हाइपीसी HiPC

15TH INTERNATIONAL CONFERENCE ON HIGH PERFORMANCE COMPUTING

December 17-20, 2008 | Bangalore, INDIA

http://www.hipc.org

HiPC 2008 Conference Program

PROGRAM-AT-A-GLANCE

Wednesday, December 17, 2008

8:30 am - 1:00 pm	Workshop I Workshop on Grid and Utility Computing Workshop II Workshop on Service-Oriented Engineering and Optimizations Workshop III Workshop on Next Generation Wireless Networks Student Research Symposium
2:00 pm - 6:30 pm	Workshop IV High Performance FPGA/Reconfigurable Computing Workshop V Cooling of HiPC Systems: Why Computer Scientists Should Care? Tutorials 1~2
6:30 pm - 8:00 pm	Student Research Symposium Reception Speaker Vishwanath (Vish) Madhugiri, General Manager and Head of Global Research Alliances, Infosys Technologies Limited

Thursday, December 18, 2008

8:00 am - 8:30 am	Opening Remarks Chief Guest Ashok Kumar C. Manoli, Principal Secretary, Dept. of IT, Biotechnology, S & T, Govt. of Karnataka
8:30 am - 9:30 am	Keynote Address by Wolfgang Gentzsch, DEISA Distributed European Initiative for Supercomputing Applications, Duke University in Durham, UNC Chapel Hill Title: "Extreme Computing on the Distributed European Infrastructure for Supercomputing Applications - DEISA"
9:30 am - 7:00 pm	Exhibits and Demos
10:00 am - 12:30 pm	Technical Session I (6 papers)
10:00 am - 12:00 noon	User & Industry Symposium Sessions I and II (6 talks)
1:30 pm - 2:30 pm	Keynote Address by David Peleg, The Weizmann Institute of Science Title: "Towards networked computers: What can be learned from distributed computing?"
2:30 pm - 5:00 pm	Technical Session II (6 papers)
3:00 pm - 5:00 pm	User & Industry Symposium Sessions III and IV
5:30 pm - 7:00 pm	Plenary Industry Panel on "Classic HPC and Cloud Computing: Competition or Synergy?"

Friday, December 19, 2008

8:30 am - 9:30 am	Keynote Address by Mary F. Wheeler, The University of Texas at Austin Title: "Computational Environments for Coupling Multiphase Flow,Transport, and Mechanics in Porous Media "
10:00 am - 12:30 pm	Technical Session III (6 papers)
1:30 pm - 4:00 pm	Technical Session IV (6 papers)
4:30 pm - 6:30 pm	Technical Session V (5 papers)
7:00 pm - 9:30 pm	Conference Banquet and Cultural Program

Saturday, December 20, 2008

8:30 am - 9:30 am	Keynote Address by Laxmikant (Sanjay) Kale, University of Illinois at Urbana-Champaign Title: "The Excitement in Parallel Computing"
10:00 am - 12:30 pm	Technical Session VI (6 papers)
1:15 pm - 3:45 pm	Technical Session VII (6 papers)
4:00 pm - 6:00 pm	Technical Session VIII (5 papers)

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Program Details

Wednesday, December 17, 2008

7:30 am - 8:30 am
Breakfast

8:30 am - 10:30 am
Workshop I on Grid and Utility Computing (half-day)
Workshop II on Service-Oriented Engineering and Optimizations (half-day)
Workshop III on Next Generation Wireless Networks
Student Research Symposium (half-day)

10:30 am - 11:00 am
Break

11:00 am - 1:00 pm
Workshop I on Grid and Utility Computing (contd.)
Workshop II on Service-Oriented Engineering and Optimizations (contd.)
Workshop III on Next Generation Wireless Networks (contd.)
Student Research Symposium (contd.)

1:00 pm - 2:00 pm
Lunch

2:00 pm - 4:00 pm
Workshop IV on High Performance FPGA/Reconfigurable Computing (half-day)
Workshop V on Storage Technologies in Computing Clusters & Datacenter Environments (half-day)

Tutorial I: High Performance Computing with CUDA (half-day)
Presenter: Sanjiv Satoor, NVIDIA corp. and Punit Kishore, NVIDIA corp.

