# HiPC 2006 Conference Program

## Program-at-a-Glance

### Monday, December 18, 2006

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8:30am - 6:30pm</td>
<td>Workshops</td>
</tr>
<tr>
<td>8:30am - 6:30pm</td>
<td>Tutorials II &amp; III (Tutorial I Cancelled)</td>
</tr>
</tbody>
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### Tuesday, December 19, 2006

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8:00am - 8:30am</td>
<td>Inauguration and Opening Remarks</td>
</tr>
<tr>
<td>8:30am - 9:30am</td>
<td>Keynote Address by Jeffrey Wadsworth <em>Advanced Scientific Computing: An Extraordinary Tool for Extraordinary Science</em></td>
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<tr>
<td>10:00am - noon</td>
<td>Parallel Technical Sessions I &amp; II (5 + 5 papers)</td>
</tr>
<tr>
<td>1:00pm - 2:00pm</td>
<td>Keynote Address by Pierre Fraigniaud <em>Navigability of Small World Networks</em></td>
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<tr>
<td>2:30pm - 4:00pm</td>
<td>Poster Presentations</td>
</tr>
<tr>
<td>4:00pm - 5:00pm</td>
<td>Poster Session</td>
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<tr>
<td>5:00pm - 6:30pm</td>
<td>Best Paper (2 papers) and Best Poster Awards Plenary Session</td>
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### Wednesday, December 20, 2006

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8:30am - 9:30am</td>
<td>Keynote Address by Gene Myers <em>Imaging-Based Systems Biology</em></td>
</tr>
<tr>
<td>10:00am - noon</td>
<td>Parallel Technical Sessions III &amp; IV (5 + 5 papers)</td>
</tr>
<tr>
<td>10:00am - noon</td>
<td>Mini Symposium on HPC Technologies, Practices And Experience (Part I)</td>
</tr>
<tr>
<td>10:00am - 6:00pm</td>
<td>Industry/Research Exhibition</td>
</tr>
<tr>
<td>1:00pm - 3:00pm</td>
<td>Parallel Technical Sessions V &amp; VI (5 + 5 papers)</td>
</tr>
<tr>
<td>1:00pm - 4:30pm</td>
<td>Mini Symposium on HPC Technologies, Practices And Experience (Part II)</td>
</tr>
<tr>
<td>4:30pm - 6:30pm</td>
<td>Industry-Academia Panel Session <em>Title: Challenges in India for Wider Adoption of HPC Systems</em></td>
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<tr>
<td>6:30pm - 9:30pm</td>
<td>Conference Banquet, Cultural Program, and Dinner</td>
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<td></td>
<td>Banquet Speech by Harrick Vin <em>Conquering Complexity in Information Systems</em></td>
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### Thursday, December 21, 2006

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8:30am - 9:30am</td>
<td>Keynote Address by Zhiwei Xu <em>High-Performance Computing for the Masses</em></td>
</tr>
<tr>
<td>10:00am - noon</td>
<td>Parallel Technical Sessions VII &amp; VIII (5 + 5 papers)</td>
</tr>
<tr>
<td>1:00pm - 2:00pm</td>
<td>Keynote Address by Dennis Gannon <em>Opportunities and Challenges for Future Generation Grid Research</em></td>
</tr>
<tr>
<td>2:30pm - 4:30pm</td>
<td>Parallel Technical Sessions IX &amp; X (5 + 5 papers)</td>
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Program Details

Monday, December 18, 2006

7:30 am - 8:30 am
Breakfast

8:30 am - 10:30 am
NG:INDIA Next Generation Innovations in Network Design and Internet Architecture
Workshop on New Horizons in Compilers
Workshop on Cutting Edge Computing
Workshop on Next Generation Wireless Networks

Tutorial I: Getting Going with the Grid and Its Applications (Cancelled)
Presenter: Dr. Mark Baker, School of Systems Engineering, The University of Reading, UK

Tutorial II: MPI - Portable Scalable Programming for High Performance Computing
Presenter: Ewing ("Rusty") Lusk, Mathematics and Computer Science Division, Argonne National Labs

10:30 am - 11:00 am
Break

11:00 am - 1:00 pm
NG:INDIA Next Generation Innovations in Network Design and Internet Architecture (contd.)
Workshop on New Horizons in Compilers (contd.)
Workshop on Cutting Edge Computing (contd.)
Workshop on Next Generation Wireless Networks (contd.)

Tutorial I: Getting Going with the Grid and Its Applications (contd.) (Cancelled)

Tutorial II: MPI - Portable Scalable Programming for High Performance Computing (contd.)

