



## 2010 International Conference on Parallel Processing

■ September 13-16, 2010   ■ Doubletree Hotel San Diego, Mission Valley   ■ San Diego, USA

### *CONFERENCE AT A GLANCE*

	MONDAY SEPT. 13	TUESDAY SEPT. 14				WEDNESDAY SEPT. 15				THURSDAY SEPT. 16			
8:00	Registration and Breakfast	Registration and Breakfast				Registration and Breakfast				Registration and Breakfast			
8:30													
9:00	MCSoc PSTI P2S2 Greencom	<b>Opening Remarks</b>				<b>Keynote II</b> Speaker: Dan Reed				<b>Keynote III</b> Speaker: Kathy Yelick			
9:30		<b>Keynote I</b> Speaker: Dean Tullsen											
10:00													
10:30	Refreshments	Refreshments				Refreshments				Refreshments			
11:00	MCSoc PSTI P2S2 Greencom	Session 1A	Session 1B	Session 1C	CLAWS	Session 4A	Session 4B	Session 4C	SRMPDS	Session 6A	Session 6B	Session 6C	AWASN
11:30													
12:00													
12:30	Lunch (on your own)	Lunch (on your own)				Lunch (on your own)				Lunch (on your own)			
1:00													
1:30													
2:00	MCSoc PSTI P2S2 Greencom	Session 2A	Session 2B	Session 2C	SCC SRMPDS	Session 5A	Session 5B	Session 5C	DIAMOND	Session 7A	Session 7B	Session 7C	AWASN
2:30													
3:00													
3:30	Refreshments	Refreshments				Refreshments				Refreshments			
4:00	MCSoc PSTI P2S2 Greencom	Session 3A	Session 3B	Session 3C	SCC SRMPDS	Panel Session				Session 8A	Session 8B	Session 8C	AWASN
4:30													
5:00													
5:30	Recess	Recess				ICPP 2011, Taipei				Recess			
6:00													
6:30		ICPP Reception (at Tennis Patio)				ICPP Banquet (at Grand Ballroom V)							
7:00													
7:30													
8:00													

# PROGRAM

## Tuesday, Sept. 14

### Opening Remarks

*Grand Ballroom IV: 9:00 – 9:30*

### Keynote Address I

*Grand Ballroom IV: 9:30 – 10:30*

“Many Cores, One Thread: The Search for Non-traditional Parallelism”

**Speaker: Dean Tullsen**

10:30 – 11:00 Break

### Session 1A: Architecture I

*Grand Ballroom I: 11:00-12:30*

*Chair – Jeanine Cook*

- Achieving Fair or Differentiated Cache Sharing in Power-Constrained Chip Multiprocessors, Xiaorui Wang, Kai Ma, Yefu Wang
- A Theoretical Framework for Value Prediction in Parallel Systems, Shaoshan Liu, Christine Eisenbeis, Jean-Luc Gaudiot
- Heterogeneous Mini-Rank: Adaptive, Power-Efficient Memory Architecture, Kun Fang, Hongzhong Zhen, Zhichun Zhu

### Session 1B: Compilers, Programming Models and Languages I

*Grand Ballroom II: 11:00-12:30*

*Chair – Gul Khan*

- Gossamer: A Lightweight Approach to Using Multicore Machines, Joseph Roback, Gregory Andrews
- Toward Harnessing DOACROSS Parallelism for Multi-GPGPUs, Peng Di, Qing Wan, Xuemeng Zhang, Hui Wu, Jingling Xue
- Exploitation of Dynamic Communication Patterns through Static Analysis, Robert Preissl, Bronis de Supinski, Martin Schulz, Daniel Quinlan, Dieter Kranzmueller, Thomas Panas

### Session 1C: Algorithms and Applications I

*Grand Ballroom III: 11:00-12:30*

*Chair – Hiroyuki Ebara*

- Parallel Exact Inference on a CPU-GPGPU Heterogeneous System, Hyeran Jeon, Yinglong Xia and Viktor Prasanna
- Minimizing Stretch and Makespan of Multiple Parallel Task Graphs via

Frederic Desprez, Frederic Suter

- Efficient PageRank and SpMV Computation on AMD GPUs, Tianji Wu, Bo Wang, Yi Shan, Feng Yan, Yu Wang, Ningyi Xu

12:30-14:00 Lunch Break

### Session 2A: Performance Evaluation and Simulation I

*Grand Ballroom I: 14:00 - 15:30*

*Chair – Hidenori Nakazato*

- Identifying the root causes of wait states in large-scale parallel applications, David Böhme, Markus Geimer, Felix Wolf, Lukas Arnold
- Energy Modeling of Wireless Sensor Nodes Based on Petri Nets, Ali Shareef, Yifeng Zhu
- Optimal Task Reallocation in Heterogeneous Distributed Computing Systems with Age-dependent Delay Statistics, Jorge Pezoa, Majeed Hayat, Zhuoyao Wang, Sagar Dhakal

