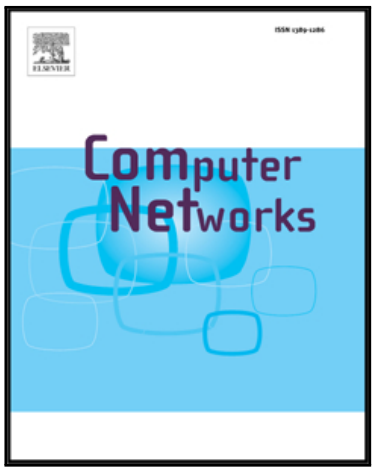

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Scalable Influence Blocking Maximization in Social Networks under Competitive Independent Cascade Models

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Abstract

Bad information propagation in online social networks (OSNs) can cause undesirable effects. The opposite good information propagating competitively with bad information can restrain the propagation of bad information. In this paper, we address the Influence Blocking Maximization (IBM) problem aiming to find a set of influential people initiating good information propagation to maximize the blocking effect on the bad information propagation in OSNs. The problem is studied on two competitive propagation models describing competitive propagation processes in two classic situations in OSNs. Two models are derived from the Independent Cascade Model (ICM). Greedy algorithms for IBM problem under two competitive propagation models are slow and not scalable. Thus, we design two heuristics CMIA-H and CMIA-O based on the maximum influence arborescence (MIA) structure to efficiently solve the IBM problem under two competitive propagation models, respectively. Extensive experiments are conducted on real-world and synthetic datasets to compare the proposed algorithms with the greedy algorithms and other baseline heuristics. The results demonstrate that both CMIA-H and CMIA-O achieve matching influence blocking performance to the greedy algorithms and consistently outperform other base-

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