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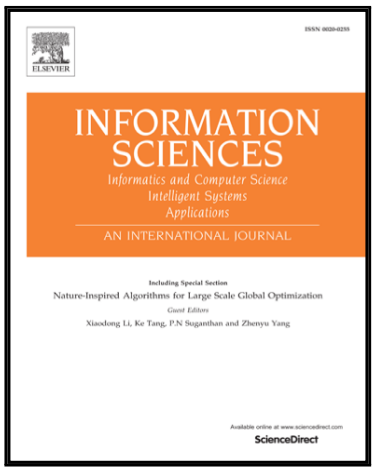

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A General and Effective Diffusion-based Recommendation Scheme on Coupled Social Networks

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Abstract

Online social networks and recommender systems are two of the most common internet applications, but due to their different nature, they are seldom considered under a single framework. Nevertheless we often rely on friends for advices before purchasing products or services. In other words, information embedded in the online social networks may be relevant to recommender systems and the combination of the two systems may benefit each other. In this paper, we introduce a simple recommendation algorithm based on a diffusion process which integrates the networks of friends and user-product relations. Our results show that social networks improve the accuracy of recommendation for inactive users, and increase the diversity of the recommended products for active users. In addition, our approach outperforms conventional popularity-based algorithms and provides personalized recommendations in the cold-start period. These results shed light on a new design of recommendation algorithms in integrating social information and recommendations.

Keywords: social information, cold start, diffusion-based recommendation, mass diffusion

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