Volume 4, Issue 1, January 2017 ISSN: 2348-8565 (Online)
International Journal of Modern Engineering and Research Technology
Website: http://www.ijmert.org Email: editor.ijmert@gmail.com

Rule Based Specialized Polarity Recommendation System

Shashank Rathore
Research Scholar, (M.Tech.)
Shri Ram Institute of Technology
Jabalpur (M.P.), [INDIA]
Email: rathore.shashank7@gmail.com

Sapna Choudhary
Assistant Professor
Department Computer Science & Engineering
Shri Ram Institute of Technology
Jabalpur (M.P.), [INDIA]
Email:choudharysapnajain@gmail.com

ABSTRACT

Recommendation systems are defined as the techniques used to predict the rating one individual will give to an item or social entity. These items can be music, videos, books, movies, restaurants and things on which individuals have different choices. These choices are being predicted using two basic approaches first content-based approach which involves characteristics of an item and second collaborative filtering approaches which takes into account user's past behaviour to make choices. The issues involved in all the techniques of the recommendation system. The Proposed system discovers recommendation based on rules and classifies more categories of polarity which helps users to find good recommendations.

Keywords:—*Recommendation systems, Personalized Recommendation, Non-Personalized Recommendation, Amazon, Flipkart, Collaborative, and Rank based.*

I. Introduction

The explosive growth in the amount of available digital information and the number of visitors to the internet have created a potential challenge of information overload which hinders timely access to items of interest on the internet. Information retrieval systems, such as Google, DevilFinder and Altavista, have partially solved this problem but prioritization and content to user's interests and preferences of information were absent. This has increased the demand for recommender systems more than ever before. Recommender systems are information filtering systems that deal with the problem of information overload [1] by filtering vital information fragment out of large amount of dynamically generated information according to user's preferences, interest, or observed behavior about item [2]. Recommender system has the ability to predict whether a particular user would prefer an item or not based on the user's profile.

Recommender systems are beneficial to both service providers and users [3]. They reduce transaction costs of finding and selecting items in an online shopping environment [4]. Recommendation systems have also proved to improve decision making process and quality [5]. In e-commerce setting, recommender systems enhance revenues, for the fact that they are effective means of selling more products [3]. In scientific libraries, recommender systems support users by allowing them to move beyond catalog searches. Therefore, the need to use efficient and accurate recommendation techniques within a system that will provide relevant and dependable recommendations for users cannot be over-emphasized.

There are many definitions of recommender systems. One of the first was presented by Paul Resnick and Hal R. Varian

in 1997. They claim that "in a typical recommender system, people provide recommendations as inputs, which the system then aggregates and directs to appropriate recipients" [7]. These systems are usually defined in terms of their functionality as the systems or agents that suggest the products to the users who purchase products on e–commerce sites [6].

The recommender systems help the consumer to make the decision what to buy. Recommender system was defined from the perspective of E-commerce as a tool that helps users search through records of knowledge which is related to users' interest and preference [6]. Recommender system was defined as a means of assisting and augmenting the social process of using recommendations of others to make choices when there is no sufficient personal knowledge or experience of the alternatives [7].

An important catalyst in this regard is the ease with which the Web enables users to provide feedback about their likes or dislikes. For example, consider a scenario of a content provider such as Netflix. In such cases, users are able to easily provide feedback with a simple click of a mouse. A typical methodology to provide feedback is in the form of ratings, in which users select numerical values from a specific evaluation system (e.g., five-star rating system) that specify their likes and dislikes of various items.

Other forms of feedback are not quite as explicit but are even easier to collect in the Web-centric paradigm. For example, the simple act of a user buying or browsing an item may be viewed as an endorsement for that item. Such forms of feedback are commonly used by online merchants such as Amazon.com, and the collection of this type of data is completely effortless in terms of the work required of a customer. The basic idea of recommender systems is to utilize these various sources of data to infer customer interests. The entity to which the recommendation is provided is referred to as the user, and the product being recommended is also referred to as an item. Therefore, recommendation analysis is often based on the previous interaction between users and items, because past interests and proclivities are often good indicators of future choices. A notable exception is the case of knowledge-based recommender systems, in which the recommendations are suggested on the basis of user-specified requirements rather than the past history of the user [8].