Tutorial II: Hadoop - Delivering Petabyte Scale Computing and Storage on Commodity Hardware (half-day)
Presenter: Yahoo Bangalore Cloud Computing Team

4:00 pm - 4:30 pm
Break

4:30 pm - 6:30 pm
Workshop IV on High Performance FPGA/Reconfigurable Computing (contd.)
Workshop V on Storage Technologies in Computing Clusters & Datacenter Environments (contd.)

Tutorial I: High Performance Computing with CUDA (contd.)
Presenter: Sanjiv Satoor, NVIDIA corp. and Punit Kishore, NVIDIA corp.

Tutorial II: Hadoop - Delivering petabyte scale computing and storage on commodity hardware (contd.)
Presenter: Yahoo Bangalore Cloud Computing Team

6:30 pm - 8:00 pm
Speaker Vishwanath (Vish) Madhugiri, General Manager and Head of Global Research Alliances, Infosys Technologies Limited
Student Research Symposium Reception

Program Details

Thursday, December 18, 2008

7:00 am - 8:00 am
Breakfast

8:00 am - 8:30 am
Chief Guest Ashok Kumar C. Manoli, Principal Secretary, Dept. of IT, Biotechnology, S & T, Govt. of Karnataka
Opening Remarks

8:30 am - 9:30 am
KEYNOTE ADDRESS
Speaker: Wolfgang Gentzsch, DEISA Distributed European Initiative for Supercomputing Applications, Duke University in Durham, UNC Chapel Hill
Title: Extreme Computing on the Distributed European Infrastructure for Supercomputing Applications - DEISA

9:30 am - 7:00 pm
Exhibits & Demos

9:30 am - 10:00 am
Break

10:00 am - 12:30 pm
SESSION I
Performance Optimization
Chair: Kalyan Kumaran

Improving Performance of Result Caches in Network Processors
Girish Chandramohan (Indian Institute of Science, India); Govindarajan Ramaswamy (Indian Institute of Science, India)

Optimization of BLAS on the Cell Processor
Vaibhav Saxena (IBM India Research Lab, New Delhi, India); Prashant Agrawal (IBM India Research Lab, India); Yogish Sabharwal (IBM India Research Lab, India); Vijay Garg (IBM India Research Lab,India); Vimitha Kuruvilla (IBM India STG Engineering Labs, India); John Gunnels (IBM T. J. Watson Research Center, USA)

Fine Tuning Matrix Multiplications on Multicore
Stéphane Zuckerman (University of Versailles Saint-Quentin en Yvelines, France); William Jalby (University of Versailles Saint-Quentin en Yvelines, France)

The Design and Architecture of MAQAOAdvisor: A Live Tuning Guide
Lamia Djoudi (University of Versailles, France)

A Load Balancing Framework for Clustered Storage Systems
Daniel Kunkle (Northeastern University, USA); Jiri Schindler (Network Appliance Inc, USA)

Construction and Evaluation of Coordinated Performance Skeletons
Qiang Xu (University of Houston, USA); Jaspal Subhlok (University of Houston, USA)

10:00 am - 12:00 noon
User & Industry Symposium Session I Emerging Storage Trends in Large Data Centers
User & Industry Symposium Session II System Management Solutions: Need for the Convergence of HPC Management Systems with Standards-based Interfaces

12:30 pm - 1:30 pm
Lunch

Program Details

Thursday, December 18, 2008

1:30 pm - 2:30 pm
KEYNOTE ADDRESS
Speaker: David Peleg, The Weizmann Institute of Science
Title: Towards networked computers: What can be learned from distributed computing?