1:00 pm - 2:00 pm
Lunch

2:00 pm - 4:00 pm
NG:INDIA Next Generation Innovations in Network Design and Internet Architecture (contd.)
Workshop on Many Core Computing
Workshop on High Speed DSP Architectures

Tutorial I: Getting Going with the Grid and Its Applications (contd.) (Cancelled)

Tutorial III: Cluster and Parallel File Systems for High Performance Computing Clusters
Presenter: Dr. Gautam Shah, IBM Systems Development Group

4:00 pm - 4:30 pm
Break

4:30 pm - 6:30 pm
NG:INDIA Next Generation Innovations in Network Design and Internet Architecture (contd.)
Workshop on Many Core Computing (contd.)
Workshop on High Speed DSP Architectures (contd.)

Tutorial I: Getting Going with the Grid and Its Applications (contd.) (Cancelled)

Tutorial III: Cluster and Parallel File Systems for High Performance Computing Clusters (contd.)
Program Details

Tuesday, December 19, 2006

7:00 am - 8:00 am
Breakfast

8:00 am - 8:30 am
INAUGURATION AND OPENING REMARKS
Guest of Honor: S. (Kris) Gopalakrishnan
Chief Operating Officer and Deputy Managing Director, Infosys Technologies Limited, India

8:30 am - 9:30 am
KEYNOTE ADDRESS
Advanced Scientific Computing: An Extraordinary Tool for Extraordinary Science
Speaker: Jeffrey Wadsworth
Director, Oak Ridge National Laboratory, USA

9:30 am - 10:00 am
Break

10:00 am - noon
SESSION I
Scheduling and Load Balancing
Chair: Srinivas Aluru

A Security-Oriented Task Scheduler for Heterogeneous Distributed Systems
Tao Xie (New Mexico Institute of Mining and Technology, USA); Xiao Qin (New Mexico Institute of Mining and Technology, USA)

Minimizing Average Response Time for Scheduling Stochastic Workload in Heterogeneous Computational Grids
Jie Hu (University of California, Irvine, USA); Raymond Klefstad (University of California, Irvine, USA)

Advanced Reservation-based Scheduling of Task Graphs on Clusters
Anthony Sulistio (University of Melbourne, Australia); Wolfram Schiffmann (FernUniversitat Hagen, Germany); Rajkumar Buyya (University of Melbourne, Australia)

Estimation Based Load Balancing Algorithm for Data-Intensive Heterogeneous Grid Environments
Ruchir Shah (IIT Roorkee, India); Bharadwaj Veeravalli (National University of Singapore, Singapore); Manoj Misra (Indian Institute of Technology, Roorkee, India)

Improving the Flexibility of the Deficit Table Scheduler
Raúl Martínez-Moráis (University of Castilla-La Mancha, Spain); José-Luis Sanchez (University Castilla La Mancha, Spain); Francisco Alfaro (University of Castilla-La Mancha, Spain)

10:00 am - noon
SESSION II
Architectures
Chair: Manish Parashar

A Cache-Pinning Strategy for Improving Generational Garbage Collection
Vimal Reddy (North Carolina State University, USA); Richard Sawyer (North Carolina State University, USA); Edward Gehringer (North Carolina State University, USA)
A Realizable Distributed Ion-Trap Quantum Computer
Darshan Thaker (University of California, Davis, USA); Tzvetan Metodi (UC Davis, USA); Fred Chong (University of California, Santa Barbara, USA)

Segmented Bitline Cache: Exploiting Non-Uniform Memory Access Patterns
Diana Franklin (California Polytechnic State University, SLO, USA); Ravishankar Rao (University of California, Davis, USA); Venkatesh Akella (University of California, Davis, USA); Rajeevan Amirtharajah (University of California, Davis, USA)

Trade-offs in Transient Fault Recovery Schemes for Redundant Multithreaded Processors
Joseph Sharkey (SUNY Binghamton, USA); Nayef Abu-Ghazaleh (SUNY Binghamton, USA); Dmitry Ponomarev (State University of New York at Binghamton, USA); Kanad Ghose (State University of New York at Binghamton, USA); Aneesh Aggarwal (Binghamton University, USA)

Supporting Speculative Multithreading on Simultaneous Multithreaded Processors
Venkatesan Packirisamy (University of Minnesota, Minneapolis, USA); Shengyue Wang (University of Minnesota, USA); Antonia Zhai (University of Minnesota, Minneapolis, USA); Wei-Chung Hsu (University of Minnesota, Minneapolis, USA); Pen-Chung Yew (University of Minnesota, Minneapolis, USA)

