Accepted Manuscript

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PII: S0378-4371(17)30039-0
DOI: http://dx.doi.org/10.1016/j.physa.2017.01.042
Reference: PHYSA 17935

To appear in: *Physica A*

Received date: 11 March 2016
Revised date: 22 December 2016

Please cite this article as: W.-J. Li, Q. Dong, Y.-B. Shi, Y. Fu, J.-L. He, Effect of recent popularity on heat-conduction based recommendation models, *Physica A* (2017), http://dx.doi.org/10.1016/j.physa.2017.01.042

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ACCEPTED MANUSCRIPT

Effect of recent popularity on heat-conduction based recommendation models

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Abstract

Accuracy and diversity are two important measures in evaluating the performance of recommender systems. It has been demonstrated that the recommendation model inspired by the heat conduction process has high diversity yet low accuracy. Many variants have been introduced to improve the accuracy while keeping high diversity, most of which regard the current node-degree of an item as its popularity. However in this way, a few outdated items of large degree may be recommended to an enormous number of users. In this paper, we take the recent popularity (recently increased item degrees) into account in the heat-conduction based methods, and propose accordingly the improved recommendation models. Experimental results on two benchmark data sets show that the accuracy can be largely improved while keeping the high diversity compared with the original models.

Keywords: Recommender systems, Heat conduction, Recent popularity, Accuracy

1. Introduction

With the rapid development of Internet [1] and World Wide Web [2], the information carried by them is increasing explosively over the past few decades, which brings us into the so-called 'Big Data' era [3], and confronts us with a large amount of online contents and services. Thus, it becomes very

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