

基于 n 序访问解析逻辑的协同过滤冷启动消除方法

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Cold-start eliminating method of collaborative filtering based on n -sequence access analytic logic

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摘要 协同过滤是目前个性化推荐系统中广泛使用和最成功的推荐算法,但在用户评分极端稀疏的情况下将面临冷启动问题,具体包括新用户问题和新项目问题.针对新用户问题,提出了一种基于 n 序访问解析逻辑的冷启动消除方法,首先通过Web日志来获取用户访问项序,进而定义了 n 序访问解析逻辑将其分解为用户访问子序集;在此基础上设计了用户访问项序的相似性计算方法来搜寻新用户的最近邻集合,进而提出了改进最频繁项提取算法IMIEA (improved most-frequent items extracting algorithm)来生成面向新用户的top- N 推荐.实验结果表明,本文提出的新方法能够有效实现面向新用户的个性化推荐,消除了协同过滤冷启动中的新用户问题.

关键词: 推荐系统 协同过滤 冷启动 n 序访问解析逻辑

Abstract: Collaborative filtering is the most successful and widely used recommendation technology in personalized recommender systems. However, collaborative filtering faces cold-start problem, which includes new user problem and new item problem, when user ratings are extremely sparse. To solve the new user problem, a cold-start eliminating method was proposed. Firstly, the items access by user was obtained via web logs; secondly, n -sequence access analytic logic was defined to decompose user's access item sequence to user access sub-sequence set; thirdly, a similarity measure for user access item sequence was proposed to search target user's nearest neighborhood; fourthly, improved most-frequent item extracting algorithm, which called IMIEA, was proposed to obtain the top- N recommendation for the new user. The experimental results show that the proposed method can efficiently eliminate new user problem and obtain better top- N recommendation quality.

Key words: recommender systems collaborative filtering cold-start n -sequence access analytic logic



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