

An Information Propagation Model Based on User Interests

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The Twitter microblogging platform has features that make it an ideal environment for studying information spread in social networks. Twitter users post messages to their followers, either by creating new tweets or retweeting messages generated by others. When a user retweets a message, the information is propagated to more people through the social network connections. Hashtags in a tweet are keywords highlighted by the creator, as representatives of important topics.

In this paper, we model the diffusion of Twitter hashtags to explore how information is generated and propagated in a social network, and the role played by individual interests in this process. We study the characteristics of individual interest, the dynamics of interest formation processes, and the influence of interests on global topical trends. We propose an agent-based model with simple mechanisms to prioritize personal preferences, translating individual interests into social behaviors. The ingredients of our model include limited user memory and attention span. The model attempts to capture both the local patterns of user interests and the global trends of different topics in the empirical data. We believe that such a model can help us better understand the influence of individual selection and preference on the global information propagation process, and explain macroscopic social phenomena from a microscopic perspective.