

An implicit rating based recommendation system: considering customer visiting sequence

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ABSTRACT

It is common that managers in shopping malls try to increase their competitiveness and maximize their profit through the use of member cards to collect purchase information of customers. With this information, shopping mall managers can quickly and accurately recommend the information of stores or products which customer may be interesting. However, most traditional recommendation system assumes that preference ratings of customers are available which is hard to be obtained in shopping mall environment. To solve this problem, a recommendation system based on customer visiting sequence is proposed. First, to cluster the customers precisely, this study develops a similarity evaluation method which considers the order of visited stores, staying time of visited stores, and staying time trend of same visited stores between two customers. To solve the problem of lacking explicit rating, the implicit ratings for stores are generated by considering the staying time and visiting frequency of the store. To deal with dynamic and huge data, the incremental SVD algorithm is applied to predict unknown ratings. With this algorithm, the recommendation system doesn't need to calculate the rating matrix repeatedly with SVD algorithm whenever a new customer is added into the system. Finally, the store with highest predict rating will be recommended to the customers. The experiment results show that considering the similarity of staying time and staying time trend of same visited stores makes the recommendation result more accurate. It also shows that different number of clusters and different number of recommended stores will affect the accuracy of prediction.