Abstract (A)

Network Interventions Based on Inversity: Leveraging the Friendship Paradox in Unknown Network Structures

Authors: Vineet Kumar, David Krackhardt and Scott Feld

Network intervention problems benefit from selecting a more connected node, which is more likely to result in stronger indirect effects. However, in many network contexts, the structure of the network is unknown. We derive and examine the mathematical properties of two distinct "informationally light" strategies, a global strategy and local strategy, that yield higher degree nodes in virtually any network structure. These strategies are based on the friendship paradox: "your friends have more friends that you do." We further identify a novel network property called Inversity, which connects the fundamental parameters of these two strategies. We prove that the sign of Inversity for any given network determines which of the two strategies will be most effective in that network. We assess the performance of these strategies across a wide range of generative network models and real networks, and we show how to leverage network structure through these strategies even when the network structure is unknown.

Abstract (B)

Can Friends Seed More Buzz?

Authors: Vineet Kumar and K. Sudhir

A critical element of word of mouth (WOM) marketing (aka buzz marketing) is to identify central actors with high degree in the social network to serve as seeds. However, seed identification typically requires data on the full network structure, which is often unavailable. We examine WOM seeding strategies motivated by the friendship paradox to get higher degree nodes without knowing network structure. But whether the higher degree nodes generate as much WOM as lower degree nodes and overall greater adoption is an empirical question. We develop and estimate a model of WOM and adoption using data on microfinance adoption across 43 villages in India for which we know the complete social networks. Counterfactuals show that the proposed seeding strategies are about 15%-20% more effective than random seeding in increasing adoption. Remarkably, they are also more effective than opinion leader seeding.