

Research Statement

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Background

Diffusion of information and innovations occurs in any network connecting people to people. With important applications in both business and social science, e.g., customer sentiment monitoring, viral marketing, there has been a number of research projects on understanding the mechanisms of diffusion. While several early qualitative and macro models for diffusion were proposed, it only has been quantitatively analysis and modeled at micro level since the born of Internet. Recently, the growing of online social networking sites, e.g., Twitter and Facebook, etc, gives us more chances to deeply understand what makes and how diffusion occurs in very large scale networks. However, there exist challenges due to the temporally dynamic nature and the interrelationships among diffusion related factors inside those networks.

Current Research Areas

Behavior Mining

Different from physical networks, social networks are characterized by user-generated content, user activities, and interactions. All these characteristics are temporally dynamic. Our objective in this research is to model diffusion related behavioral factors in the data traces of user - user and user - item interactions in social networks. We focus on the factors that directly have effects on viral diffusion in which items widely and quickly spread within the network of users through *word-of-mouth*. These factors are importance to the understanding of identification of users contributing most to viral diffusion, and to the search for products and services that are potentially well diffused without much of marketing efforts. Instead of modeling these factors independently as done in previous research, we propose a model that measures all the factors simultaneously considering their mutual dependencies. The model has been evaluated on both synthetic and real datasets. The experiments show that our

model outperforms the existing ones for synthetic data with ground truth labels. Our model also performs well for some prediction tasks.

Publications

Tuan-Anh Hoang, Ee-Peng Lim; *Virality and Sensitivity in Information Diffusions*, To appear in 6th International AAAI Conference on Weblogs and Social Media, ICWSM 2012

Tuan-Anh Hoang, Ee-Peng Lim, Palakorn Achananuparp, Jing Jiang, Feida Zhu; *On Modeling Virality of Twitter Content*, 13th International Conference on Asia-Pacific Digital Libraries, ICADL 2011

Tuan-Anh Hoang, Ee-Peng Lim, Palakorn Achananuparp, Jing Jiang, Loo-Nin Teow; *Modeling Socialness in Dynamic Social Networks*, 2nd International Conference on Advances in Social Networks Analysis and Mining, ASONAM 2011