

**PROCEEDINGS OF
THE 2013 INTERNATIONAL CONFERENCE ON
PARALLEL AND DISTRIBUTED PROCESSING TECHNIQUES AND
APPLICATIONS**

PDPTA 2013

Volume I

Editors

**Hamid R. Arabnia, Hiroshi Ishii
Minoru Ito, Kazuki Joe
Hiroaki Nishikawa, Fernando G. Tinetti**

Associate Editors

**George A. Gravvanis
George Jandieri
Ashu M. G. Solo**



WORLD COMP'13

July 22-25, 2013

Las Vegas Nevada, USA

www.world-academy-of-science.org

©CSREA Press

This set of volumes contain papers presented at The 2013 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA'13). Their inclusion in this publication does not necessarily constitute endorsements by editors or by the publisher.

Copyright and Reprint Permission

Copying without a fee is permitted provided that the copies are not made or distributed for direct commercial advantage, and credit to source is given. Abstracting is permitted with credit to the source. Please contact the publisher for other copying, reprint, or republication permission.

Copyright © 2013 CSREA Press
ISBN: 1-60132-256-9, 1-60132-257-7 (1-60132-258-5)
Printed in the United States of America

CSREA Press
U. S. A.

Foreword

It gives us great pleasure to introduce this collection of papers to be presented at the 2013 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA'13), July 22 through 25, 2013, at The New Tropicana Hotel, Las Vegas, USA.

An important mission of the World Congress in Computer Science, Computer Engineering, and Applied Computing (a federated congress to which this conference is affiliated with) includes *"Providing a unique platform for a diverse community of constituents composed of scholars, researchers, developers, educators, and practitioners. The Congress makes concerted effort to reach out to participants affiliated with diverse entities (such as: universities, institutions, corporations, government agencies, and research centers/labs) from all over the world. The congress also attempts to connect participants from institutions that have **teaching** as their main mission with those who are affiliated with institutions that have **research** as their main mission. The congress uses a quota system to achieve its institution and geography diversity objectives."* By any definition of diversity, this congress is among the most diverse scientific meeting in USA. We are proud to report that this federated congress has authors and participants from 82 different nations representing variety of personal and scientific experiences that arise from differences in culture and values. As can be seen (see below), the program committee of this conference as well as the program committee of all other tracks of the federated congress are as diverse as its authors and participants.

The program committee would like to thank all those who submitted papers for consideration. About 52% of the submissions were from outside the United States. Each submitted paper was peer-reviewed by two experts in the field for originality, significance, clarity, impact, and soundness. In cases of contradictory recommendations, a member of the conference program committee was charged to make the final decision; often, this involved seeking help from additional referees. In addition, papers whose authors included a member of the conference program committee were evaluated using the double-blinded review process. One exception to the above evaluation process was for papers that were submitted directly to chairs/organizers of pre-approved sessions/workshops; in these cases, the chairs/organizers were responsible for the evaluation of such submissions. The overall paper acceptance rate for regular papers was 29%; 8% of the remaining papers were accepted as poster papers (at the time of this writing, we had not yet received the acceptance rate for a few individual tracks.)

We are very grateful to the many colleagues who offered their services in organizing the conference. In particular, we would like to thank the members of the Program Committee of PDPTA'13, members of the congress Steering Committee, and members of the committees of federated congress tracks that have topics within the scope of PDPTA. Many individuals listed below, will be requested after the conference to provide their expertise and services for selecting papers for publication (extended versions) in journal special issues as well as for publication in a set of research books (to be prepared for publishers including: Springer, Elsevier, BMC, and others).

- *Dr. Alireza Abbasi; School of Engineering and Information Technology, University of New South Wales (UNSW), Canberra, Australia*
- *Dr. Selim Aissi (World Congress Steering Committee); formerly, Chief Strategist - Security, Intel Corporation, USA; Senior Business Leader & Head of Global Enterprise Security Architecture, Visa Corporation, USA*
- *Prof. Babak Akhgar (World Congress Steering Committee); Fellow of the British Computer Society, CITP; Professor of Informatics; Co-Director of CENTRIC (Centre of Excellence in Terrorism, Resilience, Intelligence & organised Crime research), Sheffield Hallam University, Sheffield, UK*
- *Prof. Hussain Al-Asaad; Senior Member, IEEE; University of California at Davis, Davis, California, USA*
- *Prof. Nizar Al-Holou (World Congress Steering Committee + ICWN); Professor and Chair, Electrical and Computer Engineering Department; Vice Chair, IEEE/SEM-Computer Chapter; University of Detroit Mercy, Detroit, Michigan, USA*
- *Prof. Hideharu Amano (ERSA); Keio University, Japan; Head, technical group of computer systems of IEICE; Editor, Journal of Parallel and Distributed Computing; Japan*
- *Prof. Hamid R. Arabnia (World Congress Steering Committee); Professor, Computer Science; Editor-in-Chief, The Journal of Supercomputing (Springer); Co-Editor/Board, Journal of Computational Science*