In the simplest form, personalized recommendations are offered as ranked lists of items. In performing the ranking, RSs predict what the most suitable products or services are, based on the interest and constraints of the users. In order to complete these computational task, RSs collect from users their preferences (interest), which are either explicitly stated, e.g. ratings for products, or are inferred by interpreting user actions. For instance, a RS may consider the navigation to a particular product page as an implicit sign of preference for the items shown on that page. Personalized recommender systems are used by E-commerce sites to suggest products to their customers. The products can be recommended based on the top sellers of a site, demographics of the customer, or analysis of the past buying behaviour of the customer as a prediction for future buying behavior, for example eBay[10]. These techniques help the sites spread over the World Wide Web to adapt itself to each customer requirements thus enabling individual personalization for each customer [9].

Non-personalized recommender systems recommend products to customers based on what other customers have said about the products on average. The recommendations are independent of the customer, so each customer gets the same recommendations. Non-

personalized recommender systems are automatic, because they require little customer effort to generate the recommendations and are momentary. These recommendations are completely independent of the particular customer targeted by the recommender system. For example, Amazon.com and Moviefinder.com websites are treated as non-personalized recommender systems [9].

II. RELATED WORK

Recommendation system are classified into following categories:

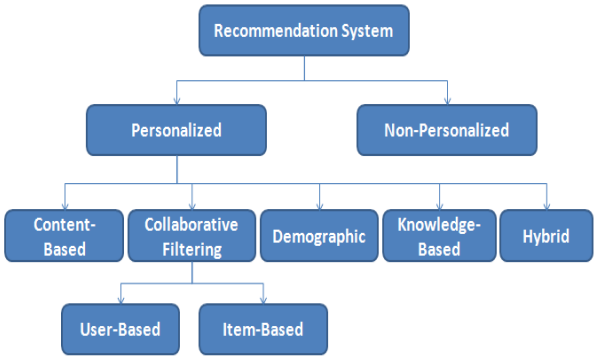

Figure 1. Type of recommendation system

The recommender systems can be classified into non personalized and personalized methods [11]. The personalized recommendation is based either on the demographic information about users or on the analysis of the past behavior of the user in order to predict their future behavior (collaborative and content–based filtering). Moreover, the personalization can be either persistent or ephemeral [11]. Persistent personalization, based on the previous users' behaviors', enables to create unique list of products for each user. The requirement that ought to be fulfilled in this situation is that customers must log into the system in order to create user profile for each of them. In a persistent personalized recommendation each person on the Web site sees different recommendations because they depend directly on the user's personal data. The recommendations rely on the information derived from the survey responses, purchasing history, products ratings, etc. The user profile is not necessary in the ephemeral personalization. In this case the recommendations are created according to the users behaviors during a current session, their navigation and selection. In this technique the recommendations are the same for all users [11]. The example of the non–personalized method is the recommendation that suggests the products which were best rated in the past by all the customers in average ("best rated") or the number of their copies, which were sold, is the greatest ("best buy"). In order to create this kind of recommendation the statistical methods are used commonly.[12]. this paper proposes a Tag based collaborative filtering Recommendation approach for personal learning Environments (PLE), s. Here 16 different tags based collaborative Filtering recommendation algorithms are implemented and compared in terms of accuracy and user satisfaction. PLE learners have Different interest and preferences so there is no similarity in their learning resources. User generated tags are combined with traditional collaborative filtering recommendation. <User-item> Relation converted into the <user, item, tag> relation. The result shows that item based K-means clustering Algorithm gives best performance in offline evaluation. Whereas in the user evaluation user based Apriori Algorithm ranked First. The result of evaluation shows that there is no relation between quality of user experience and high recommendation accuracy measured by statistical measure. [13].

This paper proposes a personalized Recommendation approach based on Three Social Factors, Personal interest means user–item relationship and interpersonal influence and interpersonal interest similarity means user -user relationship of social networks. Probabilistic matrix Factorization is used Experiments are done on three datasets

Movielens and yelp. This approach removes the problem of cold start and data sparsity. [14].