### Session 2B: OS/Resource Management I

*Grand Ballroom II: 14:00 - 15:30*

*Chair – Jeffrey J. Evans*

- Rearchitecting MapReduce for Heterogeneous Multicore Processors with Explicitly Managed Memories, Anastasios Papagiannis, Dimitrios S. Nikolopoulos
- System-level, Unified In-band and Out-of-band Dynamic Thermal Control, Dong Li, Rong Ge, Kirk Cameron
- Microwiper: Efficient Memory Propagation in Live Migration of Virtual Machines, Yuyang Du, Hongliang Yu, Guangyu Shi, Jian Chen, Weimin Zheng

### Session 2C: Algorithms and Applications II

*Grand Ballroom III: 14:00 - 15:30*

*Chair – Esmond Ng*

- Reliability and performance optimization of pipelined real-time systems, Anne Benoit, Fanny Dufosse, Alain Girault, Yves Robert
- Efficient Randomized Protocols for Single-Hop Radio Networks, Sanguthevar Rajasekaran, Dolly Sharma, Reda Ammar, Nicholas Lownes

Cappello, Henri Casanova, Yves Robert

15:30-16:00 Break

### Session 3A: Wireless Networks and Pervasive Computing

*Grand Ballroom I: 16:00 – 17:30*

*Chair – Wang-Chien Lee*

- Revisiting Tag Collision Problem in RFID Systems, Lei Yang, Jinsong Han, Yong Qi, Cheng Wang, Yunhao Liu, Ying Cheng, Xiao Zhong
- Distributed Minimum Transmission Multicast Routing Protocol for Wireless Sensor Networks, Long Cheng, Sajal K. Das, Jiannong Cao, Canfeng Chen, Jian Ma
- A Quantitative Study of Accountability in Wireless Multi-hop Networks, Zhifeng Xiao, Yang Xiao, Jie Wu

### Session 3B: Cluster, Grid and Cloud Computing I

*Grand Ballroom II: 16:00 – 17:30*

*Chair – Xiaoru Wang*

- Elastic Live Task Migration by Stack-On-Demand, Ricky K. K. Ma, Cho-Li Wang
- Designing Power-Aware Collective Communication Algorithms for InfiniBand Clusters, Krishna Kandalla, Emilio Mancini, Sayantan Sur and Dhabaleswar (DK) Panda
- Starling: Minimizing Communication Overhead in Virtualized Computing Platforms Using Decentralized Affinity-Aware Migration, Jason Sonnek, James Greensky, Robert Reutiman, Abhishek Chandra

### Session 3C: P2P and Service-Oriented Architectures I

*Grand Ballroom III: 16:00 – 17:30*

*Chair – Sanguthevar Rajasekaran*

- Dual-phase Just-in-time Workflow Scheduling in P2P Grid Systems, Sheng Di, Cho-li Wang
- A DHT-Aided Chunk-Driven Overlay for Scalable and Efficient Peer-to-Peer Live Streaming, Haiying Shen, Lianyu Zhao, Ze Li, Jin Li
- Towards building efficient content-based publish/subscribe systems over structured p2p overlays, Shengdong Zhang, Ji Wang, Rui Shen, Jie Xu

### ICPP '10 Reception

*Tennis Patio: 18:00 – 20:00*

## Wednesday, Sept. 15

### Keynote Address II

*Grand Ballroom IV: 9:30 – 10:30*

“Parallel Computing: Insights for the Future”

**Speaker: Dan Reed**

10:30 – 11:00 Break

### Session 4A: Architecture II

*Grand Ballroom I: 11:00-12:30*

*Chair – Nathan Gnanasambandam*

- A G-line-based Network for Fast and Efficient Barrier Synchronization in Many-Core CMPs, José L. Abellán, Juan Fernández, Manuel E. Acacio
- Hyperscalar: A Novel Dynamically Reconfigurable Multi-core Architecture, Jih-Ching Chiu, Yu-Liang Chou, Po-Kai Chen
- Dynamic Switching-Frequency Scaling: Scheduling Overcommitted Domains in Xen VMM, Huacai Chen, Hai Jin, Kan Hu, Jian Huang