- (Elsevier); Elected Fellow, Int'l Society of Intelligent Biological Medicine (ISIBM); The University of Georgia, Department of Computer Science, USA
- Peyman Arebi; Assistant Professor, Department of Computer Engineering, Technical and Vocational University, Bushehr, Iran
 - Prof. Ezendu Ariwa (Publicity Vice-Chair); Chair, IEEE Consumer Electronics Chapter, UK&RI; Visiting Professor, Gulf University, Bahrain; Visiting Professor, University of Lagos and Kano State Polytechnic, Nigeria
 - Prof. P. Balasubramanian (CDES + ESA); Communication Engineering, Vel Tech Technical University, Chennai, India
 - Prof. Stephan Brown (ERSA, Steering Committee); University of Toronto, Canada
 - Prof. Gabriel Caffarena (ERSA); Universidad CEU San Pablo, Spain
 - Prof. Juan-Vicente Capella-Hernandez; Editorial Board: IEEE RITA Journal; International Journal On Advances in Networks and Services; International Journal of Computer Science & Information Technology Applications; Universitat Politecnica de Valencia, Valencia, Spain; Executive Manager, Wireless Sensor Networks Valencia, Spain
 - Prof. Juan Jose Martinez Castillo; Director of The Acantelys Research Group and Coordinator of the Computer Engineering Department, Universidad Gran Mariscal de Ayacucho, Venezuela
 - Dr. Hsi-Ya (Jerry) Chang; Division Chief, National Center for High-Performance Computing, Taiwan; Secretary General of ACCTA; Member, Council of the Taiwan Association of Cloud Computing (TACC); Taiwan, ROC
 - Prof. Victor A. Clincy (FECS + ICOMP + ICWN); Professor of Computer Science, College of Science and Mathematics, Kennesaw State University, Georgia, USA
 - Dr. Alan Coppola (ERSA Advisory Board); Principal, OptNgn Software, USA
 - Prof. Juan Cuadrado-Gallego; Universidad de Alcalá, Edificio Politecnico, Madrid, Spain; Ecole de technologie superieure, University of Quebec, Canada
 - Prof. Kevin Daimi (World Congress Steering Committee + SAM Chair); Director, Computer Science and Software Engineering Programs; Department of Mathematics, Computer Science and Software Engineering; University of Detroit Mercy, Detroit, Michigan, USA
 - Prof. Leonidas Deligiannidis; Professor, Computer Science, Wentworth Institute of Technology, Boston, MA, USA
 - Somdip Dey; St. Xavier's College (Autonomous), Kolkata, India
 - Prof. Michael Flynn (ERSA Advisory Board); Founding Chair, ACM Special Interest Group on Computer Architecture; Founding Chair, IEEE Computer Society's Technical Committee on Computer Architecture; Former Vice President, IEEE Computer Society; Stanford University, California, USA
 - Prof. Solange Ghernaoui-Helie (Program Co-Chair, SAM); Faculty of Business and Economics, University of Lausanne, Switzerland
 - Prof. Guy Gogniat (ERSA); University of South Brittany, France
 - Dr. Marek Gorgon (ERSA); AGH University of Technology, Poland
 - Prof. George A. Gravvanis; Democritus University of Thrace, Greece
 - Prof. Masanori Hariyama (ERSA, Steering Committee); Tohoku University, Japan
 - Prof. Houcine Hassan; Universitat Politecnica de Valencia, Spain
 - Dr. Bing He; Cisco System Inc., San Jose, California, USA
 - Prof. Hiroshi Ishii (Session Chair, PDPTA); Department Chair, Tokai University, Minato, Tokyo, Japan
 - Prof. Minoru Ito (Session Chair, PDPTA); Nara Institute of Science and Technology, Japan
 - Dr. K. S. S. Iyer; Symbiosis Institute of Telecom Management, Pune, India
 - Prof. George Jandieri (World Congress Steering Committee); Georgian Technical University, Tbilisi, Georgia; Chief Scientist, The Institute of Cybernetics, Georgian Academy of Science, Georgia; Editorial Board Member: International Journal of Microwaves and Optical Technology, The Open Atmospheric Science Journal, American Journal of Remote Sensing, Georgia
 - Dr. Ju-wook Jang (ERSA); Sogang University, Korea
 - Prof. Kazuki Joe (Session Chair, PDPTA); Nara Women University, Japan
 - Prof. Seifedine Kadry; School of Engineering, American University of the Middle East, Kuwait
 - Prof. Dong Hwa Kim; Department of Electronic and Control Engineering, Hanbat National University, Korea; Visiting Professor, Budapest University of Technology and Economic, Hungary; International Einstein awardee for Scientific achievement (2010)
 - Dr. Paris Kitsos (ERSA); Hellenic Open University, Greece
 - Prof. Dattatraya V. Kodavade (World Congress Steering Committee); Head of Computer Science and Engineering, D.K.T.E Society's Textile & Engineering Institute, Ichalkaranji, Maharashtra State, India
 - Prof. B. Raja Sarath Kumar; Principal, Lenora College of Engineering, Andhra Pradesh, India
 - Prof. Jeong A. Lee (ERSA); Chosun University, South Korea

