



**14th IEEE International Conference on
High Performance Computing (HiPC 2007)
Goa, India, December 18-21, 2007**

HiPC 2007 Conference Program

Program-at-a-Glance

Tuesday, December 18, 2007

8:30am - 6:30pm	Workshops
8:30am - 6:30pm	Tutorials I & II

Wednesday, December 19, 2007

8:00am - 8:15am	Inauguration and Opening Remarks
8:15am - 8:30 am	Introduction by Ashwini Kumar Nanda Title: <i>"CRL's Eka Supercomputer and its mission"</i>
8:30am - 9:30am	Keynote Address by Michael Flynn Title: <i>"The future is parallel but it may not be easy"</i>
10:00am - 12:30pm	Parallel Technical Sessions I & II (6 + 6 papers)
1:30pm - 2:30pm	Keynote Address by David Keyes Title: <i>"Petaflop/s, Seriously"</i>
3:00pm - 4:30pm	Poster Presentations
4:30pm - 5:30pm	Poster Session
5:30pm - 6:00pm	Best Paper (1 paper) and Best Poster Awards Plenary Session
6:00pm - 7:00pm	Invited Plenary Talk Speaker: Ashwini Kumar Nanda Title: <i>"The Architecture, Design, and Layout of the Eka Supercomputer"</i>

Thursday, December 20, 2007

8:30am - 9:30am	Keynote Address by Prabhakar Raghavan Title: <i>"Web Search: bridging information retrieval and microeconomic modeling"</i>
10:00am - noon	Parallel Technical Sessions III & IV (5 + 5 papers)
10:00am - noon	User Symposium – Part 1
1:00pm - 3:00pm	Parallel Technical Sessions V & VI (5 + 5 papers)
1:00pm - 3:00pm	User Symposium – Part 2
10:00am - 6:00pm	Industry Exhibits
3:15pm - 6:15pm	Industry Session
6:15pm - 9:30pm	Conference Banquet, Cultural Program, and Dinner (Sponsored by: Dell & Platform Computing)

Friday, December 21, 2007

8:30am - 9:30am	Keynote Address by Vipin Kumar Title: <i>"High Performance Data Mining - Application for Discovery of Patterns in the Global Climate System"</i>
10:00am - noon	Parallel Technical Sessions VII & VIII (5 + 5 papers)
1:00pm - 2:00pm	Keynote Address by Yale Patt Title: <i>"The Transformation Hierarchy in the Era of Multi-Core"</i>
2:30pm - 4:30pm	Parallel Technical Sessions IX & X (5 + 5 papers)

Program Details

Tuesday, December 18, 2007

7:30 am - 8:30 am

Breakfast

8:30 am - 10:30 am

Workshop on New Horizons in Compilers (half-day)

Workshop on Grid and Utility Computing (half-day)

Tutorial I: Sensor Networks

Presenter: Prof. Dharma P. Agrawal, University of Cincinnati, USA

10:30 am - 11:00 am

Break

11:00 am - 1:00 pm

Workshop on New Horizons in Compilers (contd.)

Workshop on Grid and Utility Computing (contd.)

Tutorial I: Sensor Networks (contd.)

1:00 pm - 2:00 pm

Lunch

2:00 pm - 4:00 pm

Workshop on Service-Oriented Engineering and Optimization (half-day)

Workshop on Storage Technologies in Computing Clusters & Datacenter Environments (half-day)

Tutorial II: Programming Models and Compiler Optimizations for GPUs and Multi-core Processors

Presenter: Prof. J. Ramanujam, Louisiana State University, USA & Prof. P. Sadayappan, The Ohio State University, USA

4:00 pm - 4:30 pm

Break

4:30 pm - 6:30 pm

Workshop on Service-Oriented Engineering and Optimization (contd.)

Workshop on Storage Technologies in Computing Clusters & Datacenter Environments (contd.)

4:30 pm - 6:30 pm

Tutorial II: Programming Models and Compiler Optimizations for GPUs and Multi-core Processors (contd.)

