

基于移动用户上下文相似度的协同过滤推荐算法

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A Collaborative Filtering Recommendation Algorithm Based on Context Similarity for Mobile Users

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摘要

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摘要 该文面向移动通信网络领域的个性化服务推荐问题, 通过将移动用户上下文信息引入协同过滤推荐过程, 提出一种基于移动用户上下文相似度的改进协同过滤推荐算法。该算法首先计算基于移动用户的上下文相似度, 以构造目标用户当前上下文的相似上下文集合, 然后采用上下文预过滤推荐方法对“移动用户-移动服务-上下文”3维模型进行降维得到“移动用户-移动服务”2维模型, 最后结合传统2维协同过滤算法进行偏好预测和推荐。仿真数据集和公开数据集实验表明, 该算法能够用于移动网络服务环境下的用户偏好预测, 并且与传统协同过滤相比具有更高的推荐精确度。

关键词: 移动网络 用户上下文 相似度计算 协同过滤

Abstract: Towards the problem of personalized services recommendation in mobile telecommunication network, a collaborative filtering algorithm based on context similarity for mobile users is proposed by incorporating mobile users' context information into collaborative filtering recommendation process. The algorithm calculates firstly user-based context similarities to construct a set of similar contexts related to the current context of the active user. Then it reduces the “mobile user-mobile service-context” 3D model to the “mobile user-mobile service” 2D model by using context pre-filtering recommendation method. Finally it predicts the unknown user preferences and generates recommendations based on the traditional 2D Collaborative Filtering (CF) algorithm. Experimental results indicate that this algorithm can be applied to predict user preferences in mobile network service environment and achieve better recommendation accuracy than the traditional CF algorithm.

Keywords: Mobile network User context Similarity measure Collaborative Filtering (CF)

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