

# 结合三部图综合扩散的 Slope One 推荐算法

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**摘要:** Slope One 算法在评分预测时没有考虑项目之间的推荐关系, 导致推荐的准确性和多样性不高, 故提出了一种结合三部图综合扩散的 Slope One 算法. 首先在三部图中加入了项目类别节点, 然后利用三部图综合扩散计算项目之间的推荐度, 最后利用得到的推荐度结合 Slope One 进行评分预测, 由于三部图综合扩散算法同时经过用户节点和项目类别节点进行扩散, 并且计算得到的项目之间的推荐度是非对称的, 更能体现用户兴趣. 本文在 MovieLens 数据集上利用 4 种评价指标进行 5-折交叉验证. 实验结果表明: 算法有效的提高了预测的准确度和多样性.

**关键词:** 推荐系统; 三部图; slope one; 综合扩散

## Slope One Recommendation Algorithm Through Combining Integrated Diffusion on Tripartite Graph

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**Abstract:** The Slope One algorithm does not consider the recommended level between items when predict ratings, so the accuracy and diversity are not high. Therefore, a Slope One algorithm through combining integrated diffusion on tripartite graph is proposed. The idea is to add the genre nodes into the tripartite graph, and calculate the Slope One prediction ratings with the recommended level that calculated by the tripartite graph integrated diffusion algorithm. Since the diffusion through user nodes and item nodes, and the recommended level between the items is asymmetric, so it is better to reflect the user interest. The proposed method was tested by 5-fold cross-validation with four metrics, and the experiments on the MovieLens show that our approach achieves great improvement of prediction accuracy and diversity.

**Key words:** recommender system; tripartite graph; slope one; integrated diffusion

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