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CENTER FOR EMBEDDED & CYBER-PHYSICAL SYSTEMS

CECS Seminar Series

Presents

Connected Context Computing for Smart IoT

Professor Jane Yung-jen Hsu

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Abstract: We are witnessing the explosion of connected devices, or the so-called Internet of Things, in our everyday lives. This new trend has created new opportunities to monitor human activities and to configure environments for comfort, security, or energy savings. In the US, buildings account for roughly 40% of total energy usage, with major contributions from the cooling demands. While most people have no intention of wasting energy, they are often unaware of the energy footprint of their daily routines. Activity recognition is a key capability for a smart environment to offer timely services and intelligent interactions with people.

In this talk, I will introduce connected context computing and its significance in enabling our vision of smart IoT. In particular, I will share our experience on monitoring the Computer Science building on NTU campus to improve its air conditioning and space utilization. First, an agent-based HVAC service is designed to analyze cooling demands and wastes. Second, experiments on SweetFeedback are conducted to encourage energy-saving behaviors. Third, crowd sourcing cyber-physical agents are deployed to acquire status labels for activity recognition from people situated in the environment. Â Our experiments showed that context computing, predictive analytics, and proactive control are the fundamental building blocks for a smart IoT framework that can SCALE (Sense, Communicate, Analyze, Learn, Expect and Effect).

Biography: Jane Hsu is a Professor of the department of Computer Science and Information Engineering at National Taiwan University, where she was the department Chair (2011-2014) and the Associate Chair (2008-2011). As the Director of Intel-NTU Connected Context Computing Center, established in 2011, Prof. Hsu is leading the global industrial collaboration research on Internet of Things. Her research interests include multi-agent systems, knowledge mining, commonsense computing, and context-aware services. She has served on the editorial board of Journal of Information Science and Engineering (2010-), International Journal of Service Oriented Computing and Applications (Springer, 2007-2009) and Intelligent Data Analysis (Elsevier/IOS Press, 1997-2002). She is actively involved in key international conferences as organizers and members of the program committee. Prof. Hsu was the President of Taiwanese Association for Artificial Intelligence (TAAI, 2013.01-2015.01), and has been a member of AAAI, IEEE, ACM, Phi Tau Phi, an executive committee member of the IEEE Technical Committee on E-Commerce (2000), and a board member of TAAI (2004-current).

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Hosted by Professor Kwei-Jay Lin

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