- *Dr. Jong Kwan (Jake) Lee; Department of Computer Science, Bowling Green State University, Ohio, USA*
- *Prof. Kun Chang Lee (World Congress Steering Committee); Professor of MIS and WCU Professor of Creativity Science, Business School and Department of Interaction Science, Sungkyunkwan University, Seoul, South Korea*
- *Prof. Zhongyu (Joan) Lu (CSC + IPCV); University of Huddersfield, Huddersfield, UK*
- *Dr. Bala Krishna Maddali; University School of Information Technology, GGS Indraprastha University, New Delhi, India*
- *Muhammad Naufal Bin Mansor; Intelligent Signal Processing Group (ISP), University Malaysia Perlis, Kangar, Perlis, Malaysia*
- *Prof. Gevorg Margarov; Head of Information Security and Software Development Department, State Engineering University of Armenia, Armenia*
- *Prof. George Markowsky (World Congress Steering Committee and SAM Session Chair); Professor and Associate Director, School of Computing and Information Science; Chair International Advisory Board of IEEE IDAACS; Director 2013 Northeast Collegiate Cyber Defense Competition; University of Maine, Orono, Maine, USA*
- *Dr. Sara Moein; Editorial Board, International Journal of Science and Technology; Faculty of Engineering, MultiMedia University, Malaysia*
- *Dr. Ali Mostafaeipour; Industrial Engineering Department, Yazd University, Iran*
- *Dr. Saurabh Mukherjee; Associate Professor, Department of Computer Science, Banasthali University, Banasthali, Rajasthan, India*
- *Dr. Asoke Nath (SAM + BIOCAMP); Department of Computer Science, St. Xavier's College, India*
- *Daniel Nenni (ERSA Advisory Board); Founder at The Semiconductor Wiki Project, USA*
- *Prof. Hiroaki Nishikawa (Session Chair, PDPTA); University of Tsukuba, Ibaraki, Japan*
- *Prof. Noel De Palma; Associate Vice President for Research, Computer Science; Leader, ERODS Research, LIG Labs.; Board of Directors, OW2 Consortium; Department of Computer Science; University Joseph Fourier (UJF), Grenoble, France*
- *Prof. G. N. Pandey (World Congress Steering Committee); Vice-Chancellor, Arunachal University of Studies, Arunachal Pradesh, India; Adjunct Professor, Indian Institute of Information Technology, Allahabad, India*
- *Prof. James J. (Jong Hyuk) Park (World Congress Steering Committee); Professor of Computer Science and Engineering, Seoul National University of Science and Technology (SeoulTech), Korea; President, KITCS; President, FTRA; Editor-in-Chiefs: HCIS, JoC and IJITCC Journals*
- *Dr. Satish Penmatsa; Assistant Professor, Computer Science, University of Maryland - Eastern Shore, Maryland, USA*
- *Dr. Toomas Plaks (Chair, ERSA); WEBestSOL and Webest Solutions Ltd, UK*
- *Prof. R. Ponalagusamy; Department of Mathematics, National Institute of Technology, Tiruchirappalli, India*
- *Prof. Junfeng Qu; Clayton State University, Morrow, Georgia, USA*
- *Dr. Salva Sebastien (SERP); Fellow, Limos laboratory (CNRS), France; Associate Professor, University of Auvergne (UdA), LIMOS Complexe scientifique des Cezeaux, Aubiere, France*
- *Dr. Liang Shi; Senior Researcher, McAfee, USA*
- *Dr. Zhefu Shi; Microsoft Corporation, Redmond, Washington, USA*
- *Dr. Kok Swee Sim; Faculty of Engineering and Technology, Jalan Ayer Keroh Lama, Melaka, Malaysia*
- *Ashu M. G. Solo, (Publicity Chair); Fellow of British Computer Society, Principal/R&D Engineer, Maverick Technologies America Inc., USA*
- *Prof. K. Subramani; West Virginia University, USA*
- *Dr. Alain Tchana (GCA); Grenoble University, France*
- *Prof. Fernando G. Tinetti (World Congress Steering Committee); School of Computer Science, Universidad Nacional de La Plata, La Plata, Argentina; Co-editor, Journal of Computer Science and Technology (JCS&T)*
- *Dr. Predrag Tomic (World Congress Steering Committee); Microsoft, Washington, USA*
- *Prof. Quoc-Nam Tran, Ph.D. (Vice-Chair of BIOCAMP); Professor and Chair of Computer Science, The University of Texas at Tyler, Tyler, Texas, USA*
- *Dr. Vinay Vaidya (IPCV); CTO and Vice President, Center for Research in Engineering Sciences and Technology (CREST), KPIT Cummins Infosystems Limited, Pune, India*
- *Prof. Vladimir Volkov (World Congress Steering Committee & Vice-Chair of IPCV); The Bonch-Bruевич State University of Telecommunications, Saint-Petersburg, Russia*
- *Dr. Alexander Wohrer (ICOMP + GCA); Program Manager ICT at Vienna Science and Technology Fund, Schlickgasse, Vienna, Austria*
- *Prof. Dr. Bernd E. Wolfinger; Telecommunications and Computer Networks Division, Computer Science Department, University of Hamburg, Germany*

