



Women in Science

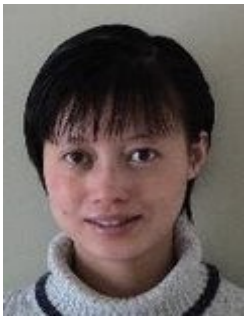
Friday, August 14, 2009 at 3:30 PM

Millennia Boardroom (Room 723, CDM building, Loop campus)

Refreshments Provided

Reliability Research for High Performance Computing

As the scale of high performance computing (HPC) continues to grow, reliability is becoming a critical concern. Recent studies have pointed out that the MTBF (mean-time-between-failures) of teraflop and petaflop machines are only on the order of 10-100 hours. This situation is only likely to deteriorate in the near future, thereby threatening the promising productivity of HPC systems. In this talk, I will briefly discuss my research projects that aim to address the problem from two aspects: (1) pre-failure prediction and tolerance and (2) post-failure diagnosis and recovery. Specially, my work on pre-failure prediction and tolerance is centered upon building FENCE, a Fault-aware ENabled Computing Environment. The core of FENCE is to adaptively integrate proactive and reactive methods with the goal to avoid anticipated failures if possible, and in the case of unforeseeable failures, to minimize their impact. My work on post-failure diagnosis and recovery focuses on designing RAPS (Recovery Aware Parallel computing Systems) to quickly and effectively resume parallel computing in the presence of failures. Our ultimate goal is to seamlessly integrate post-failure diagnosis and recovery with pre-failure prediction and tolerance as a compound fault management solution for high performance computing.



ZHILING LAN is an associate professor of Computer Science at Illinois Institute of Technology. She received her BS in Mathematics from Beijing Normal University, her MS in Applied Mathematics from the Chinese Academy of Sciences, and her PhD degree in Computer Engineering from Northwestern University. Her research interests are in the area of parallel and distributed systems, in particular, fault tolerant computing, dynamic load balancing, and performance analysis and modeling.

Dynamics in Diverse Systems

This presentation will describe a career united at its core by a deep interest in two overlapping themes: mathematics and the evolution of systems. Mathematics is my broad discipline and provides the content of the courses I teach. How people learn mathematics, and how we can use research on learning to make mathematics more accessible, are questions that have driven my development as a teacher. My Ph.D. is in the field of dynamical systems, the study of mathematical systems that change over time. In this field, researchers ask about the long-term stability or chaotic behavior of systems; they attempt to identify and classify equilibrium points; they search for constraints imposed on systems by their underlying structures. Over the past twenty years, these two themes have shifted and come together so that my scholarly work today is primarily in the interplay between systems, educational and otherwise, and the teaching and learning of mathematics and science.



LYNN NARASIMHAN is currently Associate Dean of the College of Liberal Arts and Sciences at DePaul University and a Professor in the Department of Mathematical Sciences. Dr. Narasimhan received her Ph.D. in Mathematics from Northwestern University in 1977 and joined the faculty at DePaul two years later. She has taught numerous undergraduate courses, for both majors and non-majors, and received the university's Excellence in Teaching Award in 1992. For the past 10 years, she has been active in mathematics and science education and is currently Director of DePaul's Interdisciplinary Science and Technology Center, housing programs to support minority students and women in mathematics and science, such as the Alliance for Minority Participation program and the Clare Boothe Luce Scholarship program, and programs for teachers funded by the Illinois Board of Higher Education and the National Science Foundation.