Program Details

Wednesday, December 19, 2007

7:00 am - 8:00 am

Breakfast

8:00 am - 8:15 am

INAUGURATION and OPENING REMARKS

8:15 am - 8:30 am

Introductory remarks by **Ashwini Kumar Nanda**

Title: *"CRL's Eka Supercomputer and its mission"*

8:30 am - 9:30 am

KEYNOTE ADDRESS

Speaker: **Michael Flynn**

Maxeler Corporation and Stanford University, USA

Title: *"The future is parallel but it may not be easy"*

9:30 am - 10:00 am

Break

10:00 am – 12:30pm

SESSION I

Applications on I/O and FPGAs

Chair: P. Sadayappan, Ohio State University

ROW-FS: A User-level Virtualized Redirect-on-write Distributed File System for Wide Area Applications

Vineet Chadha (University of Florida, US); Renato Figueiredo (University of Florida, US);

No More Energy-Performance Trade-Off: A New Data Placement Strategy for RAID-Structured Storage Systems

Tao Xie (San Diego State University, US); Yao Sun (San Diego State University, US);

On Reducing the IO Volume in a Sparse Out-of-core Solver

Emmanuel Agullo (ENS Lyon, FR); Abdou Guermouche (Labri/Univ. Bordeaux, FR); Jean-Yves L'Excellent (INRIA/ENS-Lyon, FR);

Experiments With A Parallel External Memory System

Mohammad Nikseresht (Carleton University, CA); Anil Maheshwari (Carleton University, CA); David Hutchinson (Carleton University, CA);

An FPGA-based Accelerator for Multiple Biological Sequence Alignment with DIALIGN

Azzedine Boukerche (University of Ottawa, CA); Alba Cristina Melo (University of Brasilia (UnB), BR); Jan Correa (University of Brasilia (UnB), BR); Ricardo Jacobi (University of Brasilia, BR); Adson Rocha (University of Brasilia (UnB), BR);

A speed-area optimized architecture for Full Search Block Matching with applications in high-definition TVs (HDTV)

Santosh Ghosh (Indian Institute of Technology, IN);

10:00 am – 12:30 pm

SESSION II

Microarchitecture and Multiprocessor Architecture

Chair: Ramesh Rajagopalan, Dell

Evaluating ISA support and Hardware Support for Recursive Data Layouts

Won-Taek Lim (Purdue University, US); Mithuna Thottethodi (Purdue University, US);

qTLB: Looking inside the Look-aside buffer

Omesh Tickoo (Intel Corporation, US); Hari Kannan (Stanford, US); Vineet Chadha (University of Florida, US); Ramesh Illikkal (Intel Corporation, US); Ravishankar Iyer (Intel Corp, US); Don Newell (Intel Corporation, US);

Analysis of x86 ISA condition codes influence on superscalar execution

Virginia Escuder (Universidad de Alcalá, ES); Raúl Durán (Universidad de Alcalá, ES); Rafael Rico (Universidad de Alcalá, ES);

Efficient Message Management in Tiled CMP Architectures using a Heterogeneous Interconnection Network

Antonio Flores Gil (University of Murcia, Spain, ES); Manuel Acacio (Universidad de Murcia, Spain, ES); Juan Aragón (Universidad de Murcia, Spain, ES)

Direct Coherence: Bringing Together Performance and Scalability in Shared-Memory Multiprocessors

Alberto Ros (Universidad de Murcia, Spain, ES); Manuel Acacio (Universidad de Murcia, Spain, ES); José M. García (Universidad de Murcia, Spain, ES);

Constraint-aware Large-scale CMP Cache Design

Srihari Makineni (Intel Corp., US); Ravishankar Iyer (Intel Corp, US); Li Zhao (Intel, US); Jaideep Moses (Intel Corp., US); Ramesh Illikkal (Intel Corporation, US); Don Newell (Intel Corporation, US);

12:30 pm - 1:30 pm

LUNCH

1:30 pm - 2:30 pm

KEYNOTE ADDRESS

Speaker: **David Keyes**

Fu Foundation Professor

Applied Physics and Applied Mathematics, Columbia University, USA

Title: *“Petaflop/s, Seriously”*

2:30 pm - 3:00 pm

Break

Poster Setup Time

3:00 pm - 4:30 pm

POSTER PRESENTATIONS

Chair: Rajeev Thakur, Argonne National Laboratory, USA

4:30 pm - 5:30 pm

POSTER SESSION

Chair: Rajeev Thakur, Argonne National Laboratory, USA

5:30 pm - 6:00 pm

BEST PAPER AND BEST POSTER AWARDS PLENARY SESSION

Chair:

BEST PAPER: Distributed Ranked Search

Vijay Gopalakrishnan (AT&T Labs - Research, US); Ruggero Morselli (Google, US); Samrat Bhattacharjee (University of Maryland at College Park, US); Pete Keleher (University of Maryland, US); Aravind Srinivasan (University of Maryland, US);

6:00 pm - 7:00 pm

INVITED PLENARY TALK

Speaker: **Ashwini Kumar Nanda**

Title: ***“The Architecture, Design, and Layout of the Eka Supercomputer”***

Program Details

Thursday, December 20, 2007

7:30 am - 8:30 am

Breakfast

8:30 am - 9:30 am

KEYNOTE ADDRESS

Speaker: **Prabhakar Raghavan**

Head, Yahoo! Research

Consulting Professor, Computer Science Department, Stanford University, USA

Title: *“Web Search: bridging information retrieval and microeconomic modeling”*

9:30 am - 10:00 am

Break

10:00 am - noon

SESSION III

Applications of Novel Architectures

Chair: Ananth Grama, Purdue University

FFTC: Fastest Fourier Transform for the IBM Cell Broadband Engine

David Bader (Georgia Institute of Technology, US); Virat Agarwal (Georgia Institute of Technology, US);

Molecular Dynamics Simulations on Commodity GPUs With CUDA

Weiguo Liu (Nanyang Technological University, SG);

Accelerating large graph algorithms on the GPU using CUDA

Pawan Harish (International Institute of Information Technology, Hyderabad, IN);

FT64: Scientific Computing with Stream

Wu Nan (National University of Defense Technology, CN); Wen Mei (National University of Defense Technology, CN); Zhang Chunyuan (National University of Defense Technology, CN)

Implementation and Evaluation of Jacobi Iteration on the Imagine Stream Processor

Jing Du (National University of Defense Technology, CN);

10:00 am - noon

SESSION IV

System Software

Chair: Lawrence Rauchwerger, Texas A&M University

Compiler-Directed Dynamic Voltage Scaling using Program Phases

Shyam Krishnaswamy (Indian Institute of Science, IN); Govindarajan Ramaswamy (Indian Institute of Science, IN);

Partial Flow Sensitivity

Subhajit Roy (Indian Institute of Science, Bangalore, IN); Srikant YN (Indian Institute of Science, IN);

A Scalable Asynchronous Replication based Strategy for Fault Tolerant MPI Applications

John Walters (Wayne State University, US); Vipin Chaudhary (University at Buffalo, SUNY, US);

Towards a Transparent Data Access Model for the GridRPC Paradigm

Gabriel Antoniu (INRIA, FR); Eddy Caron (ENS-Lyon, FR); Frederic Desprez (INRIA, FR); Aurélie Fèvre (ENS-Lyon, FR); Mathieu Jan (LRI, INRIA Futurs, FR);

A Proxy-based Self-Tuned Overload Control for Multi-Tiered Server Systems

Varsha Apte (Indian Institute of Technology Bombay, IN); Rukma Verlekar (Indian Institute of Technology, Bombay, IN);

10:00 am - noon

USER SYMPOSIUM - Part 1

Noon - 1:00 pm

Lunch

1:00 pm - 3:00 pm

SESSION V

Scheduling

Chair: Sanjeev Baskiyar, Auburn University

Approximation Algorithms for Scheduling with Reservations

Florian Diedrich (University of Kiel, DE); Klaus Jansen (University of Kiel, DE); Fanny Pascual (INRIA, laboratoire d'informatique de Grenoble, FR); Denis Trystram (Univ. of Grenoble, FR);

Enhanced Real-Time Divisible Load Scheduling with Different Processor Available Times

Xuan Lin (University of Nebraska, Lincoln, US); Ying Lu (University of Nebraska, Lincoln, US); Jitender Deogun (University of Nebraska, Lincoln, US); Steve Goddard (University of Nebraska, Lincoln, US);

A General Distributed Scalable Peer to Peer Scheduler for Mixed Tasks in Grids

Cong Liu (Auburn University, US); Sanjeev Baskiyar (Auburn University, US); Shuang Li (Auburn University, US);

