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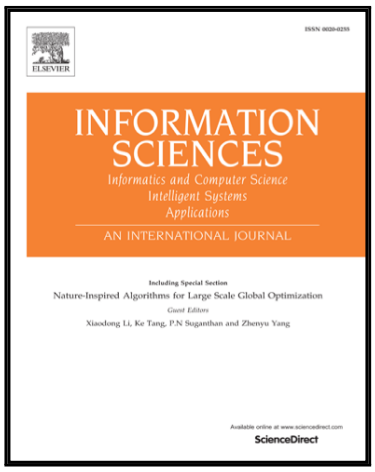

Scalable and Parallelizable Influence Maximization with Random Walk Ranking and Rank Merge Pruning

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Scalable and Parallelizable Influence Maximization with Random Walk Ranking and Rank Merge Pruning

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Abstract

As social networking services become a large part of modern life, interest in applications using social networks has rapidly increased. One interesting application is *viral marketing*, which can be formulated in graph theory as the influence maximization problem. Specifically, the goal of the influence maximization problem is to find a set of k nodes(corresponding to individuals in social network) whose influence spread is maximum. Several methods have been proposed to tackle this problem but to select the k most influential nodes, they suffer from the high computational cost of approximating the influence spread of every individual node.

In this paper, we propose an effective pruning method for the influence maximization problem based on Random Walk and Rank Merge. The key idea is to efficiently find and prune out uninfluential nodes in order to dramatically reduce the amount of computation for evaluating influence spread. Our experimental results demonstrate the efficiency of the proposed method compared to previous state-of-the-art methods. Additionally, our method is easily parallelizable, resulting in further speed up.

Keywords: Influence maximization, Social networks, Parallel processing

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