NATIONAL UNIVERSITY OF SINGAPORE

School of Computing

C S   S E M I N A R

Title: **Contextual Intent Tracking for Personal Assistants**

Speaker: Dr. Rui Zhang
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Chaired by: Dr Chan Chee Yong, Associate Professor, School of Computing
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Abstract:

A new paradigm of recommendation is emerging in intelligent personal assistants such as Apple's Siri, Google Now, and Microsoft Cortana, which recommends "the right information at the right time" and proactively helps you "get things done". This type of recommendation requires precisely tracking users' contemporaneous intent, i.e., what type of information (e.g., weather, stock prices) users currently intend to know, and what tasks (e.g., playing music, getting taxis) they intend to do. Users' intent is closely related to context, which includes both external environments such as time and location, and users' internal activities that can be sensed by personal assistants. The relationship between context and intent exhibits complicated co-occurring and sequential correlation, and contextual signals are also heterogeneous and sparse, which makes modeling the context-intent relationship a challenging task. To solve the intent tracking problem, we propose the Kalman filter regularized PARAFAC2 (KP2) nowcasting model, which compactly represents the structure and co-movement of context and intent. The KP2 model utilizes collaborative capabilities among users, and learns for each user a personalized dynamic system that enables efficient nowcasting of users' intent. Extensive experiments using real-world data sets from a commercial personal assistant show that the KP2 model significantly outperforms various methods, and provides inspiring implications for deploying large-scale proactive recommendation systems in personal assistants.

Biodata:

Rui Zhang is an Associate Professor and Reader, and leader of the Big Data and Knowledge Research Theme at the Department of Computing and Information Systems of the University of Melbourne. He has been awarded the Future Fellowship by the Australian Research Council in 2012. His inventions have been adopted by major IT companies such as AT&T

and Microsoft. In 2015, Dr Zhang has received the Chris Wallace Award for Outstanding Research in recognition of his significant contributions to the management and mining of spatiotemporal and multidimensional data. He obtained his Bachelor's degree from Tsinghua University in 2001 and PhD from National University of Singapore in 2006. He has been a visiting scholar in AT&T Labs-Research and Microsoft Research before and is now a regular visiting researcher at Microsoft Research Asia in Beijing. He has authored more than 90 publications in prestigious conferences and journals. His research interest is spatial and temporal data analytics, as well as general database and mining techniques including indexing, moving object management, data streams and sequence databases. He regularly serves as PC members of top conferences in data management and mining such as SIGMOD, VLDB, ICDE and KDD. He is an associate editor of Distributed and Parallel Databases.