Keynote

"Understanding the Genome of Data Centers"
Keynote Presenter: Jie Liu (Microsoft Research)

Abstract: To meet the every growing demand of online services, data centers consume billions of KWh electricity every year, and the number is expected to double in the next 5 years. A typical data center is operated conservatively and as a result almost half of the energy consumption goes into cooling and power distribution, and idled servers. In this talk, I summarize a number of research efforts in the Data Center Genome project at Microsoft Research. We take a data-driven approach to data center energy modeling and management, leveraging networked sensing and control technologies. We have designed and deployed wireless environmental sensors to monitor heat distribution in server rooms and software-based services to estimate server power consumption. We tackled the challenges of reliable wireless data collection, time series compression and analysis, and static/dynamic resource management. The findings are used to advance the way equipment is provisioned, loads are distributed, and systems are operated in data centers.

Short Bio

Jie Liu is a Senior Researcher at Microsoft Research, managing the Sensing and Energy Research Group (SERG). Before joining MSR in May 2004, he was a researcher at Palo Alto Research Center (formerly Xerox PARC). He got his Ph.D. degree from EECS, UC Berkeley in 2001; got his Master (1996) and Bachelor (1993) degrees from Department of Automation, Tsinghua University, Beijing, China.

From 2008 to 2011, he was an Associate Editor of the IEEE Trans. on Mobile Computing. Currently, he is the General Chair for SenSys2011, and a TPC co-Chair for IEEE PerCom 2012. Recently, he has been a General co-Chair PerCom 2011, a TPC co-chair for SenSys 2009 and IPSN/SPOT 2008, and a co-chair for PhoneSense 2010 and FeBID 2009. He served on various NSF review panels, on the TPC of conferences such as SenSys, IPSN, RTAS, RTSS, ICDCS, DAC, and DATE, and as a reviewer for various journals.

He has received the Exceptional Student Award (清华大学优秀学生特等奖 -- the highest student award) from Tsinghua University in 1996, Leon O. Chua Award for outstanding research from UC Berkeley in 2001, Technology Advance Award from PARC in 2003, and Gold Star Award from Microsoft in 2008. He also holds an adjunct professorship (Foreign PhD Advisor) at Harbin Institute of Technology, China.