

Title:

Identifying topic-based communities by combining social network data and user-generated-content

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Abstract:

[Background]

In modern social media development, the influence of interaction between consumers on their behavior is getting bigger and it is important for companies to know the relationship between consumers through understanding the community structure on social network.

[Methodology]

Many methods for identifying the community structure on the network have been proposed on only the network information. However, not all people are well-connected on the network with the same interest. For example, even if students belong to the same community of “school”, they have various hobbies such as music, books, and sports. In addition, people belong to multiple communities such as family, work, and online friends. Then it is more realistic and beneficial for company to identify community according to their interests uncovered by their communications in social media. In this study, by extending mixed membership stochastic block model, we propose a model for identifying communities by combining social network data and user-generated-content (UGC) data. The model explores multiple communities according to their topics which are identified by using network and UGC data jointly. The model will be extended to accommodate the dynamical change of the community structure on the network

[Results]

To validate the main features of the proposed model, we conducted a simulation study to show that the proposed model correctly identifies the community structure which can not be found without considering both network data and UGC.

Keywords:

Social network analysis, Community detection, User-generated-content, Topic modeling, Bayesian inference