
Proceedings

ICPP 2006

2006 International Conference on Parallel Processing
Workshops

14-18 August 2006
Columbus, Ohio

Table of Contents

Message from the ICPP Workshop Co-chairs	xi
Message from the WSGA Workshop Co-chairs	xii
Message from the PDM Workshop Chair	xiii
Message from the PEN-PCGCS Workshop Co-chairs	xiv
Message from the WSN Net Workshop Co-chairs	xv
Message from the CRTPC Workshop Co-chairs	xvi
Message from the IWEC Workshop Co-chairs	xvii
Message from the HPSEC Workshop Co-chairs	xix

Workshop on Web Services-Based Grid Applications (WSGA)

Keynote

The Good, the Bad, and the Ugly: The Web Services Stack and the Myth of Interoperability	3
<i>Jon MacLaren</i>	

Session 1

A Comparative Study of Web Services-Based Event Notification Specifications	7
<i>Yi Huang and Dennis Gannon</i>	
A Hybrid XML-Relational Grid Metadata Catalog	15
<i>Scott Jensen, Beth Plale, Sangmi Lee Pallickara, and Yiming Sun</i>	

Session 2

A Mechanism for Creating Scientific Application Services On-Demand from Workflows	25
<i>Gopi Kandaswamy and Dennis Gannon</i>	
TrustCell: Towards the End-to-End Trustworthiness in Data-Oriented Scientific Computing	33
<i>Sangmi Lee Pallickara and Beth Plale</i>	

Workshop on Parallel and Distributed Multimedia (PDM)

Computation and Energy Efficient Image Processing in Wireless Sensor Networks Based on Reconfigurable Computing	43
<i>Tyrone Tai-On Kwok and Yu-Kwong Kwok</i>	
A First Look at the Properties of Many-to-One Data Flows	51
<i>V.T. Sam, P.Y. Ho, and Jack Y. B. Lee</i>	
Grid Resource Allocation and Task Scheduling for Resource Intensive Applications	58
<i>Abdul Aziz and Hesham El-Rewini</i>	
Model-Based OpenMP Implementation of a 3D Facial Pose Tracking System	66
<i>Sankalita Saha, Chung-Ching Shen, Chia-Jui Hsu, Gaurav Aggarwal, Ashok Veeraraghavan, Alan Sussman, and Shuvra S. Bhattacharyya</i>	

A Scalable Synchronization Technique for Distributed Virtual Environments Based on Networked-Server Architectures.....	74
<i>P. Morillo, J.M. Orduña, and J. Duato</i>	
Parallel Algorithms for Motion Panorama Construction	82
<i>Yong Wei, Hongyu Wang, Suchendra M. Bhandarkar, and Kang Li</i>	

Workshop on Performance Evaluation of Networks for Parallel, Cluster and Grid Computing Systems (PEN-PCGCS)

Session 1

Session Chair: A. Khonsari, IPM School of Computer Science, Iran

Performance Analysis of a Parallel Discrete Model for the Simulation of Laser Dynamics	93
<i>J.L. Guisado, F. Fernández de Vega, and K. Iskra</i>	
A New Architecture of Grid Security System Construction.....	100
<i>MingChu Li, Yongrui Cui, Yuan Tian, Dong Wang, and Songyuan Yan</i>	

Session 2

Session Chair: B. Javadi, Deakin University, Australia

Servers Reintegration in Disconnection-Resilient File Systems for Mobile Clients	109
<i>Azzedine Boukerche and Raed Al-Shaikh</i>	
Analysis of Interconnection Networks in Heterogeneous Multi-Cluster Systems.....	115
<i>Bahman Javadi, Jemal H. Abawajy, Mohammad K. Akbari, and Saeid Nahavandi</i>	
How to Improve the Scalability of Read/Write Operations with Dynamic Reconfiguration of a Tree-Structured Coterie	123
<i>Ivan Frain, Robert Basmadjian, Jean-Paul Bahsoun, and Abdelaziz M'zoughi</i>	

Session 3

Session Chair: A. Boukerche, University of Ottawa, Canada

PLT—Positional Lexicographic Tree: A New Structure for Mining Frequent Itemsets	135
<i>Azzedine Boukerche and Samer Samarah</i>	
Analysis of Circuit Switching for the Torus Interconnect Networks with Hot-Spot Traffic	142
<i>F. Safaei, A. Khonsari, M. Fathy, and M. Ould-Khaoua</i>	

Workshop on Wireless and Sensor Networks (WSNet)

