Georgia Tech takes leading role in IPDPS 2012

The 26th IEEE International Parallel & Distributed Processing Symposium (IPDPS) took place May 21-25, 2012, in Shanghai, China. Georgia Tech's participation in the technical program included 23 faculty and students presenting six accepted papers, eight workshops, two Ph.D. Forum research posters, as well as roles in the sessions and invited panel talks. IPDPS, which drew more than 600 participants this year, is an international forum for engineers and scientists from around the world to present their latest research findings in all aspects of parallel computation. In addition to technical sessions of submitted paper presentations, the meeting offers workshops, tutorials, and commercial presentations & exhibits.

Below is a breakdown of Georgia Tech's activities in the technical program.

SYMPOSIUM LEADERSHIP:

IPDPS 2012 Technical Program Committee
David A. Bader, Richard Vuduc and George Biros, Computational Science and Engineering
Bo Hong, Electrical and Computer Engineering

Steering Committee
David A. Bader, Computational Science and Engineering

PAPERS:

Improving the Performance of Dynamical Simulations Via Multiple Right-Hand Sides
Xing Liu and Edmond Chow, Computational Science and Engineering, Georgia Tech
Karthikeyan Vaidyanathan and Mikhail Smelyanskiy, Parallel Computing Lab, Intel Corporation

Efficient Quality Threshold Clustering for Parallel Architectures
Anthony Danalis, _University of Tennessee; Collin McCurdy, Oak Ridge National Laboratory; and *Jeffrey S. Vetter, Oak Ridge National Laboratory/Georgia Tech (Computational Science and Engineering)*

Identifying Opportunities for Byte-Addressable Non-Volatile Memory in Extreme-Scale Scientific Applications
Dong Li, Oak Ridge National Laboratory; *Jeffrey Vetter, Oak Ridge National Laboratory/Georgia Tech*; Gabriel Marin, Oak Ridge National Laboratory; Collin McCurdy, Oak Ridge National Laboratory; Cristian Cira, Auburn University; Zhuo Liu, Auburn University; Weikuan Yu, Auburn University

Hybrid Transactions: Lock Allocation and Assignment for Irrevocability
Jaswanth Sreeram, Intel Labs
Santosh Pande, College of Computing, Georgia Tech

Profiling-based Adaptive Contention Management for Software Transactional Memory
Zhengyu He, Xiao Yu and Bo Hong, Electrical and Computer Engineering, Georgia Tech

Predicting Potential Speedup of Serial Code via Lightweight Profiling and Emulations with Memory Performance Model
Minjang Kim, Pranith Kumar, Hyesoon Kim, Computer Science, Georgia Tech
Bevin Brett, Software and Services Group, Intel Corporation

SESSIONS:

Parallel Graph Algorithms II
Edmond Chow, Computational Science and Engineering
Chair

Scientific Applications
Rich Vuduc, Computational Science and Engineering

Chair

Multicore Algorithms
Bo Hong, Electrical and Computer Engineering
Chair

PANELS:

Plenary Session Panel Discussion:
Will exascale computing really require new algorithms and programming models?
Richard Vuduc, Computational Science and Engineering

WORKSHOPS:

Presentations:

21st International Heterogeneity in Computing Workshop
Analyzing Massive Data using Heterogeneous Computing
David A. Bader, Computational Science and Engineering

Workshop on Multithreaded Architectures and Applications
Merge Path - Parallel Merging Made Simple
Saher Odeh, Technion; Oded Green, Computational Science and Engineering, Georgia Tech; Zahi Mwassi, Technion; Oz Shmueli, Technion; Yitzhak Birk, Technion
Scalable Multi-threaded Community Detection in Social Networks
Jason Riedy, Computational Science and Engineering, Georgia Tech; David A. Bader, Computational Science and Engineering, Georgia Tech; Henning Meyerhenke, Karlsruhe Institute of Technology
PMU-guided Priority Adjustment to Guarantee Thread Performance on IBM POWER SMT Processor
Zhengyu He, Electrical and Computer Engineering, Georgia Tech; Bo Hong, Electrical and Computer Engineering, Georgia Tech

Workshop on Large-Scale Parallel Processing
Mesh Interface Resolution and Ghost Exchange in a Parallel Mesh Representation
T. Tautges, J. Kraftcheck, N. Bertram, Vivin Sachdeva, J. Magerlein, Argonne National Laboratory, University of Wisconsin-Madison, Electrical and Computer Engineering, Georgia Tech, IBM T. J. Watson

16th Workshop on Job Scheduling Strategies for Parallel Processing
Dynamic Kernel/Device Mapping Strategies for GPU-assisted HPC Systems
Jiadong Wu, Weiming Shi and Bo Hong, Electrical and Computer Engineering, Georgia Tech

2nd NSF/TCPP Workshop on Parallel and Distributed Computing Education
Courses in High-Performance Computing for Scientists and Engineers
Richard Vuduc, Kenneth Czechowski and Aparna Chandramowlishwaran, Computational Science and Engineering; and Jee Whan Choi, Electrical and Computer Engineering, Georgia Tech

Workshop on Parallel and Distributed Computing for Machine Learning and Inference Problems
A GPU-accelerated Approximate Algorithm for Incremental Learning of Gaussian Mixture Model
Chunlei Chen, Dejun Mu and Huixiang Zhang, Northwestern Polytechnical University of China; and Bo Hong, Electrical and Computer Engineering, Georgia Tech

Committee Appointments:

11th IEEE International Workshop on High Performance Computational Biology
David A. Bader, Computational Science and Engineering
Co-Chair

2nd Workshop on Communication Architecture for Scalable Systems
Ada Gavrilovska, Computer Science
Program Committee

2nd NSF/TCPP Workshop on Parallel and Distributed Computing Education
Matthew Wolf, Computer Science
Program Committee

Workshop on Multithreaded Architectures and Applications
David A. Bader, Computational Science and Engineering
Program Committee

2nd International Workshop on Accelerators and Hybrid Exascale Systems
David A. Bader, Computational Science and Engineering
Technical Program Committee

Workshop on Parallel and Distributed Computing for Machine Learning and Inference Problems

Edmond Chow, Computational Science and Engineering
Program Committee

Ph.D. FORUM:

Twenty-four students total were selected to display a poster describing their dissertation research.

Communication-Optimal Parallel N-body Solvers
Aparna Chandramowlishwaran, Computational Science and Engineering, Georgia Tech

Modeling and Analysis for Performance and Power
Jee Choi, Electrical and Computer Engineering; Richard W Vuduc, Computational Science and Engineering, Georgia Tech

Committee Appointment:

Bo Hong, Electrical and Computer Engineering, Georgia Tech
Co-Chair