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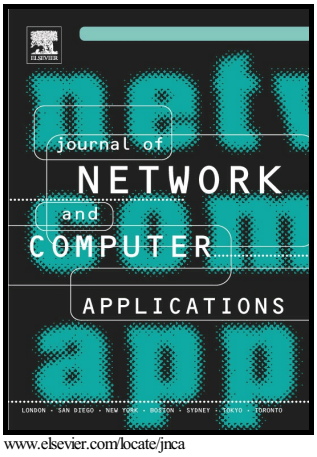

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Abstract

Among different types of the pervasive social networks, microblogging social network recently provides most efficient services for diffusing information of news, ideas and innovations. The features and models of information diffusion in microblogging social network have attracted many researchers. Compared to other works, our study provides a new perspective of analysis for information diffusion. A multi-level structure is defined to analyze the diffusion process of hot topics. The diffusion of a particular topic is represented as the evolution of the related retweeting network, where retweeting groups and information cascades are growing and interacting. Based on this multi-level structure, interesting features of the *merging effect* between two retweeting groups, the existence of *super group* and the *centralized topology* of information cascades are discovered and analyzed. Furthermore, we find that trend of diffusion in the future is influenced by diffusion in the past, and the main factors of dynamics of retweeting network are also analyzed. From the above analysis, a diffusion model based on cascade model framework is proposed to generate the retweeting network. Based on the real data, the experimental results show that our model could reproduce the diffusion features of the retweeting network effectively and outperforms the most widely-used independent cascade model.

Keywords: Pervasive social networking, Information diffusion, Diffusion model, Retweeting network

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