

电影推荐系统的设计与实现

Design and Implementation of Film Recommendation System

摘 要

目前，在所提出的推荐技术，协同过滤算法是众所周知的，最流行且最成功的。然而，传统的协同过滤算法存在一些问题，如稀疏性，可扩展性和准确性。基于协同过滤算法的推荐算法是非常依赖于用户项目分数的。只有当用户项目评分表产生时，才能实现推荐结果。但对于一个新项目，当没有人来评估项目，该项目的分数将被填充。因此这项目变得乏善可陈，就不会被推荐。这个问题导致了新的项目难以启动，这是著名的冷启动问题，为解决这一问题，本文提出了一种基于协同过滤和内容预测的改进的推荐算法。当它填充用户项目分数矩阵时，该算法简单地分析了项目的相关内容。然后利用相关内容对项目进行评分预测，并通过协同过滤算法协助计算。

为了解决协同过滤推荐系统在面对新项目和一些稀疏数据时的“冷启动”问题，提出了一种结合稀疏矩阵填充方法和协同过滤算法的算法。该算法提高了用户或项目相似度计算的准确性。当它填充稀疏的用户-项目得分矩阵时，它提前预测要填充的项目。该算法实现了准确的虚拟评分，并填写了虚拟用户-项目评分表。然后算法基于该分数形式进行预测。我们在电影数据集上进行了实验。实验结果表明，该算法能有效提高评价预测的准确性。该算法在一定程度上解决了“冷启动”问题。

关键词 推荐系统 登录 协同过滤

Abstract

With rapid development of e-commerce, the massive Internet users produce massive data. The problems confronted by the Internet users change from how to find more information to how to find more effective information. Conventional information searching methods are hard to satisfy the demand of different users. Because the difference among the users is not considered, the searching system returns the same results for all the users. But in fact different users will focus on different information to be searched, even if the same keyword is used. Against this background, in order to satisfy different users' different demands, the personalized recommendation with different contents for the different users becomes the new development direction for the e-commerce and information provider. The personalized recommendation methods based on recommendation algorithms become a hot research topic.

Currently, among the proposed recommendation technologies, the collaborative filtering algorithm is well known to be the most popular and successful method. However, there are problems in the conventional collaborative filtering algorithm, such as sparsity, expansibility, cold start and accuracy. The recommendation algorithm based on collaborative filtering is very dependent on the user-item scores. Recommendation results can be achieved only if the user-item scores are produced.

But for a new item, when there is nobody to evaluate the item, this item's scores will be filled by the means. Thus this item becomes unimpressive and it will be impossible to be recommended. This problem leads to the new item being hard to be started, which is the famous cold start

problem order to solve the problem, this paper proposes an improved recommendation algorithm based on collaborative filtering and content prediction. This algorithm simply analyzes the item's relative contents when it fills the users-item scores matrix.

Key words: Recommendation system Collaborative filtering Login

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