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AN EFFICIENT SBT-BASED E-COMMERCE RECOMMENDATION WITH BIG DATA

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ABSTRACT:

The internet is growing rapidly and huge amount of data is collected in it. So data mining is very necessary. Recommending appropriate product items to the target user is challenging for continuous success of e-commerce. E-commerce is a successful platform for the purpose of buying and selling of any goods or items through online. Whereas there are different methods can be used currently to provide efficient service to the users. The main reason for the success of e-commerce is that the recommendation of appropriate or similar products to the users. Collaborative filtering is a method usually used to fabricate customized suggestions on the web. It is based on the idea that people who agreed in their evaluation of certain items in the past are likely to agree again in the future. Be that as it may, commonplace cf techniques likewise treat every client and article and are not ready to recognize the variety of client interests in various areas. This violates the way that client interests dependably concentrate on particular areas and clients who have comparative tastes in a space may have different tastes in another area. Considering the challenge, we set forward a structural balance theory-based recommendation (i.e., sbt-rec) approach. In the concrete, (i) user-based recommendation: we search for target user's "enemy" (i.e., the users having opposite preference with target user); afterward, we determine target user's "possible friends", as indicated by's "enemy is a friend" rule of structural balance theory, and recommend the product items preferred by "possible friends" of target user to the target user. (ii) likewise, for the product items purchased and preferred by the target user, we determine their "potentially similar product items" based on structural balance theory and recommend them to the target user. Finally, the feasibility of sbt-rec is validated, through a set of experiments deployed on the movielens-1m dataset.

KEYWORDS: E-commerce, Product recommendation, similar friend, dissimilar enemy, big rating data, Structural, Balance Theory.

I. INTRODUCTION

Online marketing is one of the business models in today world. Online marketing has gained lots of attention and it's 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 is 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, and 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 neighborhood.

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 neighborhood. 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 neighborhood based on appreciations of users. Afterwards the system generates recommendations with items in the neighborhood that a user would prefer.

II. LITERATURE SURVEY

[1] Develops a predicting model according to some special characteristics of the C2C E-commerce. This model only uses the information about frequencies and timings of transactions. Due to collection of a large amount of data, the growth of cost would be faster to make enterprise unprepared. Risk is high. As the large amount of data would inevitably involve the personal privacy.

In [2] an approach that creates the Poisson Lognormal Distribution (PLN) for modeling purchase frequency counts and predicting future purchases based on past performance. The PLN model does not have direct calculation from its parameters .Hence we apply numerical estimation based on random draws and average the results to estimate the frequency distribution.

[3] A new similarity method is proposed by improving the traditional similarity function with the weight of items. When putting the similarity of items and the factor of time as the weight of the target item. Method is not accurate, because the weight about item is not simply given. Need to find out the

[4] Collaborative Filtering (CF) is a popular technology for recommender systems. CF methods suffer from such problems as data sparsity and big-error in predictions. Computation is more as we have to estimate the sensitivity of different number of user groups.

The cost of these preprocessing procedures depends on the particular clustering method used and can be higher 5] The tremendous growth in the amount of available information and the number of visitors to Web sites in recent years poses some key challenges for recommender systems. In this paper different item-based recommendation generation algorithms are analyzed. Different techniques for computing item-item similarities are analyzed.

III. EXSTING SYSTEM

Topic in E-commerce domain. Through analyzing the existing big user-product rating data, we can recognize user's interest and preference precisely and further recommend appropriate product items to the target user, so as to improve the online product sales significantly. Many people have investigated this recommendation problem and put forward various solutions. In time-aware recommendation is introduced, where time is considered as an important factor for predicting product quality. However, work only discusses the objective quality prediction, without considering the subjective preferences of different users. Matrix factorization technique is introduced in 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).

In FIG SHOWS 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. In a 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

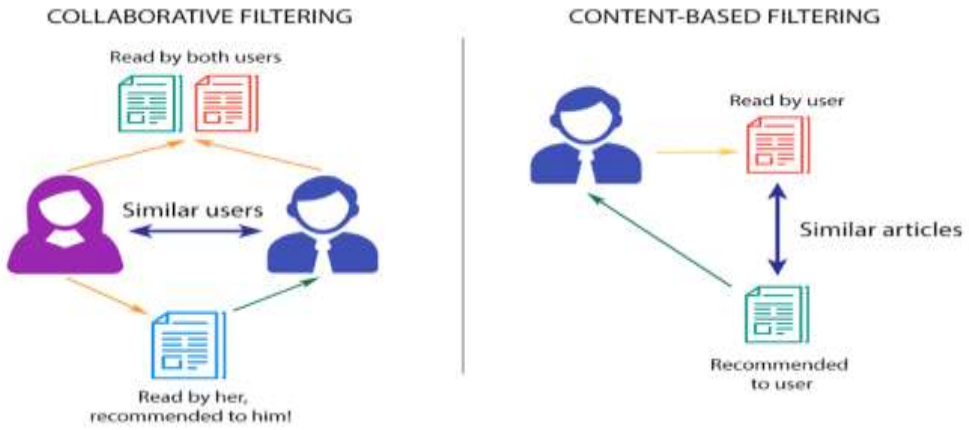

FIG 1: COLLABORATIVE FILTERING

. However, in a bidirectional 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. In a Monte Carlo algorithm named MCCP is brought forth to measure different user's personalized preferences towards different product items. According to MCCP, user target's similar friends can be found by trust propagation;

