

NATIONAL UNIVERSITY OF SINGAPORE

School of Computing

NEXT++ SEMINAR

**Title: Talk 1: ICE: Item Concept Embedding via Textual Information Talk 2:
Device Deep Learning**

Speaker: Dr Chuan-Ju Wang
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Academia Sinica

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Principle Investigator
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Date/Time: 25 August 2017, Friday, 02:00 PM to 04:00 PM

Venue: Executive Classroom, COM2-04-02

Chaired by: Dr Chua Tat Seng, KITHCT Chair Professor, School of Computing
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Talk 1: ICE: Item Concept Embedding via Textual Information

ABSTRACT:

This paper proposes an item concept embedding (ICE) framework to model item concepts via textual information. Specifically, in the proposed framework there are two stages: graph construction and embedding learning. In the first stage, we propose a generalized network construction method to build a network involving heterogeneous nodes and a mixture of both homogeneous and heterogeneous relations. The second stage leverages the concept of neighborhood proximity to learn the embeddings of both items and words. With the proposed carefully designed ICE networks, the resulting embedding facilitates both homogeneous and heterogeneous retrieval, including item-to-item and word-to-item retrieval. Moreover, as a distributed embedding approach, the proposed ICE approach not only generates related retrieval results but also delivers more diverse results than traditional keyword-matching-based approaches. As our experiments on two real-world datasets show, ICE encodes useful textual information and thus outperforms traditional methods in various item classification and retrieval tasks.

BIODATA:

Dr. Chuan-Ju Wang received her Ph.D. degree in Computer Science and Information Engineering at National Taiwan University in 2011. She joined the Research Center of

Information Technology Innovation (CITI), Academia Sinica as an assistant research fellow in 2016. She is also currently holding appointment as an associate professor at the University of Taipei, Taiwan. Her research interests include computational finance and data analytics.

Talk 2: Device Deep Learning

ABSTRACT:

Enabling deep learning in embedded, wearable, and IoT devices for mobile and edge computing is the Gordian technique of the ubiquitous intelligence. Unfortunately, the key hurdle to the broad application of Deep Neural Networks (DNNs) in the embedded environment is its large model size and high computation requirement, thereby prohibiting the wide applications on embedded, wearable, and IoT devices.

In this talk, Prof. Huang will present some recent work on the deep learning optimization, including software/hardware co-design, weight quantization, connection pruning, data transfer reduction. In addition, he would also introduce the recent resistive non-volatile memory based technologies, which may open a new paradigm of the deep learning system and revolutionize the computer architecture in near future.

BIODATA:

Prof Kejie Huang received the Ph.D degree from the Department of Electrical Engineering, National University of Singapore, Singapore, in 2014. Now he is a Principal Investigator under "Hundred Talents Program" with the College of Information Science and Electronics Engineering, Zhejiang University.

He holds four granted international patents, and another three patent applications. His current research interests include low power deep learning framework design, architecture optimization for deep learning chip and systems, and emerging embedded memory design.