- *Prof. Jongwook Woo; Director, High-Performance Information Computing Center (HiPiC), Computer Information Systems Department, California State University, Los Angeles, California, USA*
- *Prof. Jane You (Vice-Chair of IPCV); The Hong Kong Polytechnic University, Hong Kong*

As Sponsors-at-large, partners, and/or organizers each of the followings (separated by semicolons) provided help for at least one track of the World Congress: Aldebaran Robotics Inc., USA (<http://www.aldebaran-robotics.com>); Altera Corporation, USA (<http://www.altera.com/>); Computer Science Research, Education, and Applications Press (CSREA); Impulse Accelerated Technologies, Inc., USA (<http://www.impulseaccelerated.com/>); NVIDIA Corporation, USA (<http://www.nvidia.com/object/about-nvidia.html>); Parallella Community, Supercomputing for Everyone, USA (<http://forums.parallella.org/>); Pico Computing, Inc., USA (<http://picocomputing.com/>); SemiWiki.com, The Semiconductor Wiki Project, USA (<http://www.semiwiki.com/>); Solarflare Communications, Inc., USA (<http://www.solarflare.com/>); Stream Computing, Performance Engineers, The Netherlands (<http://streamcomputing.eu/>); Taylor & Francis, UK (<http://www.taylorandfrancis.com/>); US Chapter of World Academy of Science (<http://www.world-academy-of-science.org/>); and WEBestSOL & Webest Solutions Ltd, UK (<http://webestsol.com/>). In addition, a number of university faculty members and their staff (names appear on the cover of the set of proceedings), several publishers of computer science and computer engineering books and journals, chapters and/or task forces of computer science associations/organizations from 5 countries, and developers of high-performance machines and systems provided significant help in organizing the conference as well as providing some resources. We are grateful to them all.

