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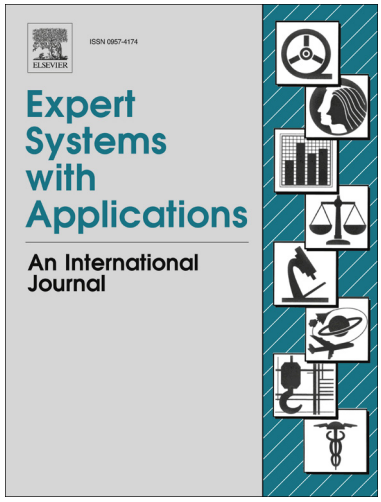

A Fast Algorithm for Finding Most Influential People Based on the Linear Threshold Model

Khadije Rahimkhani, Abolfazl Aleahmad, Maseud Rahgozar, Ali Moeini

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A Fast Algorithm for Finding Most Influential People Based on the Linear Threshold Model

Khadije Rahimkhani*[a] , Abolfazl Aleahmad*[a], Maseud Rahgozar[a], Ali Moeini[b]

[a] *Database Research Group, Control and Intelligent Processing Center Of Excellence, School of Electrical and Computer Engineering, University of Tehran*
[b] *Faculty of Engineering Science, School of Engineering, University of Tehran*

Abstract:

Finding the most influential people is an NP-Hard problem that has attracted many researchers in the field of social networks. The problem is also known as influence maximization and aims to find a number of people that are able to maximize the spread of influence through a target social network. In this paper, a new algorithm based on the Linear Threshold model of influence maximization is proposed. The main benefit of the algorithm is that it reduces the number of investigated nodes without loss of quality to decrease its execution time. Our experimental results based on two well-known datasets show that the proposed algorithm is much faster and at the same time more efficient than the state of the art algorithms.

Keywords: Social Networks, Influential People Retrieval, Influence maximization, Linear Threshold Model.

1. Introduction

Social networks play an important role in our new world. After invention of online social networks, people are able to influence each other much more easily. This fact caused many researchers to look for an efficient method for finding top-k most influential people through social networks. This problem is also known as influence maximization (IM) and has many applications such as: opinion propagation, studying acceptance of political movements or acceptance of technology in economics. For example, suppose that we need to advertise a product in a country or we need to propagate news. For this purpose, we need to choose some people as a starting point and maximize the news or the products influence in the target society.

Finding most influential people has been found useful for many applications such as: developing recommender systems (Morid et al., 2014; Song et al., 2006), choosing useful weblogs (Leskovec et al., 2007) and finding influential twitters (Bakshy et al., 2011; Weng et al., 2010). The problem was introduced in (Domingos & Richardson, 2001) for the first time. After that in (Kempe et al., 2003)

* The first two authors contributed equally to this work
E-mail addresses: rahimkhani_khadije@yahoo.com (Kh.Rahimkhani), a.aleahmad@ece.ut.ac.ir (A.Aleahmad), Rahgozar@ut.ac.ir (M.Rahgozar), moeini@ut.ac.ir (A.Moeini)

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