

基于改进 FP-growth 的用户兴趣推荐算法的设计与实现

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摘 要：针对一类只有用户浏览频次数据且没有项目评分的推荐系统，提出一种基于 FP-Growth（频繁模式增长）改进的关联规则挖掘算法，实现用户兴趣推荐。针对传统的 FP-growth 进行如下改进：首先，归一化用户浏览频率，以反映用户的兴趣，并添加遗忘因子来跟踪用户兴趣迁移。其次，采用动态支持度过滤非兴趣项目，以提高推荐结果的准确性。此外，在 FP-tree 中引入项目活跃度作为冷启动问题的可行方案。最后收集 762 个用户在企业操作系统（EOS）区块链中访问智能合约的记录来测试改进的算法。实验结果表明，该算法在用户兴趣推荐方面表现令人满意。

关键词：推荐系统；FP-growth；关联规则挖掘；冷启动

Design and implementation of a user interest recommender

algorithm based on improved FP-growth

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Abstract: In this paper, a novel algorithm of mining association rules based on improved FP-growth which focuses on precise user interest recommendation, is proposed for the system without user ratings but a large amount of browsing data. The improvements based on traditional FP-growth can be particularized in the following: First of all, the frequency of user browsing is normalized and multiplied by forgetting function in order to reflect the current interest of users. Besides, dynamic support is adopted to filter out non-interest items and enhance the recommending accuracy. Moreover, activity of item (AOI) is employed as a feasible scheme in the FP-tree to solve the cold start problem. Then, the improved algorithm is verified by the browsing data of the smart contracts in the Enterprise Operation System (EOS) blockchain. The experimental results show that the improved algorithm performs satisfactory in the user interest recommendation.

Key words: recommender system; FP-growth; association rule mining; cold start

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