

HiPC 2006 Conference Program

Program-at-a-Glance

Monday, December 18, 2006

8:30am - 6:30pm	Workshops
8:30am - 6:30pm	Tutorials II & III (Tutorial I Cancelled)

Tuesday, December 19, 2006

8:00am - 8:30am	Inauguration and Opening Remarks Guest of Honor: S. (Kris) Gopalakrishnan – Chief Operating Officer and Deputy Managing Director, Infosys Technologies Limited
8:30am - 9:30am	Keynote Address by Jeffrey Wadsworth <i>Advanced Scientific Computing: An Extraordinary Tool for Extraordinary Science</i>
10:00am - noon	Parallel Technical Sessions I & II (5 + 5 papers)
1:00pm - 2:00pm	Keynote Address by Pierre Fraigniaud <i>Navigability of Small World Networks</i>
2:30pm - 4:00pm	Poster Presentations
4:00pm - 5:00pm	Poster Session
5:00pm - 6:30pm	Best Paper (2 papers) and Best Poster Awards Plenary Session

Wednesday, December 20, 2006

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

Thursday, December 21, 2006

8:30am - 9:30am	Keynote Address by Zhiwei Xu <i>High-Performance Computing for the Masses</i>
10:00am - noon	Parallel Technical Sessions VII & VIII (5 + 5 papers)
1:00pm - 2:00pm	Keynote Address by Dennis Gannon <i>Opportunities and Challenges for Future Generation Grid Research</i>
2:30pm - 4:30pm	Parallel Technical Sessions IX & X (5 + 5 papers)

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 (FernUniversität 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

Frederic 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)

Collaborative Grid Process Creation Support in an Engineering Domain

Thomas Friese (University of Marburg, Germany); Matthew Smith (University of Marburg, Germany); Bernd Freisleben (University of Marburg, Germany); Julian Reichwald (University of Siegen, Germany); Thomas Barth (University of Siegen, Germany); Manfred Grauer (University of Siegen, Germany)

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 Baskiyar (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

Sayantana 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); Neungsoo Park (Konkuk University, Korea)

2:30 pm - 4:30 pm

SESSION X

Routing and Data Management Algorithms

Chair: Murali Medidi

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)