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 WSNet 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
Jon MacLaren

Session 1
A Comparative Study of Web Services-Based Event Notification Specifications ................................................................. 7
Yi Huang and Dennis Gannon
A Hybrid XML-Relational Grid Metadata Catalog ....................................................................................................................... 15
Scott Jensen, Beth Plale, Sangmi Lee Pallickara, and Yiming Sun

Session 2
A Mechanism for Creating Scientific Application Services On-Demand from Workflows ................................................................. 25
Gopi Kandaswamy and Dennis Gannon
TrustCell: Towards the End-to-End Trustworthiness in Data-Oriented Scientific Computing ................................................................. 33
Sangmi Lee Pallickara and Beth Plale

Workshop on Parallel and Distributed Multimedia (PDM)

Computation and Energy Efficient Image Processing in Wireless Sensor Networks Based on Reconfigurable Computing ................................................................. 43
Tyrone Tai-On Kwok and Yu-Kwong Kwok
A First Look at the Properties of Many-to-One Data Flows ................................................................. 51
V.T. Sam, P.Y. Ho, and Jack Y. B. Lee
Grid Resource Allocation and Task Scheduling for Resource Intensive Applications ................................................................. 58
Abdul Aziz and Hesham El-Rewini
Model-Based OpenMP Implementation of a 3D Facial Pose Tracking System ................................................................. 66
Sankalita Saha, Chung-Ching Shen, Chia-Jui Hsu, Gaurav Aggarwal, Ashok Veeraraghavan, Alan Sussman, and SHuvra S. Bhattacharyya
A Scalable Synchronization Technique for Distributed Virtual Environments Based on Networked-Server Architectures ................................................................. 74
P. Morillo, J.M. Orduña, and J. Duato

Parallel Algorithms for Motion Panorama Construction ................................................................. 82
Yong Wei, Hongyu Wang, Suchendra M. Bhandarkar, and Kang Li

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
J.L. Guisado, F. Fernández de Vega, and K. Iskra

A New Architecture of Grid Security System Construction ........................................................................ 100
MingChu Li, Yongrui Cui, Yuan Tian, Dong Wang, and Songyuan Yan

Session 2
Session Chair: B. Javadi, Deakin University, Australia

Servers Reintegration in Disconnection-Resilient File Systems for Mobile Clients ........................................ 109
Azzedine Boukerche and Raed Al-Shaikh

Analysis of Interconnection Networks in Heterogeneous Multi-Cluster Systems ........................................ 115
Bahman Javadi, Jemal H. Abawajy, Mohammad K. Akbari, and Saeid Nahavandi

How to Improve the Scalability of Read/Write Operations with Dynamic Reconfiguration of a Tree-Structured Coterie ........................................................................ 123
Ivan Frain, Robert Basmadjian, Jean-Paul Bahsoun, and Abdelaziz M’zoughi

Session 3
Session Chair: A. Boukerche, University of Ottawa, Canada

PLT—Positional Lexicographic Tree: A New Structure for Mining Frequent Itemsets .................................. 135
Azzedine Boukerche and Samer Samarah

Analysis of Circuit Switching for the Torus Interconnect Networks with Hot-Spot Traffic .......................... 142
F. Safaei, A. Khonsari, M. Fathy, and M. Ould-Khaoua
Workshop on Wireless and Sensor Networks (WSNet)

Session 1: Routing Protocols

Impact of Aggregation Efficiency on GIT Routing for Wireless Sensor Networks ..................................................151
  Takafumi Aonishi, Takashi Matsuda, Shinji Mikami, Hiroshi Kawaguchi, Chikara Ohta, and Masahiko Yoshimoto

Locators of Mobile Sinks for Wireless Sensor Networks..................................................................................159
  Gyudong Shim and Daeyeon Park

Maximum Lifetime Routing in Wireless Sensor Network by Minimizing Rate Capacity Effect....................165
  Kumar Padmanabh and Rajarshi Roy

Session 2: Information Assurance

A Hexagon-Based Key Predistribution Scheme in Sensor Networks..............................................................175
  Guorui Li, Jingsha He, and Yingfang Fu

