北京大学前沿计算研究中心
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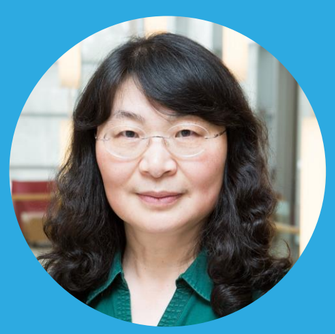
The Role of Computer Architecture in Emerging Cloud Computing and Edge Computing Paradigms



Prof. Yuanyuan Yang

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Host: 陈宝权 教授
2019年8月19日 星期一 15:00–16:00
北京大学静园五院102

Abstract

Currently, we are facing great challenges of even-increasing demand of computing power from many computation-intensive applications, such as machine learning, and big data, and the diminishing returns of Moore's Law and Dennard Scaling of CMOS technology. Cloud computing, and more recently, edge computing have emerged as promising paradigms to address these challenges and provide performance scalability. In this talk, I will explore the central role computer architecture research plays in these new computing paradigms. I will first discuss how to greatly reduce the hardware cost of data centers by an architectural approach of utilizing inherent server redundancy. I will then present a pervasive edge computing platform where heterogeneous edge devices (e.g., smartphones, tablets, IoT and vehicles) can collaborate to sense, process data and create many novel applications at the edge. I will show how to implement such a platform by a modular, composable hardware/software architecture with specialized edge devices.

Biography

Yuanyuan Yang received the BEng and MS degrees in computer science and engineering from Tsinghua University, and the MSE and PhD degrees in computer science from Johns Hopkins University. Dr. Yang is a SUNY Distinguished Professor in the Department of Electrical & Computer Engineering and Department of Computer Science at Stony Brook University. She is currently on leave serving as a Program Director at the US National Science Foundation. She has served as the Associate Dean for Academic Affairs of College of Engineering and Applied Sciences at Stony Brook University and a Division Director of New York State Center of Excellence in Wireless and Information Technology.

Dr. Yang is internationally recognized for her contributions in parallel & distributed computer architectures and systems. She was named an IEEE Fellow in 2009 for contributions to the architecture area. Her current research interests include parallel computer architecture, network-based computing, cloud computing, edge computing and mobile computing.

Dr. Yang is currently the Associate Editor-in-Chief for IEEE Transactions on Cloud Computing and an Associate Editor for ACM Computing Surveys. She has served as the Associated Editor-in-Chief for IEEE Transactions on Computers, and an Associated Editor for IEEE Transactions on Computers and IEEE Transactions on Parallel and Distributed Systems. She has published over 400 scientific papers in leading refereed journals and conferences. She is an inventor/co-inventor of seven U.S. patents in the area of interconnection networks and computer architecture. She received an IEEE Region 1 Award in 2002, the Best Paper Awards at the 18th IEEE IPDPS in 2004, and the 7th ICPADS in 2000, a Distinguished Leadership Award from the 15th IEEE ICCCN in 2006 and four Best Paper Runner-up Awards. She has served as a general chair, program chair or vice chair for several major conferences and a program committee member for numerous conferences.