We express our gratitude to keynote, invited, and individual conference/tracks and tutorial speakers - the list of speakers appears on the conference web site. We would also like to thank the followings: UCMSS (Universal Conference Management Systems & Support, California, USA) for managing all aspects of the conference; Dr. Tim Field of APC for managing the printing of the proceedings; and the staff of the New Tropicana Hotel in Las Vegas for the professional service they provided. Last but not least, we would like to thank the Co-Editors and Associate Co-Editors of PDPTA'13: Prof. Hamid R. Arabnia, Dr. George A. Gravvanis, Prof. Hiroshi Ishii, Prof. Minoru Ito, Prof. George Jandieri, Prof. Kazuki Joe, Prof. Hiroaki Nishikawa, Ashu M. G. Solo, and Prof. Fernando G. Tinetti.

We present the proceedings of PDPTA'13.

Steering Committee, 2013
<http://www.world-academy-of-science.org/>

Contents

SESSION: RESOURCE ALLOCATION, SCHEDULING, ENERGY-AWARE COMPUTING + LOAD-BALANCING + FAULT-TOLERANT SYSTEMS

- A Machine-by-Machine Analysis of a Bi-Objective Resource Allocation Problem** 3
Ryan Friese, Tyler Brinks, Curt Oliver, Anthony A. Maciejewski, Howard Jay Siegel, Sudeep Pasricha
- A Load Balancing Schema for Agent-based SPMD Applications** 10
Claudio Marquez, Eduardo Cesar, Joan Sorribes
- Towards an Operating System Based Framework for Energy-Efficient Scheduling of Parallel Workloads** 17
Shwetha Shankar, Dan Tamir, Apan Qasem
- A Fault-Tolerant Approach to Distributed Applications** 23
Toan Nguyen, Jean-Antoine Desideri, Laurentiu Trifan
- Two-Phase Atomic Commitment Protocol in Asynchronous Distributed Systems with Crash Failure** 30
Young-Hwan Cho, Sung-Hoon Park, Seon-Hyong Lee
- Load Balancing in Heterogeneous Distributed Computing Systems Using Approximation Algorithm** 36
Bibhudatta Sahoo, Sanjay Kumar Jena, Sudipta Mahapatra

SESSION: PARALLEL AND DISTRIBUTED ALGORITHMS AND APPLICATIONS

- Parallel Algorithms for Hybrid Multi-core CPU-GPU Implementations of Component Labelling in Critical Phase Models** 45
Ken A. Hawick, Daniel P. Playne
- Parallel Asynchronous Modelization and Execution of Cholesky Algorithm using Petri Nets** 52
Gustavo Wolfmann, Armando De Giusti
- Parallel Implementation of GRAPH Aligner (GRAAL) Algorithm for Network Alignment** 59
Si Li, Shengai Jin, Jonathan Z Sun, Chaoyang Zhang
- A Massively Parallel Line Simplification Algorithm Implemented Using Chapel** 64
Michael Scherger, Huy Tran

A Parallel Ford-Fulkerson Algorithm For Maximum Flow Problem	71
<i>Zhipeng Jiang, Xiaodong Hu, Suixiang Gao</i>	
Model Checking Prioritized Token-Based Mutual Exclusion Algorithms	75
<i>Mitchell L. Neilsen</i>	
A Parallel Implementation of the Modus Ponens Inference Rule in a DNA Strand Displacement System	82
<i>Jack Horner</i>	
Hadoop-Collaborative Caching in Real Time HDFS	89
<i>Meenakshi Shrivastava, Hans-Peter Bischof</i>	
Stochastic Assessment of Voltage Sags by Applying a Parallelized Method	96
<i>Carlos Ceja-Espinosa, Antonio Ramos-Paz, Elisa Espinosa-Juarez</i>	
Large scale 3D shape retrieval by exploiting multi-core and GPU	102
<i>Mohammed Benjelloun, El Wardani Dadi, El Mostafa Daoudi</i>	
Multi Sensor Data Fusion, Methods and Problems	106
<i>Rawa Adla, Youssef Bazzi, Nizar Al-Holou</i>	
Lighting Control Algorithm Using Linear Programming for An Intelligent Lighting System and Dealing with Disturbance Using Kalman Filter	112
<i>Mitsunori Miki, Hisanori Ikegami, Yohei Azuma, Yuki Sakakibara, Yo Motoya</i>	
Issues in Building Parallel Multimedia Systems: A Survey	119
<i>SeongKi Kim, SangYong Han</i>	
From Sequence of Tumor Liberated Protein (TLP) to Function and Potential Targets for Diagnosis and Therapy	125
<i>Giulio Tarro</i>	
SESSION: WORKSHOP: MATHEMATICAL MODELING AND PROBLEM SOLVING - MPS	
Inferring Strengths of Protein-Protein Interactions Using Support Vector Regression	131
<i>Yusuke Sakuma, Mayumi Kamada, Morihiko Hayashida, Tatsuya Akutsu</i>	
Mining Infrequent Patterns of Two Frequent Substrings from a Single Set of Biological Sequences	136
<i>Daisuke Ikeda</i>	
SDBP: An Easy-to-use R Program Package for Assessing Reliability of Estimated Phylogenetic Trees Based on the Speedy Double Bootstrap Method	143
<i>Aizhen Ren, Takashi Ishida, Yutaka Akiyama</i>	