An Adaptive Directed Query Dissemination Scheme for Wireless Sensor Networks........................................181
  Supriyo Chatterjea, Simone De Luigi, and Paul Havinga

m-LPN: An Approach Towards a Dependable Trust Model for Pervasive Computing Applications.............189
  Munirul M. Haque and Sheikh I. Ahamed

Trading Computation & Precision for Energy in Wireless Sensor Networks with Applications......................196
  Konstantinos Kalpakis and Shilang Tang

Session 3: Scheduling and System Development

A Secure and Scalable Time Synchronization Protocol in IEEE 802.11 Ad hoc Networks................................207
  Lin Chen and Jean Leneutre

Dynamic Critical-Path Task Mapping and Scheduling for Collaborative In-Network Processing in Multi-hop Wireless Sensor Networks.................................215
  Yuan Tian, Yaoyao Gu, Eylem Ekici and Füsun Özgüner

A Survey of Middleware for Sensor Network and Challenges...........................................................................223
  Mohammad M. Molla and Sheikh Iqbal Ahmed

A Toolkit-Based Approach to Indoor Localization..............................................................................................229
  Yu Wang and Adam Harder

5th Workshop on Compile and Runtime Techniques for Parallel Computing

Session 1

Keynote

Challenges and Opportunities of Multi-core Architectures in Run-Time Systems
  Jarek Nieplocha, PNNL
Session 2

Using Overdecomposition to Overlap Communication Latencies with Computation and take Advantage of SMT Processors

Lars Ailo Bongo, Brian Vinter, Otto J. Anshus, Tore Larsen, and John Markus Bjørndalen

MPI Pre-Processor: Generating MPI Derived Datatypes from C Datatypes Automatically

Éric Renault and Christian Parrot

Session 3

Dynamic Load-Balancing of Jini and .NET Services

Ying Chen Lin, Sy-Yuan Li, and Yuan-Shin Hwang

An Adaptive Heterogeneous Software DSM

John Paul Walters, Hai Jiang, and Vipin Chaudhary

A Runtime Scheduling Method for Dynamic and Heterogeneous Platforms

Salah-Salim Boutammine, Daniel Millot, and Christian Parrot

Session 4

Improving the Efficiency of Functional Parallelism by Means of Hyper-Scheduling

Udo Hönig and Wolfram Schiffmann

Practical Task Flow Scheduling for High Throughput Computational Grid

Wei Sun, Yuanyuan Zhang, Yanwei Wu, and Yasushi Inoguchi

Towards a Source Level Compiler: Source Level Modulo Scheduling

Yosi Ben-Asher and Danny Meisler

3rd International Workshop on Embedded Computing (IWEC)

Keynote

Energy Minimization and Reliability for Wearable Medical Applications

Ani Nahapetian, Foad Dabiri, and Majid Sarrafzadeh

Embedded Software

Multidimensional Dataflow-Based Parallelization for Multimedia Instruction Set Extensions

Lewis B. Baumstark and Linda M. Wills

Dynamic Binary Translation and Optimization in a Whole-System Emulator — SkyEye

Chen Yu, Ren Jie, Zhu Hui, and Shi Yuan Chun

Embedded Hardware

Compiler Manipulation of Stream Descriptors for Data Access Optimization

Abelardo López-Lagunas and Sek M. Chai
Scalable Core-Based Methodology and Synthesizable Core for Systematic Design Environment in Multicore SoC (MCSoC) ................................................................. 345
   Ben A. Abderazek, Tsutomu Yoshinaga, and Masahiro Sowa

Embedded Knowledge-Based Speech Detectors for Real-Time Recognition Tasks ......................................................... 353
   Sabato M. Siniscalchi, Fulvio Gennaro, Salvatore Andolina
   Salvatore Vitabile, Antonio Gentile, and Filippo Sorbello

Embedded Applications

A Monitoring Framework Exploiting the Synergy between Actual and Virtual Wireless Sensors ............................................. 361
   Luca Gatani, Giuseppe Lo Re, Marco Ortolani, and Filippo Sorbello

