

2013 IEEE International Conference on Cluster Computing (CLUSTER 2013)

**Indianapolis, Indiana, USA
23-27 September 2013**



**IEEE Catalog Number: CFP13235-POD
ISBN: 978-1-4799-0897-4**

Tuesday, September 24, 2013

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- 11:00 AM **Co-processing SPMD Computation on CPUs and GPUs cluster** %
Hui Li, Geoffrey Fox, Gregor von Laszewski, Arun Chauhan
-
- 11:00 AM **Communication and Topology-aware Load Balancing in Charm++ with TreeMatch** %
Emmanuel Jeannot, Esteban Meneses, Guillaume Mercier, François Tessier, Gengbin Zheng
-
- 11:00 AM **A-Cache: Resolving Cache Interference for Distributed Storage with Mixed Workloads** %
Bharath Ravi, Hrishikesh Amur, Karsten Schwan
-
- 11:30 AM **Lit: A High Performance Massive Data Computing Framework Based on CPU/GPU Cluster** &+
Yanlong Zhai, Emmanuel Mbarushimana, Wei Li, Jing Zhang, Ying Guo
-
- 11:30 AM **Design of Network Topology Aware Scheduling Services for Large InfiniBand Clusters**)
Hari Subramoni, Devendar Bureddy, Krishna Chaitanya Kandalla, Karl Schulz, Bill Barth, Jonathan Perkins, Mark Arnold, Dhableswar K. Panda
-
- 11:30 AM **V2-Code: A New Non-MDS Array Code with Optimal Reconstruction Performance for RAID-6** ('
Ping Xie, Jianzhong Huang, Qiang Cao, Xiao Qin, Changsheng Xie
-
- 2:30 PM **GGAS: Global GPU Address Spaces for Efficient Communication in Heterogeneous Clusters**) %
Lena Oden, Holger Fröning
-
- 2:30 PM **I/O Scheduling for Solid State Devices in Virtual Machines**) -
Kai Guo, Wentao Zhao, Yingchun Lei, Yili Gong
-
- 2:30 PM **Mercury: Enabling Remote Procedure Call for High-Performance Computing**) *
Jerome Soumagne, Dries Kimpe, Judicael Zounmevo, Mohamad Chaarawi, Quincey Koziol, Ahmad Afsahi, Robert Ross
-
- 3:00 PM **Influence of InfiniBand FDR on the Performance of Remote GPU Virtualization**) +'
Carlos Reaño, Antonio J. Peña, Federico Silla, Rafael Mayo, Enrique S. Quintana-Ortí, José Duato
-
- 3:00 PM **Checkpoint-Restart for a Network of Virtual Machines**) , %
Rohan Garg, Komal Sodha, Zhengping Jin, Gene Cooperman
-
- 3:00 PM **Oncilla: A GAS Runtime for Efficient Resource Allocation and Data Movement in Accelerated Clusters**) , -
Jeff Young, Se Hoon Shon, Sudhakar Yalamanchili, Alex Merritt, Karsten Schwan, Holger Fröning
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- 4:00 PM **EDR: An Energy-Aware Runtime Load Distribution System for Data-Intensive Applications in the Cloud** +
Bo Li, Shuaiwen Leon Song, Ivona Bezakova, Kirk W. Cameron
-
- 4:00 PM **FlexQuery: An Online Query System for Interactive Remote Visual Data Exploration at Large Scale**
Hongbo Zou, Karsten Schwan, Magdalena Slawinska, Matthew Wolf, Greg Eisenhauer, Fang Zheng, Jai Dayal, Jeremy Logan, Qing Liu, Scott Klasky, Tanja Bode, Michael Clark, Matthew Kinsey
-
- 4:30 PM **K MapReduce: A Scalable Tool for Data-Processing and Search/Ensemble Applications on Large-Scale Supercomputers**
Motohiko Matsuda, Naoya Maruyama, Shin'ichiro Takizawa
-
- 4:30 PM **Thermal Aware Automated Load Balancing for HPC Applications**
Harshitha Menon, Bilge Acun, Simon Garcia De Gonzalo, Osman Sarood, Laxmikant Kalé
-

