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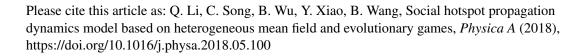
PII: S0378-4371(18)30653-8

DOI: https://doi.org/10.1016/j.physa.2018.05.100

Reference: PHYSA 19640

To appear in: Physica A

Received date: 23 November 2017 Revised date: 12 April 2018



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ACCEPTED MANUSCRIPT

Social Hotspot Propagation Dynamics Model Based on Heterogeneous Mean Field and Evolutionary Games

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Abstract

In the field of social network analysis, information diffusion is a focus of current research. Taking into account the real topological relations among the participants and the psychological characteristics of the users, in this paper, a hotspot propagation model based on heterogeneous mean field and evolutionary games is proposed. First, in real social networks, the changes of hotspot's trend could lead to the dynamic changes of users' willingness to participate in the hot topic. This effect is reflected in the dynamic behaviors among the users. In this work, based on the evolutionary games, a dynamic evolution mechanism for users' willingness to participate in hotspot is constructed and dynamically adjusts the infection rate of information dissemination model. Second, in view of the heterogeneity of the real network structure and the complexity of the heterogeneous mean field, graphical evolutionary game is introduced to improve the heterogeneous mean field. Thus, a new dynamics model of information dissemination is constructed based on graphical evolutionary game. Finally, considering the dynamic behavior among the nodes and the heterogeneity of real social networks, we obtain a hotspot propagation model based on dynamic evolution mechanism and improved heterogeneous mean field. To verify the proposed model, we perform simulations over synthetic networks and real network. Experiments show

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