Noon - 1:00 pm
Lunch

1:00 pm - 2:00 pm
KEYNOTE ADDRESS
Navigability of Small World Networks
Speaker: Pierre Fraigniaud
Research Director, CNRS and University Paris Sud, France

2:00 pm - 2:30 pm
Break
Poster Setup Time

2:30 pm - 4:00 pm
POSTER PRESENTATIONS
Chair: Rajeev Thakur, Argonne National Laboratory, USA

4:00 pm - 5:00 pm
POSTER SESSION
Chair: Rajeev Thakur, Argonne National Laboratory, USA

5:00 pm - 6:30 pm
BEST PAPER AND BEST POSTER AWARDS PLENARY SESSION
Chair: Yves Robert

Algorithmic Ramifications of Prefetching in Memory Hierarchy
Akshat Verma (IBM India Research Lab, India); Sandeep Sen (IIT New Delhi, India)

A Cache-Partitioning Aware Replacement Policy for Chip Multiprocessors
Haakon Dybdahl (Norwegian University of Science and Technology, Norway); Per Stenstrom (Chalmers University of Technology, Sweden); Lasse Natvig (Norwegian University of Science and Technology, Norway)
Program Details
Wednesday, December 20, 2006

7:30 am - 8:30 am
Breakfast

8:30 am - 9:30 am
KEYNOTE ADDRESS
Imaging-Based Systems Biology
Speaker: Gene Myers
Janelia Farm Research Campus Group Leader, Howard Hughes Medical Institute, MD, USA

9:30 am - 10:00 am
Break

10:00 am - 6:00pm
INDUSTRY/RESEARCH EXHIBITION
Chair: Vijay Mann and Raghuram Tupuri

10:00 am - noon
MINI SYMPOSIUM ON HPC TECHNOLOGIES, PRACTICES AND EXPERIENCE (PART I)
Chair: Ramamurthy Badrinath and Raghuram Tupuri

10:00 am - noon
SESSION III
Network and Distributed Algorithms
Chair: Ramamurthy Badrinath

Dynamic Internet Congestion with Bursts
Stefan Schmid (ETH Zurich, Switzerland); Roger Wattenhofer (ETH Zurich, Switzerland)

A Repair Mechanism for Fault-Tolerance for Tree-Structured Peer-To-Peer Systems
Fredéric Desprez (INRIA, France); Eddy Caron (ENS-Lyon, France); Cedric Tedeschi (ENS Lyon, France); Franck Petit (University of Picardie Jules Verne, France); Charles Fourdrignier (University of Picardie, France)

Utility-Based Adaptation of RED Parameters
Rachel Villacorta (University of the Philippines, Philippines); Cedric Angelo Festin (University of the Philippines, Philippines)

Capturing an Intruder in Product Networks
Navid Imani (IPM, Iran); Hamid Sarbazi-Azad (IPM & Sharif University of Technology, Iran); Albert Zomaya (University of Sydney, Australia)

Efficient In-Network Evaluation of Multiple Queries
Vinayaka Pandit (IBM India Research Laboratory, India); Hui-bo Ji (Australian National University, Australia)
10:00 am - noon
SESSION IV
Application Software
Chair: Kartik Gopalan

Island Model Parallel Genetic Algorithm for Optimization of Symmetric FRP Laminated Composites
Rahul Prasad (Dassault Systemes - Delmia Solutions Pvt. Ltd., India); Debabrata Chakraborty (Indian Institute of Technology Guwahati, India); Anjan Dutta (Indian Institute of Technology Guwahati, India)

Experiment with Wide Area Data Coupling Using the Seine Coupling Framework
Li Zhang (Rutgers University, USA); Manish Parashar (Rutgers, The State University of New Jersey, USA)

HeteroMPI+ScaLAPACK: Towards a Dense ScaLAPACK on Heterogeneous Networks of Computers
Ravi Reddy (University College Dublin, Ireland); Alexey Lastovetsky (University College Dublin, Ireland)

Parallel Implementation of a Spline Based Computational Approach for Singular Perturbation Problems
Rajesh Bawa (Punjab University, India); Srinivasan Natesan (Indian Institute of Technology, Guwahati, India)

Noon - 1:00 pm
Lunch

1:00 pm - 2:30 pm
MINI SYMPOSIUM ON HPC TECHNOLOGIES, PRACTICES AND EXPERIENCE (PART II)
Industry Session – 4 speakers
Chair: Ramamurthy Badrinath and Raghuram Tupuri