Wednesday, September 25, 2013

- 10:30 AM **Using Clusters in Undergraduate Research: Distributed Animation Rendering, Photo Processing, and Image Transcoding**
Peter Bui, Travis Boettcher, Nicholas Jaeger, Jeffrey Westphal
-
- 10:30 AM **Highly Optimized Full GPU-Acceleration of Non-hydrostatic Weather Model SCALE-LES** +
Mohamed Wahib, Naoya Maruyama
-
- 10:30 AM **Optimizing Power Allocation to CPU and Memory Subsystems in Overprovisioned HPC Systems**
Osman Sarood, Akhil Langer, Laxmikant Kalé, Barry Rountree, Bronis de Supinski
-
- 11:00 AM **Using a Shared, Remote Cluster for Teaching HPC**
Clay Carley, Brett McKinney, Chao Zhao, Henry Neeman
-
- 11:00 AM **Accelerating Subsurface Transport Simulation on Heterogeneous Clusters** -
Oreste Villa, Nitin Gawande, Antonio Tumeo
-
- 11:00 AM **A Case of System-Wide Power Management for Scientific Applications** +
Zhou Liu, Jay Lofstead, Teng Wang, Weikuan Yu
-
- 11:30 AM **Teaching Undergraduates Using Local Virtual Clusters**
Richard Brown, Elizabeth Shoop
-
- 11:30 AM **Distributed Resource Exchange: Virtualized Resource Management for SR-IOV InfiniBand Clusters** +
Adit Ranadiv, Ada Gavrilovska, Karsten Schwan
-
- 11:30 AM **A Scalable and Portable Approach to Accelerate Hybrid HPL on Heterogeneous CPU-GPU Clusters** %

Rong Shi, Sreeram Potluri, Khaled Hamidouche, Xiaoyi Lu, Karen Tomko, Dhableswar K. Panda

- 1:30 PM **Developing Communication-aware Service Placement Frameworks in the Cloud Economy**
Chao Chen, Ligang He, Hao Chen, Jianhua Sun, Bo Gao, Stephen A. Jarvis
-
- 1:30 PM **Distributed Data Provenance for Large-Scale Data-Intensive Computing**
Dongfang Zhaom, Chen Shou, Tanu Malik, Ioan Raicu
-
- 1:30 PM **GPU-Accelerated Scalable Solver for Banded Linear Systems**
Hang Liu, Jung-Hee Seo, Rajat Mittal, H. Howie Huang
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- 2:00 PM **A Parallel Optimization Method for Stencil Computation on the Domain that is Bigger than Memory Capacity of GPUs**
Guanghao Jin, Toshio Endo, Satoshi Matsuoka
-
- 2:00 PM **Distance-Aware Virtual Cluster Performance Optimization: A Hadoop Case Study**
Xinkui Zhao, Jianwei Yin, Zuoning Chen, Xingjian Lu
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- 2:00 PM **Fast Data Analysis with Integrated Statistical Metadata in Scientific Datasets**
Jianlin Liu, Yong Chen
-
- 2:30 PM **Active-Learning-Based Surrogate Models for Empirical Performance Tuning**
Prasanna Balaprakash, Robert B. Gramacy, Stefan M. Wild
-
- 2:30 PM **Expediting Scientific Data Analysis with Reorganization of Data**
Bin Dong, Surendra Byna, Kesheng Wu
-
- 2:30 PM **Force-directed Geographical Load Balancing and Scheduling for Batch Jobs in Distributed Datacenters**
Hadi Goudarzi, Massoud Pedram
-
- 3:30 PM **HPC Runtime Support for Fast and Power Efficient Locking and Synchronization**
Hakan Akkan, Latchesar Ionkov, Michael Lang
-
- 3:30 PM **Application Power Profiling on IBM Blue Gene/Q**
Sean Wallace, Venkatram Vishwanath, Susan Coghlan, John Tramm, Zhiling Lan, Michael E. Papka
-
- 3:30 PM **JUMMP: Job Uninterrupted Maneuverable MapReduce Platform**
William Clay Moody, Linh Bao Ngo, Edward Duffy, Amy Apon
-
- 4:00 PM **A Cost-Aware Region-Level Data Placement Scheme for Hybrid Parallel I/O Systems**
Shuibing He, Xian-He Sun, Bo Feng, Xin Huang, Kun Feng
-
- 4:00 PM **A New Design of RDMA-based Small Message Channels for InfiniBand Clusters**
Matthew Small, Xin Yuan
-

