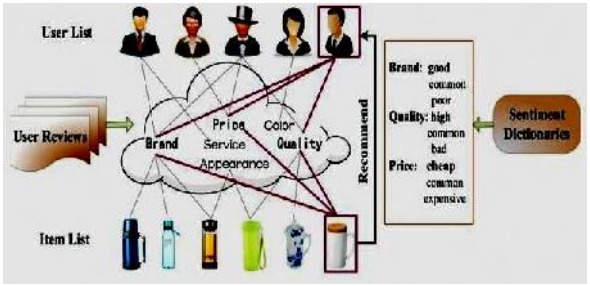


Fig 4. Proposed Architecture diagram

VI. Results and Analysis

The recommender systems applications identified using the study include but not limited to:

People and policies: Internet voting, voting on policies of business organizations.

a) Entertainment: movies, music, pubs, and resorts.

b) Content: personalized newspapers, documents, Web pages and Q&A sites.

c) E-education: e-learning and e-mail filters.

d) Electronic commerce: products, books, cameras, TVs, PCs etc.

e) Services: travel services, expert's advice, rent houses, matchmaking.

Table 1: Categorization of Recommender system approaches

Recommender system approach	Percentage of use
Content-based	36
Collaborative	40
Hybrid	16
Others	8

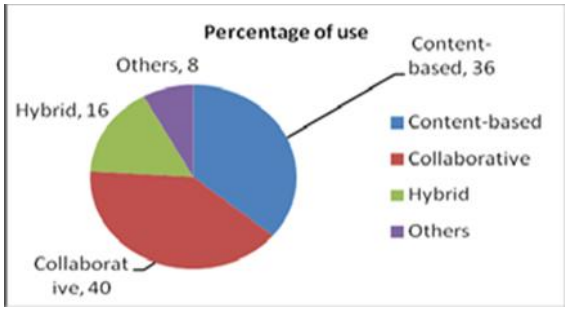


Fig. 5 Percentages of usage of different approaches.

Table 2: Categorization of Type of data considered

Type of data considered	**Percentage of use**
Opinion polls, voting	**15**
Product reviews	**60**
Service reviews	**25**

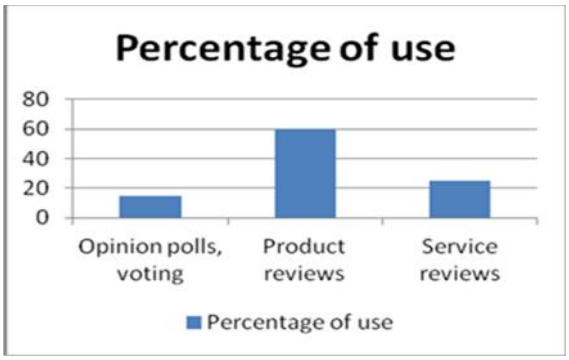


Fig. 6 Percentages of usage of different data sets

Table 3: Categorization of Type of Data mining and machine learning techniques used

Data mining and machine learning techniques used	**Percentage of use**
Classification	25
Clustering	45
Association rule mining	10
Cluster-then-classify	20

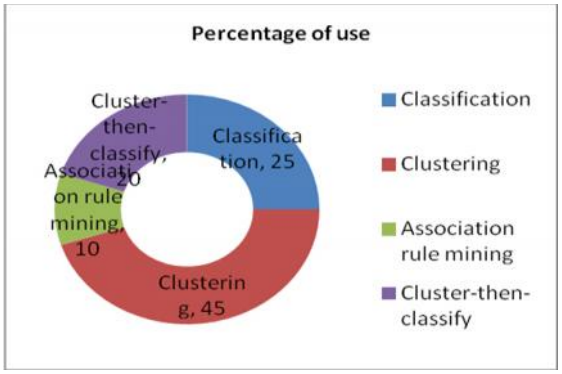


Fig. 7 Percentages of usage of different data mining techniques

VII. Conclusion

In today's world of e-commerce and e-business, people devote most of their time to the online services. Thus social networks also gained importance because of their desire to connect to a large number of people around the world. Friend recommendation on these social networking sites is a very difficult problem because usually people tend to connect to the people who might be similar in their tastes. Also the recommended user should be

trustable because the user doesn't want to connect to some fake user. In order to overcome this kind of problem in this paper, a friend recommendation system called cohesion based recommendation system is recommended in which a new friend is recommended based on some trust value calculated on the basis of few existing parameters. Results shows that proposed system recommends more friends in an optimal way. In future, other classifiers can be used and the results obtained from each of them can be compared to see which classifier produces the better result. Additionally, daily lives of users can be modeled as life documents for this system that can track social activities of users repeatedly after specific interval of time to make friend suggestion more efficient.

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Authors



G.N.P.S. Kranthi is pursing M.TECH (CSE) in the Department of Computer Science and Engineering from BVC Institute of Technology & Science, Batlapalem, Amalapuram, AP, India.



Prof. B.V. Ram Kumar is working as Professor in Department of Computer Science & Engineering, BVC Institute of Technology & Science, Batlapalem, Amalapuram, AP, India.