An Energy-aware Gradient-based Scheduling Heuristic for Heterogeneous Multiprocessor Embedded Systems

Lee Kee Goh (Institute for Infocomm Research, SG); Bharadwaj Veeravalli (National University of Singapore, SG); Sivakumar Viswanathan (Institute for Infocomm Research, SG);

On temperature-aware scheduling for single-processor systems

Deepak Rajan (IBM Research, US); Philip Yu (IBM T.J. Watson Research Center, US)

1:00 pm - 3:00 pm

SESSION VI

Energy-Aware Computing

Chair: Manish Gupta, IBM

Reuse Distance Based Cache Leakage Control

Yulai Zhao (Peking University, CN);

Self-Optimization of Performance per Watt for Interleaved Memory Systems

Bithika Khargharia (University of Arizona, US); Salim Hariri (University of Arizona, US); Mazin Yousif (Intel, US);

Distributed Algorithms for Lifetime of Wireless Sensor Networks based on Dependency Structure among Cover Sets

Sushil Prasad (Georgia State University, US); Akshaye Dhawan (Georgia State University, US);

DPS-MAC: An Asynchronous MAC Protocol for Wireless Sensor Networks

Heping Wang (University of Illinois at Chicago, US); Xiaobo Zhang (University of Illinois at Chicago, US);
Ashfaq Khokhar (University of Illinois at Chicago, US);

Compiler-Assisted Instruction Decoder Energy Optimization for Clustered VLIW Architectures

Rahul Nagpal (Indian Institute of Science, IN); Srikant YN (Indian Institute of Science, IN);

1:00 pm – 3:00 pm

USER SYMPOSIUM - Part 2

3:00 pm - 3:15 pm

Break

3:15 pm - 6:15 pm

INDUSTRY SESSION

6:15 pm - 9:30 pm

Conference Banquet, Cultural Program and Dinner

Sponsored by:

Dell & Platform Computing

Program Details

Friday, December 21, 2007

7:30 am - 8:30 am

Breakfast

8:30 am - 9:30 am

KEYNOTE ADDRESS

Speaker: **Vipin Kumar**

William Norris Professor, Head of the Computer Science and Engineering Department
University of Minnesota, USA

Title: “High Performance Data Mining - Application for Discovery of Patterns in the Global Climate System”

9:30 am - 10:00 am

Break

10:00 am - noon

SESSION VII

P2P and Internet Applications

Chair: Pankaj Jalote, IIT Delhi

P2P Document Tree Management in a Real-Time Collaborative Editing System

Jon Preston (Georgia State University, US); Sushil Prasad (Georgia State University, US);

Structuring Unstructured Peer-to-Peer Networks

Stefan Schmid (ETH Zurich, CH); Roger Wattenhofer (ETH Zurich, CH);

Multi-objective P2P Neighbor-Selection Strategy Using Genetic Algorithm

Ajith Abraham (Norwegian University of Science and Technology, NO); Hongbo Liu (Dalian University of Technology, CN);

Effect of Dynamicity on Peer to Peer Networks

Bivas Mitra (Indian Institute of Technology, Kharagpur, IN); Sujoy Ghose (Indian Institute of Technology, Kharagpur, IN); Niloy Ganguly (Indian Institute of Technology, Kharagpur, IN);

Hierarchical Multicast Routing Scheme for Mobile ad hoc Network

Shajin Nargunam (Noorul Islam College of Engineering, Anna University Chennai, IN);

10:00 am - noon

SESSION VIII

Communication and Routing

Chair: DK Panda, Ohio State University

The Impact of Noise on the Scaling of Collectives: The Nearest Neighbor Model

Nisheeth Vishnoi (University of California, Berkeley, US);

Optimization of Collective Communication in Intra-Cell MPI

Ashok Srinivasan (Florida State University, US); Murali Velamati (Sri Sathya Sai Institute of Higher Learning, IN); Arun Kumar (Sri Sathya Sai Institute of Higher Learning, IN); Naresh Jayam (Sri Sathya Sai Institute of Higher Learning, IN); Ganapathy Raja Chockalingam (Sri Sathya Sai Institute of Higher Learning, IN); Pallav Baruah (Sri Sathya Sai Institute of Higher Learning, IN);

