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**
Jaswarth Sreeram, Intel Labs
Santosh Pandre, 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**
Minjoo 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
Multicore Algorithms
Bo Hong, Electrical and Computer Engineering

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 Redy, 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, Weimin 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
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