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Lifang Ren, Wenjian Wang

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An SVM-Based Collaborative Filtering Approach for Top-N Web Services Recommendation

Lifang Ren[a,b], Wenjian Wang[a,*]

[a]*School of Computer and Information Technology, Shanxi University, Taiyuan 030006, PR China*

[b]*School of Applied Mathematics, Shanxi University of Finance and Economics, Taiyuan 030006, PR China*

Abstract

With the development of service-oriented computing (SOC) and cloud computing, Web service has become an important carrier for IT resources delivery. Nowadays, the same function can be provided by numerous services, it becomes difficult for users to find their desired services. So it is necessary to design feasible recommendation strategies to provide users with their expected services. Most existing methods attempt to recommend services according to accurate predictions for the rating or the quality of service (QoS) values. However, because the Internet is dynamic and user ratings are generally subjective, it is almost impossible to accurately predict the QoS or rating. Furthermore, accurate prediction is generally time-consuming. This paper proposes a support vector machine (SVM) based collaborative filtering (CF) service recommendation approach, namely SVMCF4SR. For a user, SVM can acquire a separating hyperplane from the historical rating data, which can filter out the services that may not be preferred by the user. Moreover, the preference degree of a user can be measured directly with the distance between the point representing the service and the separating hyperplane. Thus, according to the preference degree, top-N services can be recommended without the need of prediction for rating or QoS. Both the theory and the experiments show that SVMCF4SR has comparatively higher recommendation efficiency and quality.

*Corresponding author.

Email addresses: renlf@sxufe.edu.cn (Lifang Ren), wjwang@sxu.edu.cn (Wenjian Wang)