2:30 pm - 5:00 pm
SESSION II
Parallel Algorithms and Applications
Chair: Ashok Srinivasan

Data Sharing Analysis of Emerging Parallel Media Mining Workloads
Yu Chen (Tsinghua University, P.R. China)

Efficient PDM Sorting Algorithms
Vamsi Kundeti (University of Connecticut, USA); Sanguthevar Rajasekaran (University of Connecticut, USA)

Accelerating Cone Beam Reconstruction Using the CUDA-enabled GPU
Yusuke Okitsu (Osaka University, Japan); Fumihiko Ino (Osaka University, Japan);
Kenichi Hagihara (Osaka University, Japan)

Improving the Performance of Tensor Matrix Vector Multiplication in Cumulative Reaction Probability Based Quantum Chemistry Codes
Dinesh Kaushik (Argonne National Laboratory, USA); William Gropp (Argonne National Laboratory, USA);
Michael Minkoff (Argonne National Laboratory, USA); Barry Smith (Argonne National Laboratory, USA)

Experimental Evaluation of Molecular Dynamics Simulations on Multi-core Systems
Hong Ong (Oak Ridge National Laboratory, USA); Sadaf Alam (Oak Ridge National Laboratory, USA);
Scott Hampton (Oak Ridge National Laboratory, USA); Pratul Agarwal (ORNL, USA)

Parsing XML using Parallel Traversal of Streaming Trees
Yinfei Pan (SUNY Binghamton, USA); Ying Zhang. (SUNY Binghamton, USA);
Kenneth Chiu (SUNY Binghamton, USA)

3:00 pm - 5:00 pm
User & Industry Symposium Session III Parallel Application Development through MPI
User & Industry Symposium Session IV Web-scale Data Processing and Application Development

5:00 pm - 5:30 pm
Break

5:30 pm - 7:00 pm
Plenary Industry Panel on "Classic HPC and Cloud Computing: Competition or Synergy?"

Program Details

Friday, December 19, 2008

7:30 am - 8:30 am
Breakfast

8:30 am - 9:30 am
KEYNOTE ADDRESS
Speaker: Mary F. Wheeler, The University of Texas at Austin
Title: Computational Environments for Coupling Multiphase Flow, Transport, and Mechanics in Porous Media

9:30 am - 10:00 am
Break

10:00 am - 12:30 pm
SESSION III
Scheduling & Resource Management
Chair: Bharadwaj Veeravalli

Performance Analysis of Multiple Site Resource Provisioning: Effects of the Precision of Availability Information
Marcos Assunção (University of Melbourne, Australia); Rajkumar Buyya (The University of Melbourne, Australia)

An Open Computing Resource Management Framework for Real-Time Computing
Vuk Marojevic (Polytechnic University of Catalonia, Spain); Xavier Reves (Universitat Politecnica de Catalunya, Spain); Antoni Gelonch (Polytechnic University of Catalonia, Spain)

A Load Aware Channel Assignment and Link Scheduling Algorithm for Multi-Channel Multi-Radio Wireless Mesh Networks
K.A. Arun (IIT Madras, India); A Antony Franklin (IIT Madras, India); C. Siva Ram Murthy (IIT Madras, India)

Multi-Round Real-Time Divisible Load Scheduling for Clusters
Jitender Deogun (University of Nebraska-Lincoln, USA); Xuan Lin (University of Nebraska, Lincoln, USA); Steve Goddard (University of Nebraska-Lincoln, USA); Ying Lu (University of Nebraska-Lincoln, USA)

Energy-Efficient Dynamic Scheduling on Parallel Machines
Jaeyeon Kang (University of Florida, USA); Sanjay Ranka (University of Florida, USA)

A Service-Oriented Priority-Based Resource Scheduling Scheme for Virtualized Utility Computing
Ying Song (Graduate University of Chinese Academy of Sciences, China, P.R. China); Yaqiong Li (Graduate University of Chinese Academy of Sciences, China, P.R. China); Hui Wang (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China); Yufang Zhang (Graduate University of Chinese Academy of Sciences, China, P.R. China); Binquan Feng (Graduate University of Chinese Academy of Sciences, China, P.R. China); Hongyong Zang (Graduate University of Chinese Academy of Sciences, China, Cameroon); Yuzhong Sun (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China)

12:30 pm - 1:30 pm
Lunch

1:30 pm - 4:00 pm
SESSION IV
Sensor Networks
Chair: Ananth Grama

Scalable Processing of Spatial Alarms
Bhuvan Bamba (Georgia Institute of Technology, USA); Ling Liu (Georgia Tech, USA); Philip Yu (University of Illinois Chicago, USA); Gong Zhang (Georgia Institute of Technology, USA); Myungcheol Doo (Georgia Institute of Technology, USA)

