

# MISQ Archivist

## Top Persuader Prediction for Social Networks

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### Abstract

Top persuaders in a social network are social entities whose adoption of a product or service will result in the largest numbers of other entities in the network adopting the same product or service. Predicting top persuaders is critical to an expanding array of important social network-centric applications, such as viral marketing, customer retention, and political message promotion. This study formulates the top persuader prediction problem and develops a novel method to predict top persuaders. Our method development is rooted in eminent social network theories that reveal several forces central to social persuasion, including social influence, entity similarity, and structural equivalence. Our method innovatively integrates these forces to predict top persuaders in a social network, in contrast to existing methods that primarily focus on social influence. Specifically, we introduce persuasion probability that denotes the likelihood of persuasion conditioned on these forces. We then propose how to estimate persuasion probabilities, develop an algorithm to predict top persuaders using the estimated persuasion probabilities, and analyze the theoretical property of the algorithm. We conduct an extensive evaluation with real-world social network data and show that our method substantially outperforms prevalent methods from representative previous research and salient industry practices.

**Keywords:** Top persuader, influential user, machine learning, social network, social persuasion, social influence, entity similarity, structural equivalence, data-driven method