Session 1: Routing Protocols

Impact of Aggregation Efficiency on GIT Routing for Wireless Sensor Networks	151
<i>Takafumi Aonishi, Takashi Matsuda, Shinji Mikami, Hiroshi Kawaguchi, Chikara Ohta, and Masahiko Yoshimoto</i>	
Locators of Mobile Sinks for Wireless Sensor Networks.....	159
<i>Gyudong Shim and Daeyeon Park</i>	
Maximum Lifetime Routing in Wireless Sensor Network by Minimizing Rate Capacity Effect.....	165
<i>Kumar Padmanabh and Rajarshi Roy</i>	

Session 2: Information Assurance

A Hexagon-Based Key Predistribution Scheme in Sensor Networks.....	175
<i>Guorui Li, Jingsha He, and Yingfang Fu</i>	
An Adaptive Directed Query Dissemination Scheme for Wireless Sensor Networks.....	181
<i>Supriyo Chatterjea, Simone De Luigi, and Paul Havinga</i>	
m-LPN: An Approach Towards a Dependable Trust Model for Pervasive Computing Applications.....	189
<i>Munirul M. Haque and Sheikh I. Ahamed</i>	
Trading Computation & Precision for Energy in Wireless Sensor Networks with Applications	196
<i>Konstantinos Kalpakis and Shilang Tang</i>	

Session 3: Scheduling and System Development

A Secure and Scalable Time Synchronization Protocol in IEEE 802.11 Ad hoc Networks.....	207
<i>Lin Chen and Jean Leneutre</i>	
Dynamic Critical-Path Task Mapping and Scheduling for Collaborative In-Network Processing in Multi-hop Wireless Sensor Networks.....	215
<i>Yuan Tian, Yaoyao Gu, Eylem Ekici and Füsün Özgüner</i>	
A Survey of Middleware for Sensor Network and Challenges.....	223
<i>Mohammad M. Molla and Sheikh Iqbal Ahmed</i>	
A Toolkit-Based Approach to Indoor Localization	229
<i>Yu Wang and Adam Harder</i>	

5th Workshop on Compile and Runtime Techniques for Parallel Computing

Session 1 Keynote

Challenges and Opportunities of Multi-core Architectures in Run-Time Systems <i>Jarek Nieplocha, PNNL</i>
--

Session 2

Using Overdecomposition to Overlap Communication Latencies with Computation and take Advantage of SMT Processors.....	239
<i>Lars Ailo Bongo, Brian Vinter, Otto J. Anshus, Tore Larsen, and John Markus Bjørndalen</i>	
MPI Pre-Processor: Generating MPI Derived Datatypes from C Datatypes Automatically	248
<i>Éric Renault and Christian Parrot</i>	

Session 3

Dynamic Load-Balancing of Jini and .NET Services.....	257
<i>Ying Chen Lin, Sy-Yuan Li, and Yuan-Shin Hwang</i>	
An Adaptive Heterogeneous Software DSM.....	266
<i>John Paul Walters, Hai Jiang, and Vipin Chaudhary</i>	
A Runtime Scheduling Method for Dynamic and Heterogeneous Platforms	273
<i>Salah-Salim Boutamine, Daniel Millot, and Christian Parrot</i>	

Session 4

Improving the Efficiency of Functional Parallelism by Means of Hyper-Scheduling.....	283
<i>Udo Hönig and Wolfram Schiffmann</i>	
Practical Task Flow Scheduling for High Throughput Computational Grid	291
<i>Wei Sun, Yuanyuan Zhang, Yanwei Wu, and Yasushi Inoguchi</i>	
Towards a Source Level Compiler: Source Level Modulo Scheduling.....	298
<i>Yosi Ben-Asher and Danny Meisler</i>	

3rd International Workshop on Embedded Computing (IWEC)

Keynote

Energy Minimization and Reliability for Wearable Medical Applications	309
<i>Ani Nahapetian, Foad Dabiri, and Majid Sarrafzadeh</i>	

Embedded Software

Multidimensional Dataflow-Based Parallelization for Multimedia Instruction Set Extensions	319
<i>Lewis B. Baumstark and Linda M. Wills</i>	
Dynamic Binary Translation and Optimization in a Whole-System Emulator — SkyEye	327
<i>Chen Yu, Ren Jie, Zhu Hui, and Shi Yuan Chun</i>	

Embedded Hardware

Compiler Manipulation of Stream Descriptors for Data Access Optimization	337
<i>Abelardo López-Lagunas and Sek M. Chai</i>	

