Personalized Influential Topic Search via Social Network Summarization

Social networks are a vital mechanism to disseminate information to friends and colleagues. In this work, we investigate an important problem - the personalized influential topic search, or PIT-Search in a social network: Given a keyword query q issued by a user u in a social network, a PIT-Search is to find the top-k q-related topics that are most influential for the query user u. The influence of a topic to a query user depends on the social connection between the query user and the social users containing the topic in the social network. To measure the topics’ influence at the similar granularity scale, we need to extract the social summarization of the social network regarding topics. To make effective topic-aware social summarization, we propose two random-walk based approaches: random clustering and an L-length random walk. Based on the proposed approaches, we can find a small set of representative users with assigned influential scores to simulate the influence of the large number of topic users in the social network with regards to the topic. The selected representative users are denoted as the social summarization of topic-aware influence spread over the social network. And then, we verify the usefulness of the social summarization by applying it to the problem of personalized influential topic search. Finally, we evaluate the performance of our algorithms using real-world datasets, and show the approach is efficient and effective in practice.