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Georgia Tech Enters the Spotlight at SC08

Panel discussions, workshops, technical papers and creative booth displays round out significant presence at leading high-performance computing conference

ATLANTA, Nov. 11 -- The Georgia Institute of Technology, an emerging leader in high-performance computing research and education, will command a significant presence at next week's SC08, the international conference on high-performance computing, networking, storage and analysis scheduled for Nov. 15-21, 2008, at the Austin Convention Center in Austin, Texas. Georgia Tech will co-chair one workshop, participate in four panel (or "Birds-of-a-Feather") discussions, present three technical papers and one research poster, and host 16 booth presentations and video interviews on emerging high-performance computing projects and application areas.

"At Georgia Tech, we believe a strong and expansive high-performance computing research community drives the bigger scientific discoveries and better engineering capabilities at the heart of human progress," said Dr. Mark Allen, senior vice provost for Research and Innovation at Georgia Tech. "Through this premier industry event, researchers, academics and industry professionals have the opportunity to discuss and demonstrate new innovations and breakthroughs in high-impact areas such as biomedicine, nanoscience, astrophysics and exascale computing. Georgia Tech welcomes SC08 attendees to visit our booth, meet our researchers, observe our work and understand our mission to positively affect quality of life through advanced computing capabilities."

Technical Workshops/Panels/Birds-of-a-Feather

Technical workshops, panels and Birds-of-a-Feather discussions featuring research experts from Georgia Tech's College of Computing include (activities listed in date/time order):

WORKSHOP: Supercomputing, Multicore Architectures and Biomedical Informatics -- Monday, Nov. 15, from 8:30 a.m. - 5 p.m. in Room 15.

o Georgia Tech's David A. Bader, professor and executive director of high-performance computing at Georgia Tech, is co-chairing this workshop to begin building a community of researchers with shared interests in understanding the impact of emerging architectures on computationally demanding biomedical applications.

WORKSHOP: Bridging Multicore's Programmability Gap -- Monday, Nov. 15, from 8:30 a.m. - 5 p.m. in Room 16A/16B.

o Georgia Tech's David A. Bader is a speaker in this workshop to address the emerging "Programmability Gap" between multicore-based systems and current languages, compilers and software development techniques.

PANEL: Can Developing Applications for Massively Parallel Systems with Heterogeneous

Processors Be Made Easy(er)? -- Tuesday, Nov. 18, from 3:30 - 5 p.m. in Ballroom G.

o Georgia Tech's David A. Bader is a speaker on this panel that will look at what needs to be done in order to make the application development for massively parallel systems with heterogeneous processors easier.

BIRDS-OF-A-FEATHER: Exascale Software Challenges -- Tuesday, Nov. 18, from 5:30 - 7 p.m. in Room 19A/19B.

o Georgia Tech's David A. Bader will participate in this Birds-of-a-Feather discussion to focus on understanding challenges and developing promising approaches in developing robust, scalable and efficient software to run at exascale.

BIRDS-OF-A-FEATHER: Unleashing the Power of the Cell BE for HPC Applications -- Wednesday, Nov. 19, from 12:15 - 1:15 p.m. in Room 18A/18B/18C/18D

o Georgia Tech's David A. Bader is leading this Birds-of-a-Feather session to stimulate an open discussion on the techniques and tools that can enable HPC applications to exploit the power of the Cell/B.E. multicore processor.

Technical Papers/Poster Sessions

Technical papers and poster sessions featuring researchers from Georgia Tech include (activities listed in date/time order):

TECHNICAL PAPER: Wide-Area Performance Profiling of 10GigE and Infiniband Technologies -- presented on Tuesday, Nov. 18, from 2 - 2:30 p.m. in Ballroom F.

o Georgia Tech's Jeffrey S. Vetter is a co-author on this paper that presents an experimental study of two solutions to throughput challenges for wide-area high-performance applications.

TECHNICAL PAPER: Dendro: Parallel Algorithms for Multigrid and AMR Methods on 2:1 Balanced Octrees -- presented on Tuesday, Nov. 18, from 2:30 - 3 p.m. in Ballroom E.

o Georgia Tech's George Biros and Rahul S. Sampath are co-authors on this article that presents Dendro, a suite of parallel algorithms for the discretization and solution of partial differential equations involving second-order elliptic operators.

TECHNICAL PAPER: Early Evaluation of BlueGene/P -- presented on Tuesday, Nov. 18, from 4 - 4:30 p.m. in Ballroom E.

o Georgia Tech's Jeffrey S. Vetter is a co-author on this paper that reports on the scalability and performance of the BlueGene/P -- the second-generation BlueGene architecture from IBM.

POSTER: Modeling Assertions for Petascale Applications and Systems -- presented on Tuesday, Nov. 18, from 5:15 - 7 p.m in the Rotunda Lobby

o Georgia Tech's Jeffrey S. Vetter is a co-author on this poster that addresses programming and scaling challenges to emerging Petaflops platforms at the DOE leadership computing sites.

