香港浸會大學理學院
HKBU Faculty of Science

DEPARTMENT OF COMPUTER SCIENCE

PhD Degree Oral Presentation

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Time:	16 Aug 2016 (Tuesday) 10:30 am – 12:30 pm (35 mins presentation and 15 mins Q & A)
Venue:	RRS732, Sir Run Run Shaw Bldg., HSH Campus

"Inferring Diffusion Models with Structural and Behavioral Dependency in Social Networks"

Abstract

Online social and information networks exploit the influence of neighbors to achieve effective information sharing and diffusion. This thesis research aims to design novel diffusion models with the structural and behaviorable dependency of neighboring nodes of social networks considered, and to develop computational algorithms to infer the diffusion models as well as the underlying diffusion mechanisms based on the information cascades observed in real social networks.

By incorporating structural dependency and diversity of node neighborhood into a widely used diffusion model called Independent Cascade (IC) Model, we first propose a component-based diffusion model where the influence of parent nodes is exerted via connected components. To model directly the behavioral dependency of node neighborhood, we then propose a co-activation pattern based diffusion model where the co-activation patterns of parent nodes form the latent classes for each node. To discover a common set of the over-represented temporal activation patterns (motifs) characterizing the overall diffusion, we further propose a motif-based diffusion model, considering the temporal ordering of the parent activations and the social roles estimated for each node.

Extensive experiments have been carried out to demonstrate the effectiveness of the proposed diffusion models using both synthetic and real data. In addition, we discuss in detail how to interpret the inferred co-activation patterns and interaction motifs as the diffusion mechanisms under the context of different real social network data sets.

*** ALL INTERESTED ARE WELCOME ***