### Session 4B: Compilers, Programming Models and Languages II

*Grand Ballroom II: 11:00-12:30*

*Chair – Ben Abdallah Abderazek*

- Block-Parallel Programming for Real-time Embedded Applications, David Black-Schaffer, William Dally
- Automatic Generation of Stream Descriptors for Streaming Architectures, Lei Gao, David Zaretsky, Gaurav Mittal, Dan Schonfeld, Prith Banerjee
- Efficient Work Stealing for Fine Grained Parallelism, Karl-Filip Faxen

### Session 4C: Algorithms and Applications III

*Grand Ballroom III: 11:00-12:30*

*Chair – Yves Robert*

- Parameterized Schedulability Analysis on Uniform Multiprocessors, Risat Mahmud Pathan, Jan Jonsson
- A scalable parallel algorithm for large-scale protein sequence homology detection, Changjun Wu, Ananth Kalyanaraman, William Cannon
- A MapReduce Style Framework for Computations on Trees, Abhinav Sarje, Srinivas Aluru

12:30 - 14:00 Lunch Break

### Session 5A: Performance Evaluation and Simulation II

*Grand Ballroom I: 14:00 – 15:30*

*Chair – Benjamin K. Bergen*

- Characterizing the Relation Between Apex-Map Synthetic Probes and Reuse Distance Distributions, Khaled Ibrahim and Erich Strohmaier
- Extending the Monte Carlo Processor Modeling Technique: Statistical Performance Models of the Niagara 2 Processor, Waleed Alkohani, Jeanine Cook, Ram Srinivasan
- Modelization and Performance Evaluation of the DIET Middleware, Eddy Caron, Benjamin Depardon, Frédéric Desprez

### Session 5B: Cluster, Grid and Cloud Computing II

*Grand Ballroom II: 14:00 – 15:30*

*Chair – Xin Yuan*

- Power Management in Heterogeneous Multi-tier Web Clusters, Peijian Wang, Yong Qi
- Cyberaide onServe: Software as a Service on Production Grids, Tobias Kurze, Lizhe Wang, Gregor von Laszewski, Jie Tao, Marcel Kunze, David Kramer, Wolfgang Karl
- Energy Efficient Prefetching with Buffer Disks for Cluster File Systems, Adam Manzanara, Xiaojun Ruan, Shu Yin, Jiong Xie, Zhiyang Ding, Yun Tian, James Majors, Xiao Qin

### Session 5C: Information Retrieval and Knowledge Discovery

*Grand Ballroom III: 14:00 – 15:30*

*Chair – Xubin He*

- DISQO: A DISTRIBUTED Framework for Spatial Queries over Moving Objects, Baihua Zheng, Wang-chien Lee, Ken C. K Lee, Julian Winter, Meng-Chang Chen
- Model-driven Traffic Data Acquisition in Vehicular Sensor Networks, Chih-Chieh Hung, Wen-Chih Peng
- Distributing a Metric-Space Search Index onto Processors, Mauricio Marin, Flavio Ferrarotti, Veronica Gil-Costa

15:30 – 16:00 Break

### Panel Session

*Grand Ballroom IV: 16:00 – 17:30*

“Accelerators: Fad, Fashion, or Future”

Co-Organizers:

Wu Feng, Pavan Balaji

Panelists:

Srinivas Aluru, Taisuke Boku, Dimitris Nikolopoulos, Daniel Reed, Yves Robert

### ICPP '10 Banquet

*Grand Ballroom V*

18:30 – 20:30

## Thursday, Sept. 16

### Keynote Address III

*Grand Ballroom IV: 9:30 – 10:30*

**Speaker: Kathy Yelick**

10:30 – 11:00 Break

### Session 6A: Architecture III

*Grand Ballroom I: 11:00 – 12:30*

*Chair – David Black-Schaffer*

- Cubic Ring Networks: A Polymorphic Topology for Network-on-Chip, Bilal Zafar, Jeff Draper
- Speculative Execution on GPU: An Exploratory Study, Shaoshan Liu, Christine Eisenbeis and Jean-Luc Gaudiot
- Improving Application Performance and Predictability using Multiple Virtual Lanes in Modern Multi-Core InfiniBand Clusters, Hari Subramoni, Ping Lai, Sayantan Sur, Dhableswar Panda

### Session 6B: Compilers, Programming Models and Languages III

*Grand Ballroom II: 11:00 – 12:30*

*Chair – Karen Karavanic*

- packetC Language and Parallel Processing of Masked Databases, Ralph Duncan, Peder Jungck, Kenneth Ross
- Handling Conflicts with Compiler's help in Software Transactional Memory Systems, Sandya Mannarswamy, Ramaswamy Govindarajan
- Design and Implementation of a Hybrid Parallel Performance Measurement System, Alan Morris, Allen Malony, Sameer Shende, Kevin Huck