Program Details

Friday, December 19, 2008

Coverage Based Expanding Ring Search for Dense Wireless Sensor Networks
Kiran Rachuri (IIT Madras, India); Antony Franklin A (IIT Madras, India); Siva Ram Murthy (IIT Madras, India); Lee Kee Goh (Institute for Infocomm Research, Singapore)

An Energy-Balanced Task Scheduling Heuristic for Heterogeneous Wireless Sensor Networks
Bharadwaj Veeravalli (National Uniersity of Singapore, Singapore)

Energy Efficient Distributed Algorithms for Sensor Target Coverage based on Properties of an Optimal Schedule
Akshaye Dhawan (Georgia State University, USA); Sushil Prasad (Georgia State University, USA)

In-network Data Estimation Mechanisms for Sensor-driven Scientific Applications
Nanyan Jiang (Rutgers University, USA); Manish Parashar (Rutgers, The State University of New Jersey, USA)

Localization in Ad Hoc and Sensor Wireless Networks with Bounded Errors
Mark Terwilliger (Lake Superior State University, USA); Ajay Gupta (Western Michigan University, USA); Collette Coullard (Lake Superior State University, USA)

4:00 pm - 4:30 pm
Break

4:30 pm - 6:30 pm
SESSION V
Scalable Computing
Chair: Jaspal Subhlok

Optimization of Fast Fourier Transforms on the Blue Gene/L Supercomputer
Yogish Sabharwal (IBM India Research Lab, India); Saurabh Garg (The University of Melbourne, Australia); Rahul Garg (IBM India Research Lab, India); John Gunnels (IBM T. J. Watson Research Center, USA); Ramendra Sahoo (IBM Research, Yorktown Heights, NY, USA)

ScELA: Scalable and Extensible Launching Architecture for Clusters
Jaidev Sridhar (The Ohio State University, USA); Matthew Koop (The Ohio State University, USA); Jonathan Perkins (The Ohio State University, USA); Dhabaleswar Panda (The Ohio State University, USA)

Parallel Information Theory Based Construction of Gene Regulatory Networks
Jaroslaw Zola (Iowa State University, USA); Maneesha Aluru (Iowa State University, USA); Srinivas Aluru (Iowa State University, USA)

Communication Analysis of Parallel 3D FFT for Flat Cartesian Meshes on Large Blue Gene Systems
Anthony Chan (Argonne National Laboratory, USA); Pavan Balaji (Argonne National Laboratory, USA); William Gropp (Argonne National Laboratory, USA); Rajeev Thakur (Argonne National Laboratory, USA)

Scalable Multi-cores with Improved Per-core Performance using Off-the-critical Path Reconfigurable Hardware
Tameesh Suri (SUNY Binghamton, USA); Aneesh Aggarwal (Binghamton University, USA)
HiPC BEST PAPER AWARD WINNER

6:30 pm - 7:00 pm
Break

7:00 pm - 9:30 pm
Conference Banquet and Cultural Program

Program Details

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7:30 am - 8:30 am
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8:30 am - 9:30 am
KEYNOTE ADDRESS
Speaker: Laxmikant (Sanjay) Kale, University of Illinois at Urbana-Champaign
Title: The Excitement in Parallel Computing

9:30 am - 10:00 am
Break

10:00 am - 12:30 pm
SESSION VI
Distributed Algorithms
Chair: Pavan Balaji

TrustCode: P2P Reputation-Based Trust Management Using Network Coding
Yingwu Zhu (Seattle University, USA)

Design, Analysis, and Performance Evaluation of an Efficient Resource Unaware Scheduling Strategy for Processing Divisible Loads on Distributed Linear Daisy Chain Networks
Bharadwaj Veeravalli (National University of Singapore, Singapore);
Jingxi Jia (National University of Singapore, Singapore)

A Novel Learning Based Solution for Efficient Data Transport in Heterogeneous Wireless Networks
B. Venkata Ramana (IIT Madras, India); K. Srinivasa Pavan (IIT Madras, India);
C. Siva Ram Murthy (IIT Madras, India)