Booth Events and Activities

Georgia Tech researchers and staff will be on hand at Booth 2821 to demonstrate and discuss the latest innovations in high-performance computing research. The Georgia Tech research display will feature live research presentations, video conversations with Georgia Tech experts in high performance computing, and an interactive display unlike any other -- a virtual field trip to the world's largest aquarium, the Georgia Aquarium. Utilizing a high bandwidth (1Gbps) channel connecting the Aquarium to the SC08 show floor, visitors to the Georgia Tech booth will be able to interact with researchers, fish and other marine creatures live through this one-of-a-kind tradeshow experience. Additional events and activities include:

PRESENTATION: Sony-Toshiba-IBM Center of Competence for the Cell Broadband Engine Processor -- presented by David A. Bader on Tuesday, Nov. 18, from 1 - 2 p.m. at Booth 2821.

PRESENTATION: High Performance Computing and Grid Computing for Large Scale Data Analysis and Integration -- presented by Joel Saltz, Tony Pan, Tashin Kurc and Ashish Sharma on Tuesday, Nov. 18, from 2 - 3 p.m. at Booth 2821.

PRESENTATION: Financial Modeling on the Cell Broadband Engine -- presented by Virat Agarwal on Tuesday, Nov. 18, from 3 - 4 p.m. at Booth 2821.

PRESENTATION: Concurrent Collections: A Model for Parallel Programming -- presented by Aparna Chandramowlishwaran on Tuesday, Nov. 18, from 4 - 5 p.m. at Booth 2821.

PRESENTATION: Dynamics of Inextensible Vesicles Suspended in a Two-Dimensional Stokes Flow -- presented by Abtin Rahimian on Tuesday, Nov. 18, from 5 - 6 p.m. at Booth 2821.

PRESENTATION: On the Design of Fast Pseudo-Random Number Generators for the Cell Broadband Engine and an Application to Risk Analysis -- presented by Aparna Chandramowlishwaran on Wednesday, Nov. 19, from 10 - 11 a.m. at Booth 2821.

PRESENTATION: Dendro: Parallel Algorithms for Multigrid and AMR Methods on 2:1 Balanced Octrees -- presented by Rahul Sampath on Wednesday, Nov. 19, from 11 a.m. - 12 p.m. at Booth 2821.

PRESENTATION: Optimizing Discrete Wavelet Transform on the Cell Broadband Engine -- presented by Seunghwa Kang on Wednesday, Nov. 19, from 12 - 1 p.m. at Booth 2821.

PRESENTATION: Kernel-Independent Fast Multipole Method with Scalable Octree Construction -- presented by Ilya Lashuk on Wednesday, Nov. 19, from 1 - 2 p.m. at Booth 2821.

PRESENTATION: Numerical Relativity and XiRel: One SC Application -- presented by Deirdre Shoemaker on Wednesday, Nov. 19, from 2 - 3 p.m. at Booth 2821.

PRESENTATION: Large-Scale Graph Problems on the Cray XMT -- presented by David Ediger on Wednesday, Nov. 19, from 3 - 4 p.m. at Booth 2821.

PRESENTATION: Multi-Threaded Maximum Flow Algorithm on Shared-Memory Platforms -- presented by Bo Hong on Wednesday, Nov. 19, from 4 - 5 p.m. at Booth 2821.

VIDEO INTERVIEW: Jeffrey Skolnick, professor and director, Center for the Study of Systems Biology talks about his team's development of tools for the prediction of protein structure and function from sequence, functional genomics, automatic assignment of enzymes to metabolic pathways, and prediction of protein structure and folding pathways.

VIDEO INTERVIEW: Haesun Park, professor and associate chair, Division of Computational Science and Engineering, discusses her work in massive data analytics as part of the $3 million Foundations of Data and Visual Analytics (FODAVA) award Dr. Park and her team won from the National Science Foundation and the Department of Homeland Security.

VIDEO INTERVIEW: Uzi Landman, Regents' professor and Fuller E. Callaway Chair in Computational Materials Science, will talk about his work at the nanoscale.

VIDEO INTERVIEW: Pablo Laguna, professor and director, Center for Relativistic Astrophysics, shares the importance and impact of supercomputing on the study of black holes in order to prove Einstein's theory of relativity.

VIDEO INTERVIEW: Karsten Schwan, professor and director, Center for Experimental Research in Computer Systems, will talk about the emergence and impact of exascale computing both directly and indirectly on everyday life.

SC08 Leadership Activities

Georgia Tech's David A. Bader is co-chairing the SC08's Biomedical Informatics Technology Thrust with Joel Saltz of Emory University.

David A. Bader, Kalyan Perumulla (Adjunct of the Computation Science and Engineering (CSE) division), Ada Gavrilovska, and Karsten Schwan, serve on the SC08 Technical Program Committee.

Jeffrey Vetter is a member of the SC08 Tutorials Committee and Disruptive Technologies Committee.

Thomas Zacharia is the Invited Speakers chair.

Four Georgia Tech CSE graduate students are serving as SC08 Student Volunteers: Swathi Bhat, Aparna Chandramowlishwaran, Manisha Gajbe, and Seunghwa Kang.

CSE Visiting Professor Zhihui Du (Associate Professor, Tsinghua University, China), was awarded a conference participation grant through the SC08 Broader Engagements (BE) Program.

Source: Georgia Tech

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