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A Novel Approach for Customized Recommendation on Infrequent Content

Ms. Snehal R. Shinde
Department of Computer Engineering
Pillai HOC College of Engineering and Technology
Rasayani, Raigad, India

Prof. Sushila Ratre
Department of Computer Engineering
Pillai HOC College of Engineering and Technology
Rasayani, Raigad, India

***Abstract* - In E-commerce, sparse data is difficult to manage. Recommendation technique is used to provide dynamic high quality recommendation. If no value exist for given combination of dimension values, no rows exists in fact table. The methods to make use of profiles to extend the co-relating relation, a set to react user's preferences or item's reputation are relation mining of rating data and dynamic feature extraction. In Relation mining a semi co-relate relation between items rating and profile content are utilized. Dynamic feature extraction contains set of dynamic features to describe users' multi-phase preferences with respect to computation, accuracy and flexibility. For high quality recommendation adaptive weighting algorithm is proposed with the help of association rule mining.**

Keywords* - *Rating data for relation mining, Dynamic feature extraction, Association rule mining

I. INTRODUCTION

In today's world the internet has become an important part of our daily routine. Because of these it facilitates an opportunity for companies to send data related to items and facilities to customers properly. Day by day this type of data is increasing rapidly. It became a challenge to deliver proper content as quick as possible to appropriate customer. In Web-based applications of robust information, recommendation system have the problem to distinguish best quality new products and to give recommendations to new customers. In E-commerce and other Web-based applications recommendation techniques are very useful. It becomes difficult to dynamically provide best quality recommendation on infrequent data.

There are number of mobile selling websites available on the internet. Many of them are having their own recommendation system to recommend mobiles to the buyers. Generally the mobile recommended by most of the websites is not of the buyer's interest. Mostly lots of information and recommendations are pushed to buyers, but most of them are not applicable[1]. This happens due to infrequent data.

II. LITERATURE SURVEY

The aim of recommendation engine is to find the relationship between previous data and object like user, items, relationship is used to find the similarity between different objects. For example, relationship can be represented in the form of ratings to show the user likeness about a particular item. Different steps to extract data are performed by recommendation engine to make recommendation.

Recommendation engine takes input as an object and their relationship. Fig 1. shows the processing of recommendation. Initially, ratings given to items by users are considered as input data to recommendation engine, to find out the similarities between object. To find similarity the computing time changes as per size of data. With the help of similarity information, recommendation engine gives recommendation on the basis of criteria given by a user.

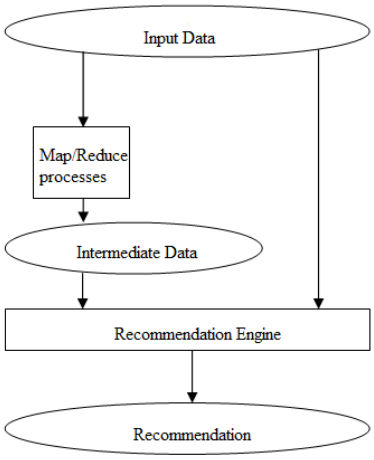

Fig 1. The Big Picture

Previously, recommendation systems are classified into content based or hybrid system and collaborative filtering.

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P.W.Foltz and S.T.Dumais[2] tried different way for predicting Technical Memos as per clients interest. Bellcore published 150n technical memos but were less useful as the clients interest was something else. By considering keywords given by clients and feedback about earlier useful abstract, Bellcore made predictions. Bellcore used standard keyword matching and Latent Semantic Indexing for informational retrieval. By combining these four methods a personalized information that is technical memo were predicted.

U. Shardanand and P. Maes[3] tested a method for personalized recommendation. These method consider the profile of current user and previous user similarity is checked out. The Ringo network is created for personalized recommendation for music album and singer. It represented qualitative and quantitative predictions as size of database went on increasing.

R. Silvestri[4] described a web service which used standardized XML messages to support peer to peer to communication in a network. It became necessary to consider preference of user requirements as it kept on changing. User profile consist of both direct and indirect details which gives user preferences and behavior. It focuses mainly on dynamic evaluation of user profiles for personalization of web services based on service usage log.

III. PROPOSED SYSTEM

To improve use of co-rate relation of profiles a new way is introduced and then collection of dynamic features to react customers likings or product position in different stages of interest. Then finally an adaptive algorithm using association rule mining will be used for customized recommendation. By making use of user profile and item profile will help to expand co-rate relation between ratings through each attribute for data consistency as given in Fig 2.

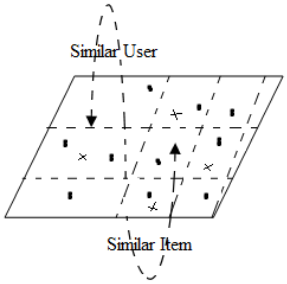

Fig 2. The Proposed Approach

A collaborative filtering method is combined with association rule mining for recommendation. For final recommendation association rule mining will be used. By using item based collaborative filtering a similarity between target item of target user is done. To reduce problem of information scarcity, the combination of collaborative filtering and association rule mining will help.

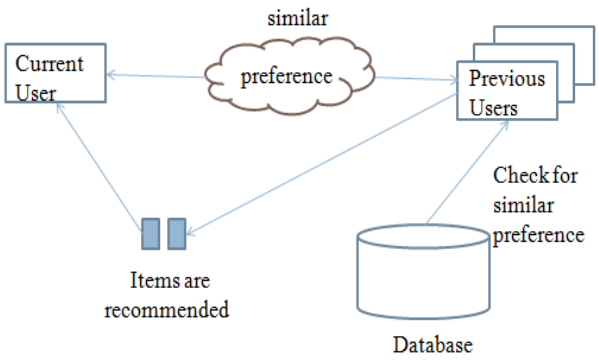

Fig 3. Proposed System Architecture

IV. IMPLEMENTATION

A. *Rating data for Relation mining*

For recommendation, recommendation engine get data from historical rating data, user profile and item profile. Recommendation engine faced problem due to infrequency of data. In previous method, a co-rate relation(to same item by different user or to same user by different item) is used which gives sparse data. So a semi co-rate relation is done between the ratings given by previous users.