2:30 pm - 3:00 pm
Break

1:00 pm - 3:00 pm
SESSION V
Network Services
Chair: Bertil Schmidt

Parallel Bloom Filters: A Multi-attribute Data Structure for Network Services
Yu Hua (Hong Kong Polytechnic University, Hong Kong); Bin Xiao (Hong Kong Polytechnic University, Hong Kong)

Receive Side Coalescing for Accelerating TCP/IP Processing
Srihari Makineni (Intel Corp., USA); Ravishankar Iyer (Intel Corp, USA); Parthasarathy Sarangam (Intel Corp., USA); Don Newell (Intel Corporation, USA); Li Zhao (University of California, Riverside, USA); Jaideep Moses (Intel Corp., USA); Ramesh Illikkal (Intel Corporation, USA)
Minimizing Metadata Access Latency in Wide Area Networked File Systems
Jian Liang (Polytechnic University, USA); Aniruddha Bohra (NEC Laboratories, America, USA); Hui Zhang (NEC Laboratories America, USA); Samrat Ganguly (NEC Labs, USA); Rauf Izmailov (NEC Laboratories America, USA)

Connecting Pervasive Frameworks through Mediation
Florence Balagtas (University of the Philippines, Philippines); Cedric Angelo Festin (University of the Philippines, Philippines)

Error Resilient Video Streaming For Heterogeneous Networks
Divyashikha Sethia (Indian Institute of Technology Delhi, India); Huzur Saran (Indian Institute of Technology, India)

1:00 pm - 3:00 pm
SESSION VI
Applications
Chair: Rajesh Bawa

Exploring Thread and Memory Placement on NUMA Architectures: Solaris and Linux, UltraSPARC/FirePlane and Opteron/HyperTransport
Joseph Antony (Australian National University, Australia); Pete Janes (Australian National University, Australia); Alistair Rendell (Australian National University, Australia)

Low-Power Scheduling of DAGs to Minimize Finish Time
Sanjeev Baskiyan (Auburn University, USA); Kiran Palli (Intel Corp., USA)

GPU-ClustalW: Using Graphics Hardware to Accelerate Multiple Sequence Alignment
Weiguo Liu (Nanyang Technological University, Singapore); Bertil Schmidt (Nanyang Technological University, Singapore); Gerrit Voss (NTU, Singapore); Wolfgang Mueller-Wittig (NTU, Singapore)

Load Balanced Block Lanczos Algorithm over GF(2) for Factorization of Large Keys
Dongseung Kim (Korea University, Korea); Wontae Hwang (Korea University, Korea)

Parallel Support Graph Preconditioners
Meiqiu Wang (Texas A&M University, USA); Vivek Sarin (Texas A&M University, USA)

3:00 pm - 4:30 pm
MINI SYMPOSIUM ON HPC TECHNOLOGIES, PRACTICES AND EXPERIENCE (PART II)
Industry Session (contd.) – 4 speakers
Chair: Ramamurthy Badrinath and Raghuram Tupuri

4:30 pm - 6:30 pm
INDUSTRY-ACADEMIA PANEL DISCUSSION
Title: Challenges in India for Wider Adoption of HPC Systems
Moderator: Rudramuni B
Regional Director, Dell R&D, Bangalore, India

6:30 pm - 9:30 pm
CONFERENCE BANQUET, CULTURAL PROGRAM AND DINNER
BANQUET SPEECH
Conquering Complexity in Information Systems
Speaker: Harrick Vin
Vice President, Tata Research, Development and Design Center, Tata Consultancy Services, Pune, India
Program Details

Thursday, December 21, 2006

7:30 am - 8:30 am
Breakfast

8:30 am - 9:30 am
KEYNOTE ADDRESS
High-Performance Computing for the Masses
Speaker: Zhiwei Xu
Deputy Director, Institute of Computing Technology, Chinese Academy of Sciences, Beijing, China

9:30 am - 10:00 am
Break

10:00 am - noon
SESSION VII
Ad-hoc Networks
Chair: Ajay Gupta

Group Based Routing in Disconnected Ad Hoc Networks
Markose Thomas (Indian Institute of Technology, Kharagpur, India); Arobinda Gupta (Indian Institute of Technology, Kharagpur, India); Srinivasan Keshav (University of Waterloo, Canada)

A Hybrid Routing Protocol for Large Scale Mobile Ad Hoc Networks with Mobile Backbones
Ashish Pandey (Indian Institute of Technology, Kanpur, India); Phalguni Gupta (Indian Institute of Technology, Kanpur, India)

K-Tree: A Multiple Tree Video Multicast Protocol for Ad hoc Wireless Networks
Anirudh Badam (Indian Institute of Technology Madras, India); Tamma Bheemarjuna Reddy (IIT Madras, India, India); Siva Ram Murthy (IIT Chennai, India)

