Discovering Hidden Topical Hubs and Authorities Across Multiple Online Social Networks

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Abstract— Finding influential users in online social networks (OSNs) is an important problem with many useful applications. Many methods have been proposed to identify influential users in OSNs. PageRank and HITS are two well-known examples that determine influential users through link analysis. In recent years, new models that consider both content and social network links have been developed. The Hub and Authority Topic (HAT) model is one that extends HITS to identify topic-specific hubs and authorities by jointly learning hubs, authorities and topical interests from users' relationship and textual content. However, many of the previous works are confined to identifying influential users within a single OSN. These models, when applied to multiple OSNs, could not learn influential users under a common set of topics nor address platform preferences. In this paper, we propose the MPHAT model, an extension of HAT, to jointly model the topic-specific hub users, authority users, their topical interests and platform preferences. We evaluate MPHAT against existing state-of-the-art methods in multiple OSNs settings using synthetic datasets and real-world datasets from Twitter and Instagram. We show that MPHAT is comparable to state-of-the-art topic models in learning topics but outperforms the state-of-the-art models in platform prediction and link recommendation tasks.

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