Scalable Core-Based Methodology and Synthesizable Core for Systematic Design Environment in Multicore SoC (MCSoc).....	345
<i>Ben A. Abderazek, Tsutomu Yoshinaga, and Masahiro Sowa</i>	
Embedded Knowledge-Based Speech Detectors for Real-Time Recognition Tasks.....	353
<i>Sabato M. Siniscalchi, Fulvio Gennaro, Salvatore Andolina Salvatore Vitabile, Antonio Gentile, and Filippo Sorbello</i>	

Embedded Applications

A Monitoring Framework Exploiting the Synergy between Actual and Virtual Wireless Sensors.....	361
<i>Luca Gatani, Giuseppe Lo Re, Marco Ortolani, and Filippo Sorbello</i>	
Combined People Position and Compass Detection for Context-Aware Service Provision.....	368
<i>Alessandro Genco, Salvatore Sorce, and Emanuele Varrica</i>	
Retargeting Image-Processing Algorithms to Varying Processor Grain Sizes.....	376
<i>Samuel T. Sander and Linda M. Wills</i>	
A Lightweight Software Architecture for Robot Navigation and Visual Logging through Environmental Landmarks Recognition.....	384
<i>Edoardo Ardizzone, Antonio Chella, Irene Macaluso, and Daniele Peri</i>	

Security, Testing and Verifications

Model Checking Control Communication of a FACTS Device.....	391
<i>David A. Cape, Bruce M. McMillin, and James K. Townsend</i>	
Automatic Flow Analysis Using Symbolic Execution and Path Enumeration.....	397
<i>D. Kebbal</i>	
Protected JTAG.....	405
<i>Ronald F. Buskey and Barbara B. Frosik</i>	

8th Workshop on High Performance Scientific and Engineering Computing (HPSEC)

Keynote

Surgery Needs HPC, Really!.....	415
<i>Vipin Chaudhary, Wayne State University, USA</i>	

Session 1: Grid Computing

Framework for Interactive Parallel Dataset Analysis on the Grid.....	419
<i>David A. Alexander, Balamurali Ananthan, Tony Johnson, and Victor Serbo</i>	
A Generic Task-Farming Framework for Reservoir Analysis in a Grid Environment.....	426
<i>Santiago Pena, Dayong Huang, Zhou Lei, Gabrielle Allen, Xin Li, and Chris D. White</i>	

Session 2: Scheduling and Load Balancing

Multiple Flows of Control in Migratable Parallel Programs	435
<i>Gengbin Zheng, Laxmikant V. Kalé, and Orion Sky Lawlor</i>	
Robust Resource Allocation in Weather Data Processing Systems.....	445
<i>Mohana Oltikar, Jeff Brateman, Joe White, Jon Martin, Keith Knapp, Anthony A. Maciejewski, and H. J. Siegel</i>	
A FLOPs Based Model for Performance Analysis and Scheduling of Applications for Single and Multiple CPUs	455
<i>Nilesh Padhariya, Kolin Paul, and Dheeraj Bhardwaj</i>	

Session 3: Applications

Parallel Hyperspectral Image Processing on Commodity Graphics Hardware.....	465
<i>J. Setoain, C. Tenllado, M. Prieto, D. Valencia, A. Plaza, and J. Plaza</i>	
High Performance Multiscale Simulation or Crack Propagation.....	473
<i>Guillaume Ancaix, Olivier Coulaud, and Jean Roman</i>	
Parallel Implementation of the Polyhedral Homotopy Method	481
<i>Jan Verschelde and Yan Zhuang</i>	
Dynamic Algorithm Selection in Parallel GAMESS Calculations	489
<i>Nurzhan Ustemirov, Mark S. Gordon, Masha Sosonkina, and Michael W. Schmidt</i>	

Session 4: Algorithms

Tetrahedral Mesh Refinement in Distributed Environments	497
<i>Mehmet Balman</i>	
An Efficient Parallel Finite-Element-Based Domain Decomposition Iterative Technique with Polynomial Preconditioning	505
<i>Yu Liang, Ramdev Kanapady, and Kumar K. Tamma</i>	
Parallel Implementation of the Global Optimization Algorithm Based on Uniform Distributional Design and Powell Method.....	511
<i>Bin Shen, Wen-Ying Wang, Zhong-Hua Lu, Xue-Bin Chi, and Hui Yu</i>	

Session 5: System Architecture

Building Cost Effective High Performance Computing Environment via PCI Express.....	519
<i>A. Nishida</i>	
Remote iSCSI Cache on InfiniBand: An Approach to Optimize iSCSI System.....	527
<i>Xuhui Liu, Nan Wang, Guozhong Sun, Jizhong Han, Lisheng Zhang, and Chengde Han</i>	
Author Index	535