Combined People Position and Compass Detection for Context-Aware Service Provision ........................................... 368
   Alessandro Genco, Salvatore Sorce, and Emanuele Varrica

Retargeting Image-Processing Algorithms to Varying Processor Grain Sizes .......................................................... 376
   Samuel T. Sander and Linda M. Wills

A Lightweight Software Architecture for Robot Navigation and Visual Logging through Environmental Landmarks Recognition ......................................................... 384
   Edoardo Ardizzone, Antonio Chella, Irene Macaluso, and Daniele Peri

Security, Testing and Verifications

Model Checking Control Communication of a FACTS Device .................................................................................. 391
   David A. Cape, Bruce M. McMillin, and James K. Townsend

Automatic Flow Analysis Using Symbolic Execution and Path Enumeration .......................................................... 397
   D. Kebbal

Protected JTAG ............................................................................................................................................................... 405
   Ronald F. Buskey and Barbara B. Frosik

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

Keynote

Surgery Needs HPC, Really! ........................................................................................................................................ 415
   Vipin Chaudhary, Wayne State University, USA

Session 1: Grid Computing

Framework for Interactive Parallel Dataset Analysis on the Grid ............................................................................. 419
   David A. Alexander, Balamurali Ananthan, Tony Johnson, and Victor Serbo

A Generic Task-Farming Framework for Reservoir Analysis in a Grid Environment .............................................. 426
   Santiago Pena, Dayong Huang, Zhou Lei, Gabrielle Allen, Xin Li, and Chris D. White
Session 2: Scheduling and Load Balancing

Multiple Flows of Control in Migratable Parallel Programs ................................................................. 435
   Gengbin Zheng, Laxmikant V. Kalé, and Orion Sky Lawlor

Robust Resource Allocation in Weather Data Processing Systems ............................................................ 445
   Mohana Oltikar, Jeff Brateman, Joe White, Jon Martin, Keith Knapp,
   Anthony A. Maciejewski, and H. J. Siegel

A FLOPs Based Model for Performance Analysis and Scheduling of Applications for Single
and Multiple CPUs ................................................................................................................................. 455
   Nilesh Padhariya, Kolin Paul, and Dheeraj Bhardwaj

Session 3: Applications

Parallel Hyperspectral Image Processing on Commodity Graphics Hardware .............................................. 465
   J. Setoain, C. Tenllado, M. Prieto, D. Valencia, A. Plaza, and J. Plaza

High Performance Multiscale Simulation of Crack Propagation ................................................................ 473
   Guillaume Anciaux, Olivier Coulaud, and Jean Roman

Parallel Implementation of the Polyhedral Homotopy Method ................................................................... 481
   Jan Verschelde and Yan Zhuang

Dynamic Algorithm Selection in Parallel GAMESS Calculations ................................................................. 489
   Nurzhan Ustemirov, Mark S. Gordon, Masha Sosonkina,
   and Michael W. Schmidt

Session 4: Algorithms

Tetrahedral Mesh Refinement in Distributed Environments ........................................................................... 497
   Mehmet Balman

An Efficient Parallel Finite-Element-Based Domain Decomposition Iterative Technique
with Polynomial Preconditioning ................................................................................................................ 505
   Yu Liang, Ramdev Kanapady, and Kumar K. Tamma

Parallel Implementation of the Global Optimization Algorithm Based on Uniform
Distributional Design and Powell Method .................................................................................................. 511
   Bin Shen, Wen-Ying Wang, Zhong-Hua Lu, Xue-Bin Chi, and Hui Yu

Session 5: System Architecture

Building Cost Effective High Performance Computing Environment via PCI Express ................................ 519
   A. Nishida

Remote iSCSI Cache on InfiniBand: An Approach to Optimize iSCSI System ............................................ 527
   Xuhui Liu, Nan Wang, Guozhong Sun, Jizhong Han, Lisheng Zhang, and Chengde Han

Author Index ............................................................................................................................................... 535