

Influence Limitation in Multi-Campaign Social Networks: A Game Theoretic Approach

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We investigate the problem of influence limitation in the presence of competing campaigns in a social network. Our research is motivated by situations such as rumor modeling in networks and virus inoculation networks. Given a negative campaign that starts propagating from a specified source and a positive campaign that is initiated to limit the spread of misinformation by the negative campaign, we are interested in discovering influential nodes at which the positive campaign should be initiated. The influence function for the generic influence limitation problem is non-submodular. Restricted versions of the influence limitation problem, reported in the literature, assume submodularity of the influence function and do not capture the problem in a realistic setting. In this paper, we propose a novel game theoretic approach for the influence limitation problem that uses solution concepts from cooperative game theory. Our approach works equally effectively for submodular as well as non-submodular influence functions. We also address the problem of influence limitation in the presence of multiple competing campaigns.