- 4:00 PM **Dynamic Slot Allocation Technique for MapReduce Clusters** %
Shanjiang Tang, Bu-Sung Lee, Bingsheng He
-
- 4:30 PM **Insight and Reduction of MapReduce Stragglers in Heterogeneous Environment** %
Xia Zhao, Kai Kang, YuZhong Sun, Yin Song, Minhao Xu, Tao Pan
-
- 4:30 PM **Optimizing Blocking and Nonblocking Reduction Operations for Multicore Systems: Hierarchical Design and Implementation** & *
Manjunath Gorentla Venkata, Pavel Shamis, Rahul Sampath, Richard L. Graham, Joshua S. Ladd
-
- 4:30 PM **Write Bandwidth Optimization of Online Erasure Code Based Cluster File System** ' ' (
Lin Yan, Jing Xing, Tian Wang, Zhigang Huo, Jie Ma, Peiheng Zhang
-
- 5:00 PM **The Scaling of Many-Task Computing Approaches in Python on Cluster Supercomputers** (&
Monte Lunacek, Jazcek Braden, Thomas Hauser
-
- 5:00 PM **Making Work Queue Cluster-Friendly for Data Intensive Scientific Applications** ' ') \$
Michael Albrecht, Dinesh Rajan, Douglas Thain
-
- 5:00 PM **Streamer: A Distributed Framework for Incremental Closeness Centrality Computation** ' ' ' ') ,
Ahmet Erdem Sariyüce, Erik Saule, Kamer Kaya, Ümit V. Çatalyürek
-

Poster Session

- 6:00 PM **Twitter Bootstrap and AngularJS: Frontend Frameworks to Expedite Science Gateway Development** ' ' ' ' * *
Viknes Balasubramanee, Chathuri Wimalasena, Raminder Singh, Marlon Pierce
-
- 6:00 PM **Automotive Big Data** ' ' ' ' * +
Tim Barrett, Graham Lenes, Ken Kennedy, Philipp Lix, Amy Apon
-
- 6:00 PM **The Oklahoma PetaStore: Big Data on a Small Budget** ' ' ' ' * ,
Patrick Calhoun, David Akin, Joshua Alexander, Brett Zimmerman, Brandon George, Henry Neeman
-
- 6:00 PM **Parallelizing Windowed Stream Joins in a Shared-Nothing Cluster** ' ' ' ' ' ' * -
Abhirup Chakraborty, Ajit Singh
-
- 6:00 PM **Unified and Efficient HEC Storage System with a Working-Set based Reorganization Scheme** ' ' ' ' ' ' + (
Junjie Chen Yong Chen
-
- 6:00 PM **BASE: Benchmark Analysis Software for Energy-efficient Solutions in Large-scale Storage Systems** ' ' ' ' ' ' + -
Tseng-Yi Chen, Hsin-Wen Wei, Ying-Jie Chen, Tsan-Sheng Hsu, Wei-Kuan Shih
-