Acceleration of Tandem Mass Spectrometry Analysis Software CoCoozo using Multi-core CPUs and Graphics Processing Units	149
<i>Yasufumi Obata, Takashi Ishida, Tohru Natsume, Yutaka Akiyama</i>	
A Case Study of Calculation of Source Code Module Importance	155
<i>Takaaki Goto, Setsuo Yamada, Tetsuro Nishino, Kensei Tsuchida</i>	
Implementation of the Orthogonal QD Algorithm for Lower Tridiagonal Matrices	161
<i>Sho Araki, Hiroki Tanaka, Kinji Kimura, Yoshimasa Nakamura</i>	
Improved Computation of Bounds for Positive Roots of Polynomials	168
<i>Masami Takata, Takuto Akiyama, Sho Araki, Kinji Kimura, Yoshimasa Nakamura</i>	
Latent Feature Independent Cascade Model for Social Propagation	175
<i>Yuya Yoshikawa, Tomoharu Iwata, Hiroshi Sawada</i>	
Decidability of k-Secrecy Against Inference Attacks Using Functional Dependencies on XML Databases	182
<i>Nobuaki Yamazoe, Kenji Hashimoto, Yasunori Ishihara, Toru Fujiwara</i>	
Implementation of Multiple Classifier System on MapReduce Framework for Intrusion Detection	189
<i>Masataka Mizukoshi, Bando Shintaro, Martin Schlueter, Masaharu Munetomo Munetomo</i>	
A Change of Order Balance Implies Intraday Price Trend in Japanese Stock Market	195
<i>Hiwon Yoon</i>	
Poisson Observed Image Restoration using a Latent Variational Approximation with Gaussian MRF	201
<i>Hayaru Shouno, Masato Okada</i>	
SESSION: GRID + CLOUD COMPUTING AND SUPPORTING TOOLS + APPLICATIONS	
Configuration Challenges when Migrating Applications to a Cloud: The JEE use Case	209
<i>Alain Tchana, Noel De Palma, Xavier Etchevers, Daniel Hagimont</i>	
Globus XIO Compression Driver: Enabling On-the-fly Compression in GridFTP	216
<i>Mattias Lidman, John Bresnahan, Rajkumar Kettimuthu</i>	

Cost-effective Cloud Services for HPC in the Cloud: The IaaS or The HaaS?	223
<i>Ifeanyi P. Egwutuoha, Shiping Chen, David Levy, Rafael Calvo</i>	
A Chord-based Architecture for Efficient Dynamic Service Provisioning over Distributed Resources	229
<i>Dibyanshu Jaiswal, Sujoy Mistry, Arijit Mukherjee, Nandini Mukherjee</i>	
A Hybrid Algorithm Based on Genetic Algorithm and Simplex Method for QoS-aware Cloud Service Selection	236
<i>Chengwen Zhang, Jiali Bian, Bo Cheng, Lei Zhang</i>	
Open Source Cloud Computing: Characteristics and an Overview	243
<i>Naylor Bachiega, Henrique Martins, Roberta Spolon, Marcos Antonio Cavenaghi, Renata Lobato, Aleardo Manacero</i>	
SESSION: SYSTEMS SOFTWARE + PROGRAMMING MODELS + THREADS + CACHING + FILE SYSTEMS + TESTING AND MONITORING METHODS	
Write Buffer Sharing Control in SMT Processors	251
<i>Yilin Zhang, Wei-Ming Lin</i>	
A Flexible and Adaptable Distributed File System	258
<i>Silas Evandro Nachif Fernandes, Renata Spolon Lobato, Aleardo Manacero, Roberta Spolon, Marcos Antonio Cavenaghi</i>	
Optimizing the Use of the Hard Disk in MapReduce Frameworks for Multi-core Architectures	264
<i>Tharso Ferreira, Antonio Espinosa, Juan Carlos Moure, Pofidio Hernandez</i>	
Application Characteristics of Many-tasking Execution Models	271
<i>Timur Gilmanov, Matthew Anderson, Maciej Brodowicz, Thomas Sterling</i>	
Virtual Processor Frequency Emulation	278
<i>Christine Mayap, Daniel Hagimont</i>	
Action, Objects, and Subjects	285
<i>Hannu-Matti Jarvinen</i>	
Efficient Replacement Policy for Sub-Block Cache Architectures	292
<i>Oluleye Olorode, Mehrdad Nourani</i>	
Locality Analysis for Characterizing Applications Based on Sparse Matrices	299
<i>Noboru Tanabe, Sonoko Tomimori, Masami Takata, Kazuki Joe</i>	

