

Review on “Typicality-Based Collaborative Filtering Recommendation using Sub Clustering for Online Shopping”

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Abstract -Collaborative filtering is a convenient mechanism used in recommender system, which is used to find the similar items in a group. The same favour items can be identified by using the collaborative filtering based on items and the users. However there are some drawbacks in premature filtering techniques which lead to less accuracy, data sparsity and prediction errors. In this work take advantage of proposal of object typicality from cognitive psychology moreover suggests a typicality-based collaborative filtering recommendation method named as Tyco. A distinguishing characteristic of typicality-based collaborative filtering is that it finds neighbours of users on the basis of user typicality degrees in user groups. Selection of neighbours regarding users by means of measuring users’ similarity on the basis of their typicality degrees is a separate feature, which distinguishes this approach from earlier collaborative filtering methods. It exceeds many CF recommendation methods on recommendation accuracy on any type of datasets. In proposed method main approach is to Sub Clusters the all items into several item groups by applying such as nearest neighboring algorithm. This helps users to search items more easily and to increase the accuracy and quality of the recommendation.

Keyword – collaborative filtering, clustering, accuracy, recommendation

1. Introduction-

Collaborative filtering (CF) is an essential and popular technology for recommender systems. These methods are categorized into user-based CF and item-based CF. The simple idea of user-based CF approach is to find out a set of users who have same favour patterns to a given user (i.e. “neighbors” of the user) and recommend to the user those items that another users in the same set like, while the item-based CF approach aims to provide a user with the recommendation on an item based on other items with high correlations (i.e., “neighbors” of the item).

In reality, people may like to group items into categories, and for all categories there is a corresponding group of people who like items in the category. Cognitive psychologists find out that objects (items) have different typicality degrees in categories in real life but these collaborative filtering methods have facing some problems like-

Data Sparsity: The data sparsity problem is the difficulty in having too few ratings, and hence, it is difficult to find out correlations between users and items [1].

Recommendation Accuracy: People require recommender systems to predict users’ preferences or ratings as accurately as possible. Since, some predictions provided by current systems may be very different from the actual preferences or ratings provided by users [2]. These inaccurate predictions, especially the big error Predictions, may reduce the trust of users based on the recommender system.

Along with the above-mentioned issues, it is clear that a good process to find “neighbors” of users is very important. A better way to choose “neighbors” of users or items for collaborative filtering can easier and better handling of the challenges. In reality, people may like to group items into categories, and for each category there is a relevant group of people who like items in the category.

In this work the proposal of object typicality from cognitive psychology moreover suggest a typicality-based collaborative filtering recommendation method named as Tyco is used. The mechanism of typicality-based CF recommendation is as follows: First, all items are clustered into many item groups. For example, cluster all movies into “war movies,” “romance movies,” and so on. Second, forming a user group corresponding to all item group (i.e., a set of users who like items of a particular item group), with all users having distinct typicality degrees in all of the user groups. Third, build a user-typicality matrix and calculated users’ similarities dependent on users’ typicality degrees in all user groups so as to select a group of “neighbors” of each user. Then, here this method predicts the unknown rating of a user on an item depend on the ratings of “neighbors” of the user on item. Ratings from the user is considered and maintained as group from 1 to 5 and recommended for other users. With respect to the ratings here use neighbors’ for recommending typicality items. Cluster assist to make recommendations easy way.

1.1 Recommender Systems:

There have been many works on recommender systems and most of these works concentrate on developing new methods of recommending items to user’s. The objective of recommender systems is to help users to find out items

which they would be interested in. Items can be any type, like movies, jokes, restaurants, books, news articles. Currently, recommendation methods are mainly categorized into collaborative filtering (CF), content based (CB), hybrid based (HB) method.

1.1.1 Collaborative based recommendation:

The main technique in recommendation system is collaborative filtering methods that search a group of people who share the same interest with you. There are two kinds of CF methods, called user-based CF approach and item-based CF approach.

The basic idea of user-based CF approach is to supply recommendation of an item for a user dependent the viewpoint of other like-minded users on that item. The user-based CF approach at first finds out a set of nearest "neighbors" (Similar users) for each user, who allocate similar interests. Then, the rating of a user on an unrated item is predicted based on ratings provide by the user's "neighbors" on the item.

The base idea of item-based CF method is to provide a user with the recommendation of an item depend on the other items with high correlations. Unlike the user-based CF, the item-based CF method first finds out a set of nearest

"neighbors" (similar items) for each item. The item-based CF recommender systems efforts to predict a user's rating on an item based on the ratings given by the user on the neighbors of the target item.

1.2 Clustering:

Clustering is the action of grouping data objects into a set of disjoint classes, called clusters. There are x clusters in the cluster set, all cluster has many items which have similar ratings. A cluster center of each cluster is the mean rating value of each item in the cluster. When a new item is added in, similitude between the item and other cluster centers will be calculated. The cluster center will be recalculated. Else a new cluster center will be created with the rating score of the item the cluster center of the new cluster.

2. Related Work

2.1 Applying Associative Retrieval Techniques

Here, propose to deal with this sparsity problem by applying an associative retrieval framework and correlated spreading activation algorithms to check out transitive associations among consumers through their earlier transactions and feedback. Such transitive associations are a precious source of information to help infer consumer interests and can be researched to deal with the sparsity problem.

2.2 Toward the Next Generation of Recommender Systems

Here, reviewed different limitations of the current recommendation methods and analyze possible extensions that can give better recommendation capabilities [2].

These extensions include, among others, the improved modeling of users and items, incorporation of the contextual details into the recommendation process, support for multi criteria ratings, and provision of a more pliable and less intrusive recommendation process.

2.3 Content-Based Book Recommending Using Learning for Text Categorization

This approach has the good of being able to recommend previously unrated items to users with individual interests and to provide simplification for its recommendations. Describe a content-based book recommending systems that take advantage of information extraction and machine-learning algorithm for text categorization.

2.4 Typicality In Big Datasets

Rifqi [10] study to provide work on object typicality in big datasets and it was also extended by Lesot et al[5]. Based on the similarity of an object, the items form a group for each item. Au Yeung and Leung investigated this research with the use of ontologies that measures the property vector and prototype vector of this concept from this study, we derive that no study discussed with the concept of Collaborative Filtering.

2.5 Dimensionality Of Object

The degree of similarity is attributed as the appeal level of the items modeled in concepts. Under the object of the theory the common dimension that is related by each of the objects is considered for describing the novel concepts [4]. In model view of concepts, a procedure is symbolized by the common dimension used by all objects are grouped as the concepts. The common dimension information includes both the relevant and irrelevant dimension of the objects [7]. The concept model imparts the general dimensionality of all objects which is efficiently used for prescribing the similarity of the instances.

3. Conclusion:

In this, the collaborative filtering recommendation from a new perspective is proposed and a novel typicality-based collaborative filtering recommendation approach is presented. In this, user is represented by a user typicality vector that can indicate user's preference on each kind of items. Its distinct feature is that it selects "neighbors" of users by count users similarity based on their typicality degrees substituted of co-rated items by users.

Such a feature can overcome several restrictions of traditional collaborative filtering methods. It is the first task that applies typicality for collaborative filtering. There are some pre-processing procedures, such as constructing user prototype by sub clustering and measuring user typicality in user groups. The recommendation system using sub clustering based CF approach and presents a CF technique for enhanced recommendation system based on object typicality. If typicality degrees of users and items in corresponding user and item groups are higher, the recommendation scores are higher.

4. References

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