B. Dynamic Feature Extraction

At different phases of interest user preferences and item reputation goes on changing. To enhance the precision of recommendation algorithm, a need to deal with active data(features), historical ratings and different weights in the prediction. These techniques help to do advancement in precision of customized recommendation.

C. *Association Rule Mining*

Association rule mining is used to find interesting relationship and correlation among huge item set. Consider as an item set. An association rule mining can be represented by $A \rightarrow B$,where $A \subseteq I$, $B \subseteq I$, $A \subseteq B = \emptyset$ [6]. Association rule pull out the pattern on the basis of minimum support from database. Support: The rule ($A \rightarrow B$) holds in transaction set D with support s, where s is the percentage of transaction in D containing A U B.

V. WORKING OF PROJECT

Initially user do the login or registration to the system. Depending upon the user's interest of the product results will be recommended. For recommendation, recommendation engine will look for relation mining on rating of an item which is given by current and historic users. A dynamic feature extraction is done to find similarity between searched item and stored items. Finally a association rule mining is implemented on the basis of support of the particular item and recommendation is done. Fig 3. shows the overall working of the proposed system.

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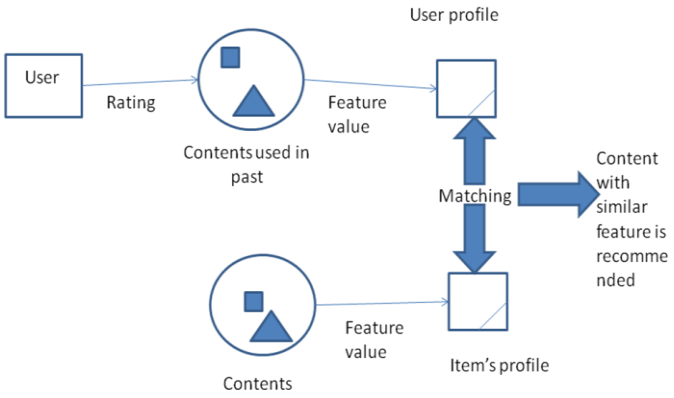

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Fig 4. Block diagram

VI. RESULT

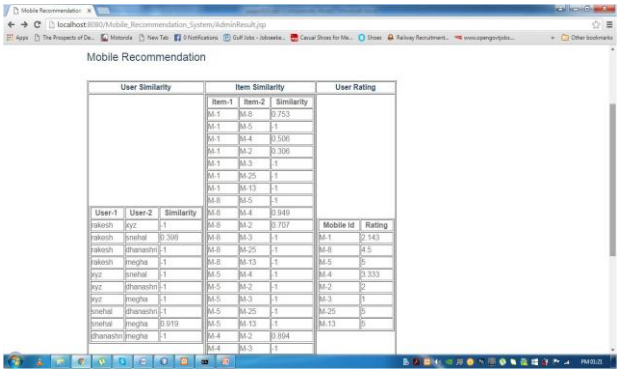

Fig 5. Result after relation mining and dynamic feature extraction

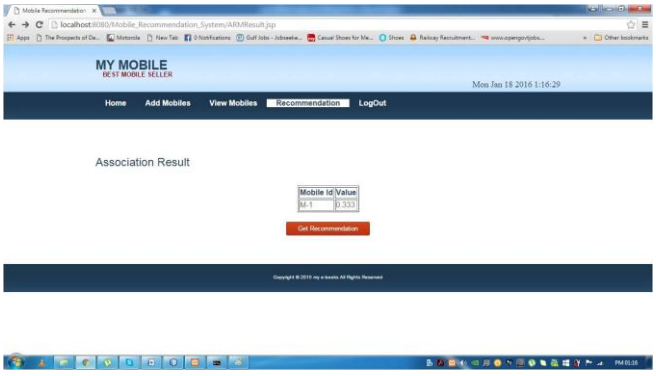

Fig 6. Result after applying association rule mining

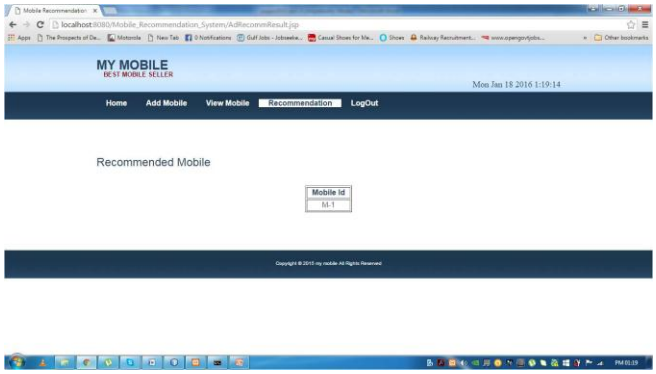

Fig 7. Recommendation given to user

VII. CONCLUSION

A trouble of storing data is increasing due to excessive growth in usage of internet. A new dynamic personalized recommendation technique is proposed for non repeating information. Rating of information is done by considering the neighboring rating with the user profile and item profile. A set of dynamic features is designed to narrate preference information. Hence the problem of infrequent data will be resolved by association rule mining.

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