Towards Estimating Lifetime of Ad Hoc Wireless Networks
S. Jayashree (Indian Institute of Technology, Madras, India); Siva Ram Murthy (IIT Chennai, India)

A Proxy based Efficient Checkpointing Scheme for Fault Recovery in Mobile Grid System
Imran Rao (KyungHee University, Korea)

10:00 am - noon
SESSION VIII
Systems Software
Chair: Manish Gupta

The Impact of Noise on the Scaling of Collectives: An Empirical Evaluation
Rahul Garg (IBM India Research Lab, India); Pradipta De (State University of New York, Stony Brook, USA)

DDSS: A Low-Overhead Distributed Data Sharing Substrate for Cluster-Based Data-Centers over Modern Interconnects
Karthikeyan Vaidyanathan (The Ohio State University, USA); Sundeep Narravula (The Ohio State University, USA); D.K. Panda (The Ohio State University, USA)
Proactive Fault Tolerance in MPI Applications via Task Migration
Sayantan Chakravorty (University of Illinois at Urbana-Champaign, USA); Celso Mendes (University of Illinois, USA); Laxmikant Kale (University of Illinois at Urbana Champaign, USA)

Exploring Energy-Performance Trade-offs for Heterogeneous Interconnect Clustered VLIW Processors
Rahul Nagpal (Indian Institute of Science, India); Y.N. Srikant (Indian Institute of Science, India)

Distributed Anemone: Transparent Low-Latency Access to Remote Memory in Commodity Clusters
Michael R. Hines (Binghamton University, USA); Jian Wang (Binghamton University, USA); Kartik Gopalan (Binghamton University, USA)

Noon - 1:00 pm
Lunch

1:00 pm - 2:00 pm
KEYNOTE ADDRESS
Opportunities and Challenges for Future Generation Grid Research
Speaker: Dennis Gannon
Professor of Computer Science & Science Director - Pervasive Computing Labs, Indiana University, USA

2:00 pm - 2:30 pm
Break

2:30 pm - 4:30 pm
SESSION IX
Sensor Networks and Performance Evaluation
Chair: Sanjeev Baskiyar

Scalable Localization in Wireless Sensor Networks
Muralidhar Medidi (Washington State University, USA); Roger Slaaen (Washington State University, USA); Yuanyuan Zhou (Washington State University, USA); Christopher Mallery (Washington State University, USA); Sirisha Medidi (Washington State University, USA)

A Novel Real-Time MAC Protocol Exploiting Spatial and Temporal Channel Diversity in Wireless Industrial Networks
Kavitha Balasubramanian (Iowa State University, USA); Sudha Anil Gathala (Iowa State University, USA); G. Manimaran (I.I.T, Madras, India); Zhengdao Wang (Iowa State University, USA)

An Efficient MAP Classifier for Sensornet
Zille Huma Kamal (Western Michigan University, USA); Ajay Gupta (Western Michigan University, USA); Leszek Lilien (Western Michigan University, USA); Ashfaq Khokhar (University of Illinois at Chicago, USA)

Collective Communication Costs Analysis Over Gigabit Ethernet and InfiniBand
Hyacinthe NZIGOU Mamadou (Kyushu University, Japan)

Performance Evaluation of a Chip Multi-Threading Server for High Performance Computing Applications
Myungho Lee (MyongJi University, Korea); Yeonseung Ryu (Myongji University, Korea); Tae-Sun Chung (Ajou University, Korea); Neungssoo Park (Konkuk University, Korea)
A Study on the Locality of Minimum Spanning Tree Algorithms
Guojing Cong (IBM T.J. Watson Research Center, USA)

A Precomputation-Based Scheme for QoS Routing and Fair Bandwidth Allocation
Chia-Hung Wang (National Chengchi University, Taiwan); Hsing Luh (National Chengchi University, Taiwan)

Heuristics for Flash Dissemination in Heterogeneous Networks
Mayur Deshpande (University of California, Irvine, USA); Nalini Venkatasubramanian (University of California-Irvine, USA); Sharad Mehrotra (University of California, Irvine, USA)

B-PIC: A Novel Caching Scheme for Multimedia Streaming Servers
Ohhoon Kwon (Seoul National University, Korea); Taeseok Kim (Seoul National University, Korea); Hyokyung Bahn (Ewha University, Korea); Kern Koh (Seoul National University, Korea)

Gvu: A View-Oriented Framework for Data Management in Grid Environments
Pradeep Padala (University of Michigan, USA); Kang G. Shin (University of Michigan, USA)