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- 6:00 PM **Integrating Deadline-Modification SCAN Algorithm to Xen-based Cloud Platform** , (Tseng-Yi Chen, Hsin-Wen Wei, Ying-Jie Chen, Wei-Kuan Shih, Tsan-Sheng Hsu
-
- 6:00 PM **Nekkloud: A Software Environment for High-order Finite Element Analysis on Clusters and Clouds** , , Jeremy Cohen, David Moxey, Chris Cantwell, Pavel Burovskiy, John Darlington, Spencer J. Sherwin
-
- 6:00 PM **Runtime System Design of Decoupled Execution Paradigm for Data-Intensive High-End Computing** - ' Kun Feng, Yanlong Yin, Chao Chen, Hassan Eslami, Xian-He Sun, Yong Chen, Rajeev Thakur, William Gropp
-
- 6:00 PM **On Transactional Memory Concurrency Control in Distributed Real-Time Programs** - (Sachin Hirve, Aaron Lindsay, Binoy Ravindran, Roberto Palmieri
-
- 6:00 PM **Optimizations on the Parallel Virtual File System Implementation Integrated with Object-Based Storage Devices** - - Cengiz Karakoyunlu, John A. Chandy
-
- 6:00 PM **Rockhopper, a True HPC System Built with Cloud Concepts** (\$(Richard Knepper, Barbara Hallock, Craig Stewart, Matthew Link, Matthew Jacobs
-
- 6:00 PM **ConHA: An SOA-based API Gateway for Consolidating Heterogeneous HA Clusters** (\$- Mingyu Li, Qian Zhang, Hanyue Chu, Xiaohui Hu, Fanjiang Xu
-
- 6:00 PM **MOLAR: A Cost-Efficient, High-Performance Hybrid Storage Cache** (%& Yi Liu, Xiongzi Ge, Xiaoxia Huang, David H.C. Du
-
- 6:00 PM **LittleFe - The High Performance Computing Education Appliance** (%+ Mohammed Mobeen Ludin, Aaron Weeden, Jennifer Houchins, Skylar Thompson, Charles Peck, Ivan Babicv Kristin Muterspaw, Elena Sergienko
-
- 6:00 PM **Model-Driven Multisite Workflow Scheduling** (% Ketan Maheshwari, Eun-Sung Jung, Jiayuan Meng, Venkatram Vishwanath, Rajkumar Kettimuthu
-
- 6:00 PM **An Object Interface Storage Node for Clustered File Systems** (& Orko Momin, John A. Chandy
-
- 6:00 PM **Understanding the Performance of Stencil Computations on Intel's Xeon Phi** (&, Joshua Peraza, Ananta Tiwari, Michael Laurenzano, Laura Carrington, William A. Ward, Roy Campbell
-
- 6:00 PM **AptStore: Dynamic Storage Management for Hadoop** (' ' Krishnaraj Ravindranathan, Aleksandr Khasymiski, Ali R. Butt, Sameer Tiwari, Milind Bhandarkar
-

- 6:00 PM **Capturing Inter-Application Interference on Clusters** (' ,
Aamer Shah, Felix Wolf, Sergey Zhumatiy, Vladimir Voevodin
-
- 6:00 PM **ECG Identification of Arrhythmias by using an Associative Petri Net** (('
Dong-Her Shih, Hsiu-Sen Chiang, Ming-Hung Shih
-
- 6:00 PM **Improving Performance and Energy Efficiency of Matrix Multiplication via Pipeline Broadcast** (()
Li Tan, Longxiang Chen, Zizhong Chen, Ziliang Zong, Rong Ge, Dong Li
-
- 6:00 PM **On Service Migration in the Cloud to Facilitate Mobile Accesses** (() \$
Yang Wang, Wei Shi
-
- 6:00 PM **Zput: A Speedy Data Uploading Approach for the Hadoop Distributed File System** (())
Youwei Wang, Weiping Wang, Can Ma, Dan Meng
-
- 6:00 PM **Parallelization of Software Pipelines Using the mpififo Tool** ((* \$
Nathan T. Weeks, Marina Kraeva, Glenn R. Luecke
-
- 6:00 PM **A Synthetic Bursty Workload Generation Method for Web 2.0 Benchmark** ((* '
Jianwei Yin, Hanwei Chen, Xingjian Lu, Xinkui Zhao
-
- 6:00 PM **Towards High-Performance and Cost-Effective Distributed Storage Systems with Information Dispersal Algorithms** ((* +
Dongfang Zhao, Kent Burlingame, Corentin Debains, Pedro Alvarez-Tabio, Ioan Raicu
-
- 6:00 PM **Counting Sort for the Live Migration of Virtual Machines** ((+&
QingXin Zou, ZhiYu Hao, Xu Cui, XiaoChun Yun, YongZheng Zhang