Scalable Data Collection in Sensor Networks
Asad Awan (Purdue University, USA); Suresh Jagannathan (Purdue University, USA);
Ananth Grama (Purdue University, USA)

Task Scheduling on Heterogeneous Devices in Parallel Pervasive Systems (P2S)
Sagar Tamhane (University of Texas at Arlington, USA);
Mohan Kumar (The University of Texas at Arlington, USA)

A Performance Guaranteed Distributed Multicast Algorithm for Long-lived Directional Communications in WANETs
Song Guo (The University of British Columbia, Canada)

12:30 pm - 1:15 pm
Lunch

1:15 pm - 3:45 pm
SESSION VII
Communication Networks
Chair: Sudhakar Yalamanchili

Designing High Performance pNFS With RDMA on InfiniBand
Ranjit Noronha (Ohio State University, USA); Xiangyong Ouyang (The Ohio State University, USA);
Dhabaleswar Panda (The Ohio State University, USA)

Maintaining Quality of Service with Dynamic Fault Tolerance in Fat-trees
Frank Olaf Sem-Jacobsen (University of Oslo, Norway); Tor Skeie (Simula Research Lab, Norway)

Program Details

Saturday, December 20, 2008

Sockets Direct Protocol for Hybrid Network Stacks: A Case Study with iWARP over 10G Ethernet
Pavan Balaji (Argonne National Laboratory, USA); Sitha Bhagvat (Dell Inc., USA); ?
Rajeev Thakur (Argonne National Laboratory, USA); Dhabaleswar Panda (The Ohio State University, USA)

Making a Case for Proactive Flow Control in Optical Circuit-Switched Networks
Mithilesh Kumar (Virginia Polytechnic Institute and State University, USA);
Vineeta Chaube (Virginia Polytechnic Institute and State University, USA);
Pavan Balaji (Argonne National Laboratory, USA); Wuchun Feng (Virginia Tech, USA);
Hyun-Wook Jin (Konkuk University, Korea)

FBICM: Efficient Congestion Management for High-Performance Networks using Distributed Deterministic Routing
Jesús Escudero-Sahuquillo (University of Castilla-La Mancha, ES);
Pedro García (University of Castilla-La Mancha, ES); Francisco Quiles (Universidad Castilla La Mancha, ES);
Jose Flich (Universidad Politecnica de Valencia, ES); Jose Duato (Universidad Politecnica de Valencia, ES)

Achieving 10Gbps Network Processing: Are we there yet?
Srihari Makineni (Intel Corp., USA); Priya Govindarajan (Intel Corp., USA); Don Newell (Intel Corporation, USA);
Ravishankar Iyer (Intel Corp, USA); Ram Huggahalli (Intel Corporation, USA); Amit Kumar (Intel Corp., USA)

3:45 pm - 4:00 pm
Break

4:00 pm - 6:00 pm
SESSION VIII
Architecture
Chair: Govind Ramaswamy

SAIL: Self-Adaptive File Reallocation on Hybrid Disk Arrays
Tao Xie (San Diego State University, USA); Deepthi Madathil (San Diego State University, USA)

Directory-Based Conflict Detection in Hardware Transactional Memory
Rubén Titos (University of Murcia, Spain); Manuel Acacio (Universidad de Murcia, Spain);
José M. García (University of Murcia, Spain)

Fault Tolerant Cache Coherence Protocols for CMPs: Evaluation and Trade-offs
Ricardo Fernández-Pascual (University of Murcia, Spain); José M. García (University of Murcia, Spain);
Manuel Acacio (Universidad de Murcia, Spain); Jose Duato (Universidad Politecnica de Valencia, Spain)

SDRM: Simultaneous Determination of Regions and Function-to-Region Mapping for Scratchpad Memories
Amit Pabalkar (Arizona State University, USA); Aviral Shrivastava (Arizona State University, USA);
Jongeun Lee (Arizona State University, USA); Arun Kannan (Arizona State University, Uruguay)

An Utilization Driven Framework for Energy Efficient Caches
Subramanian Ramaswamy (Georgia Institute of Technology, USA);
Sudakhar Yalamanchili (Georgia Institute of Technology, USA)