IV. PROPOSED SYSTEM

Considering the above challenge, we put forward a Structural Balance Theory-based Recommendation (i.e., SBTRec) approach over big rating data in E-commerce. Different from the traditional CF-based recommendation approaches where we look for "similar friends" or "similar product items" directly, in SBT-Rec, we first look for the target user's dissimilar "enemy" (i.e., antonym of "friend"), and furthermore, we look for the "possible friends "of Ecommerce target user, according to "enemy's enemy is a friend" rule of Structural Balance Theory. Afterwards the merchandise things most popular by the target user's "possible friends" square measure considered the advice candidates for target user; likewise, for the product items preferred by target user, we 1st confirm their "possibility similar product items" supported "enemy's enemy could be a friend" rule of Structural Balance Theory, and regard them because the recommendation candidates for target user.

Algorithm:

Input: User rating matrix RM and an active user au.
Output: recommended items set of size N for the active user au
K: Number of users in the neighborhood Nau (k) of the active user au.
N: Number of items recommended to the active user au. Icau: Items which have not yet rated by the active user au.
CNau: Candidate neighbours of the active user au.
Pau j : Rating prediction of items i for the active user au.
1: CN au :U, then compute similarity between active user au and each user u CNau:
2: for each item i Icau do:
3: Find the k most similar users in CNau to comprise neighborhood Nau(k):

4: Predicate rating score pau j for item I by neighborhood Nau(k):
5: end for
6: Recommend to the active user au the top N items having the highest pau,j:

SYSTEM ARCHTECTURE

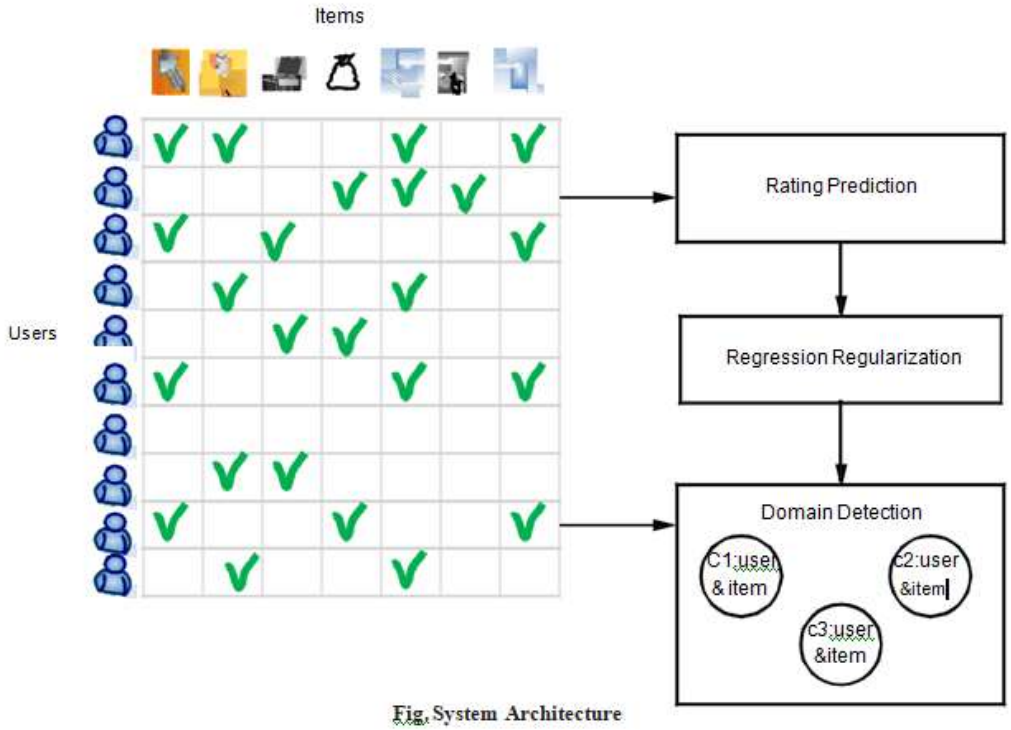

Fig. System Architecture

In FIG 2 , propose a new structural balance theory-based recommendation algorithm (SBT-Rec) to perform classifications prediction by simultaneously analyzing the subset of user elements, in which a subset of user elements is considered as a domain consisting of a subset of elements with similar attributes and a subset of users who have interests in these elements. Enemy's enemy is a friend" rule of Structural Balance Theory Algorithm. The proposed framework of SBT-Rec includes three components: a matrix factorization factor model for observed rating reconstruction, a bioreactor model for the analysis of subgroups of user elements, and two regular terms to link the two before components into a unified formulation.

The user needs 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 behavior 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. Now the user can search for items and view the choices suggested to them and select one among and rate a product.

CONCLUSIONS

In this project , to handle specific recommendation situations when the target user does not have Friends and similar product items preferred by the target user do not have similar products. On the one hand, SBT - fully exploits the valuable information on the structural balance hidden in the network of purchase of the user's products precise recommendation, considering that the rule "the enemy's enemy is a friend" and the rule of "friend of the enemy is an enemy" in Theory of structural theory; On the other hand, SBT-Rec integrates both the user-based CF recommendation and the CF recommendation of imputation, in order to improve recovery of the recommendation. Structural Balanced Theory makes use of Structural Balance Information which is present in user-product purchase network for

recommendation by considering "enemy of an enemy is friend" concept.

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