Visualization Showcase

- 6:00 PM **IEEE Cluster 2013 Visualization Showcase** ((++

Science Gateway Institute Workshop

- 9:00 AM **Science Gateway Institute Workshop Overview** ((, *
Nancy Wilkins-Diehr, Marlon Pierce, Suresh Marru
-
- Globus Nexus: An Identity, Profile, and Group Management Platform for Science Gateways and Other Collaborative Science Applications** ((, +
Rachana Ananthakrishnan, Ian Foster, Mattias Lidman, Steven Tuecke
-
- Science Gateway Security Recommendations** ((- \$
Jim Basney, Von Welch
-
- The WeFold Gateway: Enabling Large-scale Science Cooperation** ((- '
Silvia Crivelli, Rion Dooley, Raquell Holmes, Stephen Mock

Cyberinfrastructure: The Key to Building Successful Science Gateways

Gregory Davis, Gregory Madey

User-friendly Met workflows in Quantum Chemistry

Alexander Hoffmann, Sonja Herres-Pawlis, Sandra Gesing, Luis de la Garza, Jens Krüger, Richard Grunzke

CyberGIS Gateway for Enabling Data-Rich Geospatial Research and Education

Yan Liu, Shaowen Wang, Anand Padmanabhan

BioExtract Server: A Web-based Workflow Enabling System, Leveraging iPlant Collaborative Resources

Carol Lushbough, Etienne Gnimpieba, Rion Dooley

Enabling Multi-task Computation on Galaxy-based Gateways using Swift

Ketan Maheshwari, Alex Rodriguez, David Kelly, Ravi Madduri, Justin Wozniak, Michael Wilde, Ian Foster

Authoring a Science Gateway Cookbook

Suresh Marru, Rion Dooley, Nancy Wilkins-Diehr, Marlon Pierce, Mark Miller, Sudhakar Pamidighantam, Julie Wernert

Structured Participation Toolkit: An Enabler for Knowledge Production in Science Gateways

Mary Roderick, Timothy Nyerges

Building an Open Genome Wide Association Study (GWAS) Platform

Liya Wang, Doreen Ware, Nirav Merchant, Carol Lushbough

5th IASDS Workshop

9:00 AM

IASDS Workshop Overview

Dries Kimpe, Douglas Thain

Reliability Enhancement of SSD-based Storage Systems

Saeideh Alinezhad, Seyed Ghassem Miremadi

A Multi-level Approach For Understanding HPC Applications' I/O Activities

Babak Behzad, Huong Luu, Marianne Winslett

LVFS: A Scalable Big Data Scientific Storage System

Navid Golpayegani, Milton Halem, Edward J. Masuoka, Neal K. Devine, Gang Ye

Towards a Unified Object Storage Foundation for Scalable Storage Systems

Cengiz Karakoyunlu, Dries Kimpe, Philip Carns, Kevin Harms, Robert Ross, Lee Ward

PEXTA: A Parallel Chunked Extendible Dense Array I/O for Global Array

Gideon Nimako, Ekow Otoo, Daniel Ohene-Kwofie

Dynamic File Striping and Data Layout Transformation on Parallel System with Fluctuating I/O Workload (2011) \$

Seung Woo Son

Two-Phase Collective I/O based on Advanced Reservations to Obtain Performance Guarantees from Shared Storage Systems (2011) ,

Yusuke Tanimura, Rosa Filgueira, Isao Kojima, Malcolm Atkinson
