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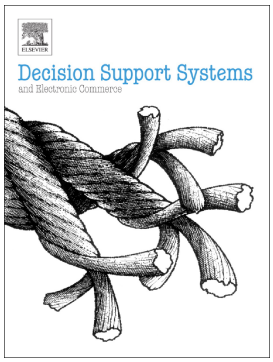

A cross-domain recommender system with consistent information transfer

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A cross-domain recommender system with consistent information transfer

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Abstract

Recommender systems provide users with personalized online product and service recommendations and are a ubiquitous part of today's online entertainment smorgasbord. However, many suffer from cold-start problems due to a lack of sufficient preference data, and this is hindering their development. Cross-domain recommender systems have been proposed as one possible solution. These systems transfer knowledge from one domain that has adequate preference information to another domain that does not. The outlook for cross-domain recommendation is promising, but existing methods cannot ensure the knowledge extracted from the source domain is consistent with the target domain, which may impact the accuracy of the recommendations. To address this challenging issue, we propose a cross-domain recommender system with consistent information transfer (CIT). Knowledge consistency is based on user and item latent groups, and domain adaptation techniques are used to map and adjust these groups in both domains to maintain consistency during the transfer learning process. Experiments were conducted on five real-world datasets in three categories: movies, books, and music. The results for nine cross-domain recommendation tasks show that CIT outperforms five benchmarks and increases the accuracy of recommendations in the target domain, especially with sparse data. Practically, our proposed method is applied into a telecom product recommender system and a business partner recommender system (Smart BizSeeker) to enhance personalized decision making for both businesses and individual customers.

Keywords: Recommender systems, cross-domain recommender system, knowledge transfer, collaborative filtering

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