Design and Implementation of an In-Network Cache Coherence Protocol 306
Christian Bernard, Huy-Nam Nguyen, Eric Guthmuller, Yves Durand

A Visualization System and Monitoring Tool to Measure Concurrency in MPICH Programs 313
Michael Scherger, Zakir Hussain Syed

Runtime Support for Dynamic Skeletons Implementation 320
Javier Fresno, Arturo Gonzalez-Escribano, Diego R. Llanos

Fully Automatic Parallel Programming 327
Bryant Nelson, Nelson Rushton

An Efficient Mixed-Mode BIST Scheme for Test-Per-Clock Testing 330
Tieqiao Liu, Jishun Kuang, Shuo Cai, Yinbo Zhou, Zhiqiang You

SESSION: PERFORMANCE EVALUATION, ESTIMATION, AND RELATED ISSUES

Tuning Master/Worker Applications: A Practical Use Case with MATE 337
Andrea Martinez, Anna Sikora, Eduardo Cesar, Joan Sorribes

Performance Model for the Impact of Hardware Characteristics in Accelerated Processing Units 343
Mario Alberto Chapa Martell, Hiroyuki Sato

A Framework to write Performability-Aware SPMD Applications 350
Hugo Meyer, Ronal Muresano, Dolores Rexachs, Emilio Luque

SuperViewer: An Interactive Visual Interface to Explore the Top500 List 357
Leonidas Deligiannidis, Erik Noyes, Hamid Arabnia

Performance Model for Master/Worker hybrid Applications 365
Abel Castellanos, Andreu Moreno, Tomas Margalef

SESSION: COMMUNICATION SYSTEMS + NETWORKS AND INTERCONNECTION NETWORKS + PEER-TO-PEER NETWORKS AD-HOC NETWORKS + SENSOR NETWORKS AND APPLICATIONS

Real-Time Radio Wave Propagation for Mobile Ad-Hoc Network Emulating using GPGPUs 375
Brian Henz, David Richie, Evens Jean, Song Park, James Ross, Dale Shires

A Stochastic Fault-tolerant Routing Algorithm in Hyper-star Graphs 382
Yo Nishiyama, Yuki Hirai, Keiichi Kaneko

Parallel Routing In Exchanged Hypercubes	389
<i>Tsung-Han Tsai, Y-Chuang Chen, Jimmy J.M. Tan</i>	
Swarm Architecture Toward P2P VoD without Playback Suspension	397
<i>Yasuaki Yuji, Satoshi Fujita</i>	
MCM Based Cluster Algorism for Ocean Sensor Networks	404
<i>Hwanghyuk Lee, Sang-Eon Park, Young-Jun Chung</i>	
A Point-Based Incentive Scheme for P2P Reputation Management Systems	410
<i>Takuya Nishikawa, Satoshi Fujita</i>	
Decycling Hierarchical Cubic Networks	417
<i>Antoine Bossard</i>	
Heuristics For Reconfigurable Three Dimensional Fiber Space Optical Networks	423
<i>Johan Kosumo, Danny Luong, James C.S. Wong, Gilbert Young</i>	
GPU-based Multi-stream Analyzer on Application Layer for Service-oriented Router	430
<i>Kazumasa Ikeuchi, Janaka Wijekoon, Shinichi Ishida, Hiroaki Nishi</i>	
Minimum Spanning Tree For Energy Saving in Interconnection Networks	437
<i>Hai Nguyen, Daniel Franco, Emilio Luque</i>	
Optimization of TSV-based Crossbars for a 3D Memory-Centric Network-on-Chip	442
<i>Hossam Sarhan, Amr Wassal</i>	
A Methodology to characterize the parallel I/O of the message-passing scientific applications	449
<i>Sandra Mendez, Dolores Rexachs, Emilio Luque</i>	
Control and Marking Data Flows	456
<i>Djamel-Eddine Henni, Zoulikha Mekkakia, Abdelghani Ghomari</i>	
History-Aware Adaptive Routing Algorithm For Energy Saving in Interconnection Networks	463
<i>Hai Nguyen, Gonzalo Zarza, Daniel Franco, Emilio Luque</i>	
BlueHoc: Bluetooth Ad-Hoc Network Android Distributed Computing	468
<i>Gregorio Hinojos, Curtis Tade, Song Park, Dale Shires, David Bruno</i>	
Comparison of NoC Routing Algorithms Using Formal Methods	474
<i>Zeinab Sharifi, Siamak Mohammadi, Marjan Sirjani</i>	

