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Structural diversity effect on hashtag adoption in Twitter

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HIGHLIGHTS

- A network containing the following relationship of Twitter users is built.
- The GN algorithm is used to analyze the structural diversity of user's ego network.
- The structural diversity effect on user's behavior in Twitter is revealed.
- The effect of the number of influencers, the strength of relationship is examined.

Abstract

With online social network developing rapidly these years,, user' behavior in online social network has attracted a lot of attentions to it. In this paper, we study Twitter user's behavior of hashtag adoption from the perspective of social contagion and focus on "structure diversity" effect on individual's behavior in Twitter. We achieve data through Twitter's API by crawling and build a users' network to carry on empirical research. The Girvan-Newman (G-N) algorithm is used to analyze the structural diversity of user's ego network, and Logistic regression model is adopted to examine the hypothesis The findings of our empirical study indicate that user' behavior in online social network is indeed influenced by his friends and his decision is significantly affected by the number of groups that these friends belong to, which we call structural diversity.

Keywords: Social network, Twitter, Structural diversity, hashtag adoption

1. Introduction

In recent years, online social networks, such as Facebook and Twitter, have been developing rapidly. According to eMarkters' report, increasing users log on to online social networks at least once a month, occupying 63.4% of the world's Internet users and 20.4% of the world population already as of 2012. Through these online social networks, users can share news, videos, music and photos, discuss hot topics, and join discussion groups to maintain and develop interpersonal relationships. Impacting on human social life increasingly, online social network has become an inseparable part many peoples' life

Many types of social behavior can be thought of as contagious: participation in a social party, smoking, voting, migration, the spread of innovations, fashions, rumors and so on [1; 2; 3; 4]. With the popularity of online social networks, the behaviors of users have gained wide attention from many scholars. Recently, many researchers have proven that online social network behaviors, such as forwarding messages, linking to articles, joining groups, adopting hashtags or becoming fans of pages, are influenced by friends whom users have followed in online social networks [5; 6; 7; 8]. Users are likely to perform the same behaviors that their friends have already exhibited.

The researches on users' online social network behavior have thus far shown some factors that may affect the decision of the user, such as the number of friends who have performed the same behavior, the strength of relationships between users and their friends and the popularity of their friends. However, most studies of online social network structures concentrating on their influence on diffusion effects, instead of their influence on individual decisions and behaviors. What attracts us is that, Ugander et al. studied the

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