### Session 6C: Algorithms and Applications IV

*Grand Ballroom III: 11:00 – 12:30*

*Chair – Ananth Kalyanara*

- Scalability of a Parallel JPEG Encoder on Shared Memory Architectures, David Castells-Rufas, Jaume Joven, Jordi Carrabina
- Integer Number Crunching on the Cell Processor, Hsieh-Chung Chen, Chen-Mou Cheng., Shih-Hao Hung, Zong-Cing Lin
- Incentive Compatible Online Scheduling of Malleable Parallel Jobs with Individual Deadlines, Thomas Carroll, Daniel Grosu

12:30 - 14:00 Lunch Break

### **Session 7A: Performance Evaluation and Simulation III**

*Grand Ballroom I: 14:00 – 15:30*

*Chair – Laksono Adhianto*

- Optimizing HPC Fault-Tolerant Environment: An Analytical Approach, Hui Jin, Yong Chen, Huaiyu Zhu, Xian-He Sun
- Detailed Load Balance Analysis of Large Scale Parallel Applications, Kevin Huck, Jesus Labarta
- A Machine Learning Approach for Optimizing Parallel Logic Simulation, Sina Meraji, Carl Tropper

### **Session 7B: OS/Resource Management II**

*Grand Ballroom II: 14:00 – 15:30*

*Chair – Wen-Chih Peng*

- A Gray-box Feedback Control Approach for System-Level Peak Power Management, Jiayu Gong, Cheng-Zhong Xu
- A Lightweight, GPU-Based Software RAID System, Matthew Curry, Lee Ward, Anthony Skjellum, Ron Brightwell
- Task Assignment with Cache Partitioning and Locking for WCET Minimization on MPSoC, Tiantian Liu, Yingchao Zhao, Minming Li, Chun Jason Xue

### **Session 7C: Algorithms and Applications V**

*Grand Ballroom III: 14:00 – 15:30*

*Chair – Chen-Mou Cheng*

- Massive Social Network Analysis: Mining Twitter for Social Good, David Ediger, Karl Jiang, Jason Riedy, David A. Bader, Courtney Corley, Rob Farber, William N. Reynolds
- Subgraph Enumeration in Large Social Contact Networks using Parallel Color Coding and Streaming, Zhao Zhao, Maleq Khan, Anil Vullikanti, Madhav Marathe
- Lock-free Multiway Search Trees, Michael Spiegel, Paul Reynolds

15:30 – 16:00 Break

### **Session 8A: Data Intensive and I/O Computing**

*Grand Ballroom I: 16:00 – 17:30*

*Chair – Maleq Khan*

- SAM: A Semantic-Aware Multi-Tiered Source De-duplication Framework for Cloud Backup, Yujian Tan, Hong Jiang, Dan Feng, Lei Tian, Zhichao Yan, Guohui Zhou

- Hint-K: An Efficient Multi-level Cache Using K-step Hints, Chentao Wu, Xubin He, Qiang Cao, Changsheng Xie
- FlashCoop: A Locality-Aware Cooperative Buffer Management for SSD-based Storage Cluster, Qingsong Wei, Bozhao Gong, Suraj Pathak, Y.C. Tay

### **Session 8B: Cluster, Grid and Cloud Computing III**

*Grand Ballroom II: 16:00 – 17:30*

*Chair – Dimitrios Nikolopoulos*

- Near-optimal Rendezvous Protocols for RDMA-enabled Clusters, Matthew Small, Zheng Gu and Xin Yuan
- Performance Management of Accelerated MapReduce Workloads in Heterogeneous Clusters, Jorda Polo, David Carrera, Yolanda Becerra, Vicenç Beltran, Jordi Torres, Eduard Ayguade
- MemX: Virtualization of Cluster-wide Memory, Umesh Deshpande, Beilan Wang, Shafee Haque, Michael Hines, Kartik Gopalan

### **Session 8C: P2P and Service-Oriented Architectures II**

*Grand Ballroom III: 16:00 – 17:30*

*Chair – Yu-Chee Tseng*

- Using Mobile Mules for Collecting Data from an Isolated Wireless Sensor Network, Yu-Chee Tseng, Wan-Ting Lai, Chi-Fu Huang, Fang-Jing Wu
- A Simple Effective Scheme to Enhance The Capability of Web Servers Using P2P Networks, Jie Yu, Liming Lu, Zhoujun Li, Xiaofeng Wang, Jinshu Su
- Optimal Overlay Construction on Heterogeneous Live Peer-to-peer Streaming Systems, Min Yang and Yuanyuan Yang