#### Do (your) Friends Really Have More Friends than You? Leveraging the Friendship Paradox in Network-based Interventions

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## Abstract

The presentation draws from two papers, the first (A) a theoretical foundation for the double-edged friendship paradox, and (B) an empirical examination of how adoption can be impacted by leveraging network structure.

(A): We provide a theoretical foundation for the double-edged friendship paradox in the present paper. In doing so, we discover a second paradox, the "Paradox of the Paradox of Friends." The paper details this second paradox and resolve it, making the following contributions. First, we demonstrate that the friendship paradox is double- edged, exhibiting both local and global properties, each having a different mean number of friends of friends. Second, we prove the local mean of friends-of-friends is greater than the average degree in a network. Third, we provide two distinct seeding intervention strategies to accelerate diffusion within the network--a local and a global strategy, based on the corresponding dual nature above.

(B): In the empirical application, we empirically investigate whether the friendship paradox can be leveraged to increase product adoption. The paper leverages data on microfinance adoption and social networks in 43 villages of Southern India. We estimate a simple diffusion model of microfinance adoption that accounts for social network position in diffusion of those who are seeded. We then test two counterfactual strategies: (1) random seed versus friend of random seed and (2) randomly selected leader seed versus leader friend of randomly selected leader seed to assess the difference in new product penetration from using seeding strategies informed by the friendship paradox.

# **Speaker Profile:**

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