This paper proposes a recommendation system for real estate websites that helps users in purchasing new properties or homes. Recommendation system is developed by combining case based reasoning (CBR) and Ontology. Earlier systems supports single attribute search systems but this system support multi valued search system. User search behaviors are studied and a knowledge base is prepared.[15]

This paper proposes a hybrid collaborative filtering recommendation approach based on user preferences and item features. Traditional collaborative filtering recommendation approach has challenges like 1). Data sparsity 2).scalability 3). Similarity-: similar items can have different names and meaning so recommendation system would treat them as different items. To solve these challenges a recommendation algorithm is proposed based on user preferences and item – features. User preferences are determined from previous ratings of user over a period of time and then using similarity matrix find similar users. An item is additional represented as vector of different features. Every feature has given weight. If a feature is visible in different items then it becomes the preference of user. The proposed algorithm is more accurate than other traditional CF methods. it also removes the problem of data sparsity to some extent.

[16]. The major problem of many on-line web sites is the presentation of many choices to the client at a time; this usually results to strenuous and time consuming task in finding the right product or information on the site. In this work, we present a study of automatic web usage data mining and recommendation system based on current user behavior through his/her click stream data on the newly developed Really Simple Syndication (RSS) reader website, in order to provide relevant information to the individual without explicitly asking for it. The K-Nearest-Neighbor (KNN) classification method has been trained to be used on-line and in Real-Time to identify clients/visitors click stream data, matching it to a particular user group and recommend a tailored browsing option that meet the need of the specific user at a particular time. More research also need to be carried out on many other data mining techniques, comparing the result with this model, so as to determine the most effective model in handling a problem of this nature in the nearest future.

Following shows comparison of some e-commerce recommendation which represents output on the basis of polarity like positive or negative:

Table 1 Comparison of Popular E-Comm Recommender

E-commerce site	Parameters used by re-commender
Flipkart.com	positive, negative, most helpful, certified buyers
Amazon.com	star rating, most recent
Snap-deal.com	most helpful, most recent, star rating
Ebay.in	No ratings, only visitor history

III. PROPOSED WORK

In the survey of existing system available for e-commerce like flipkart, ebay etc, recommendations are focuses on

Overall product not on there features like CPU, RAM, SCREEN SIZE, BATTERY LIFE of mobile etc. So user does not have specific reviews or recommendation according to that they also have limited polarity measures like positive or negative recommendation.

Proposed system provides attribute based recommendation for products, which provides support for selection of products to user. Proposed system also filters recommendation with specialized polarity of product and its attribute like we introduces strongly positive, strongly negative, trusted, untrusted, neutral etc.

Figure below represents overall architecture of proposed system:

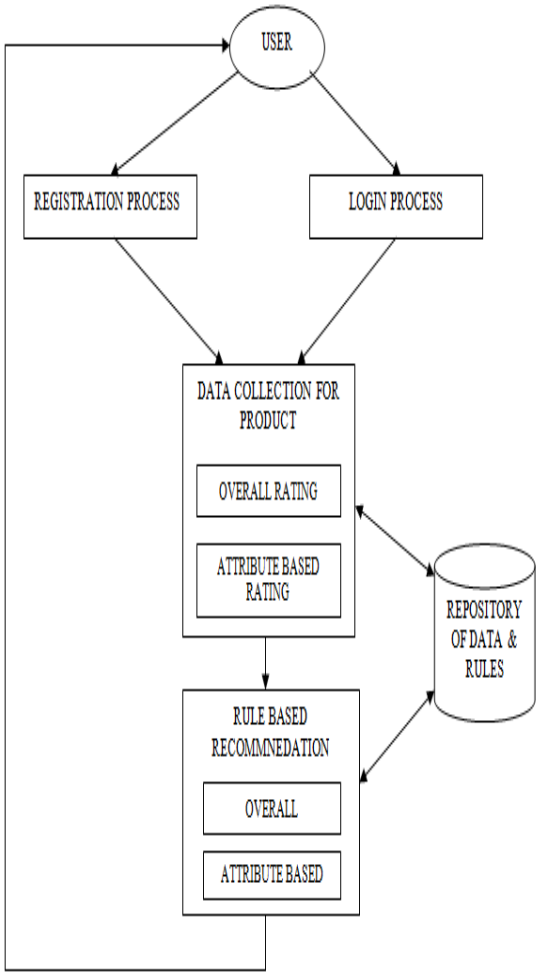

Figure 2. Proposed System

IV. RESULTS

The proposed work is implemented with JSP/Servlet and MySQL database. We usesNetBeans IDE. Snapshot of result is shown below:

V. CONCLUSION AND FUTURE WORK

The simulation results showed that the proposed system performs better in respect of user to get specialized recommendation with filtering according to attributes and polarity categories. This make user easy to select any product to purchase. KNN works on nearest neighbor for overall rating. This work will be enhanced in future with more accurate artificial intelligence based prediction system.

REFERENCES:

[1] Konstan JA, Riedl J. Recommender systems: from algorithms to user experience. User Model User-Adapt Interact 2012;22:101–23.

[2] Pan C, Li W. Research paper recommendation with topic analysis. In Computer Design and Applications IEEE 2010;4, pp. V4-264.

[3] Pu P, Chen L, Hu R. A user-centric evaluation framework for recommender systems. In: Proceedings of the fifth ACM conference on Recommender Systems (RecSys'11), ACM, New York, NY, USA; 2011. p. 57–16

[4] Hu R, Pu P. Potential acceptance issues of personality-ASED

recommender systems. In: Proceedings of ACM conference on recommender systems (RecSys'09), New York City, NY, USA; October 2009. p. 22–5.

[5] Pathak B, Garfinkel R, Gopal R, Venkatesan R, Yin F. Empirical analysis of the impact of recommender systems on sales. JManage Inform Syst 2010;27(2):159 –884.

[6] Schafer, J.B., Konstan, J.A., and Riedl, J. (2001) 'E–Commerce Recommendation Applications', Data Mining and Knowledge Discovery, 5 (1/2), 115 – 152.

[7] Kazienko, P., Kołodziejski, P. (2005) 'WindOwls – Adaptive System for the Integration of Recommendation Methods in E – commerce', Springer Verlag, 218 – 224.

[8] C.C. Aggarwal, Recommender Systems: The Textbook, Springer International Publishing Switzerland 2016

[9] Prasad, R., & Kumari, V. (2012). A Categorical Review of Recommender Systems. International Journal of Distributed and Parallel Systems (IJDPS) Vol.3, No.5,

[10] Ricci, F., Rokach, L., & Shapira, B. (2010). Introduction to recommender Systems Handbook-Page 2.

[11] Nana Yaw Asabere, Review of Recommender Systems for Learners in Mobile Social/Collaborative Learning, International Journal of Information and Communication Technology Research, ISSN 2223-4985, Volume 2 No. 5, May 2012.

[12] Mohamed Amine Chatti, Simona Dakova, Hendrik Thu¨ s, and Ulrik Schroeder, "Tag-Based Collaborative Filtering Recommendation in Personal Learning Environments", Vol. 6, No. 4, October-December 2013.

[13] Liang Hu, Guohang Song, ZhenzhenXie, and Kuo Zhao, "Personalized Recommendation Algorithm Based on Preference Features", Tsinghua Science And Technology ISSNll1007-0214ll08/11llpp293-299 Volume 19, Number 3, June 2014.

[14] Xiaofang Yuan, Ji-Hyun Lee n, Sun-JoongKim, YoonHyun Kim, "Toward a user-oriented system for real estate websites", Information Systems 38 (2013) 231– 243.

[15] XuemingQian, Member, IEEE, He Feng, Guoshuai Zhao, and Tao Mei, Senior Member, IEEE, "Personalized Recommendation Combining User Interest and Social Circle", IEEE Transactions on Knowledge and Data Engineering, Vol. 26, No. 7, July 2014.

[16] D.A. Adeniyi, Z. Wei, Y. Yongquan, "Automated web usage data mining and recommendation system using K-Nearest Neighbor (KNN) classification method", 2210-8327 [a] 2015 Production and hosting by Elsevier B.V. on behalf of King Saud University., 2014.

* * * * *