Recommending the Appropriate Products for target user in E-commerce using SBT over Big rating data

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Abstract - *The internet is growing too fast and there is tremendous amount of data in internet so data mining is very necessary .Suggesting desired product items to the target user is challenging for continuous success of E-commerce. There are many recommendation systems used before like web service recommendation, Qos–aware recommendation and typicality based collaborative filtering systems but all these methods have problems such as lack of data, inaccuracy in suggesting products and prediction. In this paper we acquire ideas of collaborative filtering technique. Collaborative Filtering (abbreviated as CF) method helps to suggest product item to users. The CF suggestion method can provide good results, if the target user has similar users. Due to the lack of big rating data in E-commerce, similar friends and similar product items may not be available to the user-product purchase network, which lead to a big challenge to suggest appropriate product items to the target user.*

Key Words: Ecommerce, Recommendation system ,collaborative filtering, structural balance theory, rating item,

1. INTRODUCTION

Online marketing is one of the business models in today world. Online marketing has gained lots of attention and its competitive so the online sellers pay attention towards customers taste. It is necessary for online markets to sell maximum items and expect repeat purchase from customers for similar items online sellers should understand the factors that increase the sales growth In general, the traditional Collaborative Filtering technique gives good result, when the target user have friends having similar choice , or the target user's purchased and preferred product items own one or more similar product items. The idea behind recommendation system is to recommend item to customer which are similar to previous items rated highly by same customer. consider some of the examples in case of movies here we can recommend movies of same actor, actress, director. In case of website blogs we can recommend articles, news with similar content and similar topic. In case of people recommendation we can recommend people with many common friends. we start with user and find out the set of items user like using both explicit and implicit data. Consider set of items and set of users and look at the items to which user has rated highly and set of items user has purchased and for each item we will build user profile.

Collaborative filtering became one of the most researched techniques of recommender systems .The idea of collaborative filtering is in finding users in a community that share appreciations. If two users have same or almost same rated items in common, then they have similar tastes. Such users build a group or a so called neighbourhood. A user gets recommendations to those items that he/she hasn't rated before, but that were already positively rated by users in his/her neighbourhood. In collaborative filtering method there are two approaches they are user based and item based. In the user-based approach, the users perform the main role. If certain majority of the customers has the same taste then they join into one group. Recommendations are given to user based on evaluation of items by other users form the same group, with whom he/she shares common preferences. If the item was positively rated by the community, it will be recommended to the user. Thus in the user-based approach the items that were already rated by the user before play an important role in searching a group that shares appreciations with him. In Item-based approach referring to the fact that the taste of users remains constant or change very slightly similar items build neighbourhood based on appreciations of users. Afterwards the system generates recommendations with items in the neighbourhood that a user would prefer.

2. LITERATURE SURVEY

- Time-aware recommendation is introduced, where time is considered as an important factor for predicting product quality. [1]
- Matrix factorization technique is introduced to realize the recommendation purpose; however, if the user-product rating matrix is very sparse, the recommendation effect is not as good as expected (e.g., over fitting problem).[2]
- In CAP approach is introduced to predict missing quality of product items, which is mainly based on the clustering idea; afterwards, precise product item recommendation is realized. However, CAP requires that the user-product rating matrix is dense; and therefore, CAP is not very suitable for product item recommendation with sparse rating data.[6]
- In CF-based recommendation approach (named CF+QoS) is proposed, which recommends product items

to the target user by considering the product items liked by user target's similar friends. [4]

- In a bi-directional recommendation approach named WSRec is put forward, which integrates user-based CF and item-based CF together, for high-quality recommendation results. While the recommendation quality of WSRec is low, when user target does not have similar friends and user target's preferred product items do not have similar product items simultaneously.[4]

- In a Monte Carlo algorithm named MCCP is brought forth to measure different users' personalized preferences towards different product items. According to MCCP, user target's similar friends can be found by trust propagation.[3]

3. PROPOSED SYSTEM

- We are proposing Structural Balance Theory-based Recommendation (i.e., SBT-Rec) approach over big rating data in E-commerce. where we look for "similar friends" or "similar product items" directly, in SBT-Rec, we first look for the target user's dissimilar "enemy" and furthermore, we look for the "possible friends" of E-commerce target user, according to "enemy's enemy is a friend" rule of Structural Balance Theory afterwards, the product items preferred by the target users "possible friends" are regarded as the recommendation candidates for target user; likewise, for the product items preferred by target user, we first determine their "possibly similar product items" based on "enemy's enemy is a friend" rule of Structural Balance Theory, and regard them as the recommendation candidates for target user. Fig.1 is the proposed architecture for recommendation system. The recommendation system extracts rating data and Process them to suggest new item to the user and every user should rate a product and can share reviews in the form of text comment this helps in improving the quality of the product and increase a sales. We are using User-based CF recommendation considering Structural Balance Theory. Determine *new users* "possible friends" through "enemy's enemy is a friend" and "enemy's friend is an enemy" rules, and then select the product items liked by "possible friends" of *newuser* as the recommendation candidates
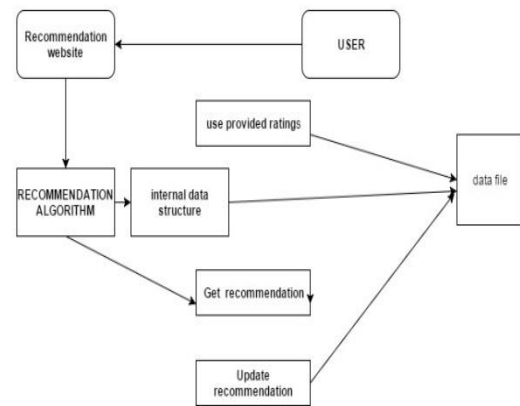

Fig 1.System Architecture

A. SYSTEM MODEL

The entities mainly involved here are,

1. Data collection – huge data will be stored in database, when the user requests for item, the data need to be cleaned and normalized.

2. Recommendation module –based on the users rating the recommendation algorithm will suggest the items to the target user.

3. User interface –User will search, view and select the item.

B. Working Procedure of the proposed system

The user need to register and then login to the web application. After successful registration user profile will be created and the user can request for item and also specify there requirement and this data is stored in database now the data is sent to recommendation module and here the past behaviour of the user is Processed and is compared with his friends data , ratings and a new item is suggested to the target user. once the user is satisfied by the item they can rate the item and this is again stored in database for other users recommendation .once after recommendation Post processing of data is done. As shown in Fig 2. Now the user can search for items and view the choices suggested to them and select one among and rate a product.
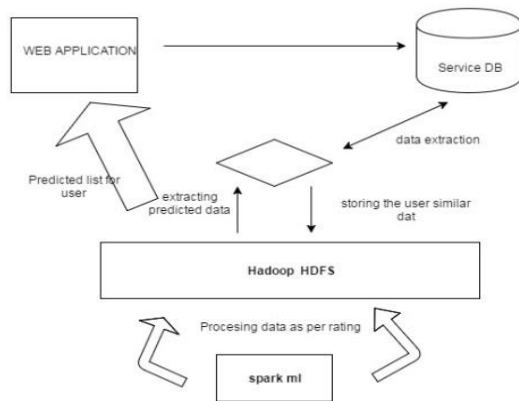
Fig 2. Recommendation system design

3. CONCLUSIONS

According to the big rating data in E-commerce, a novel product item recommendation approach is brought forth in this paper, for dealing with the specific recommendation situations when the target user has no similar friends and the product items preferred by target user have no similar product items. This recommendation system makes full use of the valuable structural balance information hidden in user-product purchase network for precise recommendation.

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