A Case Study for User Rating Prediction on Automobile Recommendation System Using Mapreduce

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Abstract : Recommender systems have been widely used in contemporary industry, and plenty of work has been done in this field to help users to identify items of interest. Collaborative Filtering (CF, for short) algorithm is an important technology in recommender systems. However, less work has been done in automobile recommendation system with the sharp increase of the amount of automobiles. What's more, the computational speed is a major weakness for collaborative filtering technology. Therefore, using MapReduce framework to optimize the CF algorithm is a vital solution to this performance problem. In this paper, we present a recommendation of the users' comment on industrial automobiles with various properties based on real world industrial datasets of user-automobile comment data collection, and provide recommendation for automobile providers and help them predict users' comment on automobiles with new-coming property. Firstly, we solve the sparseness of matrix using previous construction of score matrix. Secondly, we solve the data normalization problem by removing dimensional effects from the raw data of automobiles, where different dimensions of automobile properties bring great error to the calculation of CF. Finally, we use the MapReduce framework to optimize the CF algorithm, and the computational speed has been improved times. UV decomposition used in this paper is an often used matrix factorization technology in CF algorithm, without calculating the interpolation weight of neighbors, which will be more convenient in industry.

Keywords : collaborative filtering, recommendation, data normalization, mapreduce

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