Routing-Contained Virtualization based on Up*/Down* Forwarding

Aashild Solheim (Simula Research Laboratory, NO); Olav Lysne (Simula Research Laboratory, NO); Thomas Sødning (Simula Research Laboratory, NO); Tor Skeie (Simula Research Lab, NO); Jakob Libak (Simula Research Laboratory, NO);

A Routing Methodology for Dynamic Fault Tolerance in Meshes and Tori

Nils Agne Nordbotten (SIMULA Research Laboratory, NO); Tor Skeie (Simula Research Lab, NO);

Fault-Tolerant Topology Adaptation by Localized Distributed Protocol Switching

Sushanta Karmakar (Indian Institute of Technology, Kharagpur, IN); Arobinda Gupta (Indian Institute of Technology, Kharagpur, IN);

Noon - 1:00 pm

Lunch

1:00 pm - 2:00 pm

KEYNOTE ADDRESS

Speaker: **Yale Patt**

Professor of Electrical and Computer Engineering,
Ernest Cockrell, Jr. Centennial Chair in Engineering,
University of Texas at Austin, USA

Title: “The Transformation Hierarchy in the Era of Multi-Core”

2:00 pm - 2:30 pm

Break

2:30 pm - 4:30 pm

SESSION IX

Cluster and Grid Applications

Chair: Ashok Srinivasan, Florida State University

Accomplishing Approximate FCFS fairness without queues

K. Subramani (West Virginia University, US); Kamesh Madduri (Georgia Institute of Technology, US)

A Novel Force Matrix Transformation with Optimal Load-Balance for 3-body Potential based Parallel Molecular Dynamics using Atom-Decomposition in a Heterogeneous Cluster Environment

Sumanth Jannyavula Venkata (University of Nebraska-Lincoln, US); Hong Jiang (University of Nebraska at Lincoln, US); David Swanson (University of Nebraska at Lincoln, US);

Grid'BnB: A Parallel Branch & Bound Framework for Grids

Alexandre di Costanzo (INRIA - I3S - CNRS - Université Nice Sophia Antipolis, FR); Laurent Baduel (Tokyo Institute of Technology, JP); Denis Caromel (Univ. of Nice, CNRS/I3S, INRIA, IUF, FR); Satoshi Matsuoka (Tokyo Institute of Technology, JP);

The CMS Remote Analysis Builder (CRAB)

Daniele Spiga (University and INFN of Perugia, IT);

Applying Internet Random Early Detection Strategies to Scheduling in Grid Environments

Manuel Brugnoli (Universitat Autònoma de Barcelona, ES); Steven Willmott (Universitat Politècnica de Catalunya, ES); Elisa Heymann (Universitat Autònoma de Barcelona, ES); Paul Hurley (IBM Research, Zurich); Miquel Senar (Universitat Autònoma de Barcelona, ES);

2:30 pm - 4:30 pm

SESSION X

Mobile Computing

Chair: Kumkum Garg, IIT Roorkee

A Consistent Checkpointing-Recovery Protocol for Minimal number of Nodes in Mobile Computing System

Sarmistha Neogy (Jadavpur University, IN); Chandreyee Chowdhury (Jadavpur University, IN);

MASD: Mobile Agent Based Service Discovery in Ad Hoc Network

Neeraj Nehra (Shri Mata Vaishno Devi University, IN);

Channel Adaptive Real-Time MAC protocols for a Two-level Heterogeneous Wireless Network

Kavitha Balasubramanian (Iowa State University, US); Sudha Anil Gathala (Iowa State University, US); Manimaran Govindarasu (Iowa State University, US);

Modeling Hierarchical Mobile Agent Security Protocol Using CP Nets

Nimesh Desai (IIT Roorkee, IN); Kumkum Garg (Indian Institute of Technology Roorkee, IN); Manoj Misra (Indian Institute of Technology, Roorkee, IN); Bharadwaj Veeravalli (National University of Singapore, SG);

Single Lock Manager Approach for Achieving Concurrency Control in Mobile Environments

Salman Moiz (Muffakham Jah College of Engg & Tech, Osmania University, IN); Lakshmi Rajamani (Osmania University, IN);