基于混合蛙跳联合聚类的协同过滤算法

喻金平，张 勇，廖列法，梅宏标
（江西理工大学 信息工程学院，江西 赣州 341000）

摘 要：针对传统协同过滤推荐算法稀疏性、冷启动、推荐质量不高等缺陷，提出一种基于混合蛙跳模糊聚类的协同过滤推荐算法.该算法先对原始评分矩阵用户和项目进行联合聚类，利用联合聚类结果对评分矩阵进行填充，再对混合蛙跳算法进行改进，利用改进后的算法快速地全局寻优能力得到项目最近邻居集合，最后通过计算预测评分生成推荐结果.仿真结果表明，该算法有效缓解对评分数据稀疏性的不良影响，同时在推荐精度上有明显改善.

关键词：推荐系统；协同过滤；联合聚类；数据填充；混合蛙跳
中图分类号：TP311 **文献标识码**：A **文章编号**：1000－7180(2016)01－0065－07

Collaborative Filtering Recommendation Based on Shuffled Frog Leaping Fuzzy Co-Clustering Algorithm

YU Jin-ping, ZHANG Yong, LIAO Lie-fa, MEI Hong-biao
(School of Information Engineering, Jiangxi University of Science & Technology, Ganzhou 341000, China)

Abstract: In order to overcome the disadvantages of the traditional collaborative filtering recommendation algorithm, such as sparsity, cold start and low recommend quality, collaborative filtering recommendation based on shuffled frog leaping fuzzy co-clustering algorithm was proposed. First, co-clustering algorithm is used to simultaneously obtain user and item neighborhoods for the original score matrix, and then the results of co-clustering is used on rating matrix. Improve the shuffled frog leaping fuzzy, and the improved-shuffled frog leaping algorithm is used based on its fast global optimization ability to get the nearest neighbor set. Lastly, the final rating prediction is obtained. The experimental result show that filtering recommendation based on shuffled frog leaping fuzzy co-clustering algorithm will become more accurate, which can effectively relieve the impact of sparse data and improve the quality of recommendation.

Key words: recommendation systems; collaborate filtering; co-clustering; data padding; shuffled frog leaping fuzzy

作者简介：

喻金平 男，(1964-)，教授. 研究方向为数据挖掘.

张 勇(通讯作者) 男，(1991-)，硕士. 研究方向为数据挖掘、群体智能. E-mail：penny_1399@163.com.

廖列法 男，(1975-)，博士，教授. 研究方向为组织学习、电子商务、推荐系统.

梅宏标 男，(1976-)，博士，副教授. 研究方向为大规模仿真系统工程.