**SESSION: CLUSTER COMPUTING + MULTI-CORE, GPU, FPGA PROCESSING
AND APPLICATIONS**

Cluster-SkePU: A Multi-Backend Skeleton Programming Library for GPU Clusters	483
<i>Mudassar Majeed, Usman Dastgeer, Christoph Kessler</i>	
DEF-G: Declarative Framework for GPU Environment	490
<i>Robert Senser, Tom Altman</i>	
Workstation Footprint Tactical Computing	497
<i>Song Park, Dale Shires, James Ross, David Richie, Jordan Ruloff, Brian Henz</i>	
Exploiting Heterogeneous Systems: Keccak on OpenCL	502
<i>Allan Mariano de Souza, Fabio Dacencio Pereira, Edward David Moreno</i>	
GPU Acceleration of a Genetic Algorithm for the Synthesis of FSM-based Bimodal Predictors	508
<i>Martin Burtscher, Hassan Rabeti</i>	
A Fast Implementation of Parallel Discrete-Event Simulation on GPGPU	516
<i>Janche Sang, Che-Rung Lee, Vernon Rego, Chung-Ta King</i>	
A GPU-based Multiresolution Pipeline for Compressed Volume Rendering	523
<i>Julian Lamas-Rodriguez, Francisco Arguello, Dora B. Heras</i>	
Data-flow Concurrency on Distributed Multi-core Systems	530
<i>George Michael, Samer Arandi, Paraskevas Evripidou</i>	
A Highly Extensible Framework for Molecule Dynamic Simulation on GPUs	539
<i>Xiao Zhang, Wan Guo, Xiao Qin, Xiaonan Zhao</i>	
Adding Semi-Coordinated Checkpoint to RADIC in Multicore Clusters	545
<i>Marcela Castro, Dolores Rexachs, Emilio Luque</i>	
Comparative Study of High Performance Computing Using Multi-core Parallel Systems	552
<i>Hyo Jong Lee, Hyeon Kyu Kim</i>	
A Numerical Modeling MATLAB Approach to Memory Behavior on a Multi-core Architecture on a Beowulf Cluster Single-Node	557
<i>Damian Valles</i>	
Applying the Parallel GPU Model to Radiation Therapy Treatment	564
<i>J. Steven Kirtzic, David Allen, Ovidiu Daescu</i>	

A Benchmark-Driven Modelling Approach For Evaluating Deployment Choices On A Multicore Architecture 571

Annette Osprey, Graham Riley, Muniyappa Manjunathaiah, Bryan Lawrence

Job Parallelism using Graphical Processing Unit Individual Multi-Processors and Localised Memory 578

Daniel P. Playne, Ken A. Hawick

SESSION: DATA-DRIVEN NETWORKING SYSTEMS WITH HIGH TOLERANCE FOR DISASTER, FAULT AND CONGESTION

Effective Flooding over Disaster Tolerant Ad Hoc Network based on Exchange of Neighbor Information 587

Naoya Imaizumi, Keisuke Utsu, Hiroshi Sano, Hiroshi Ishii

Video Streaming Performance of Load and Battery Charge Oriented Flooding over Disaster Tolerant Ad Hoc Network 592

Keisuke Utsu, Hiroaki Nishikawa, Hiroshi Ishii

A Proposal on Broadcast based Information Sharing System over Disaster and Congestion Tolerant Ad Hoc Network 599

Keisuke Utsu, Hiroaki Nishikawa, Hiroshi Ishii

An Overload-Free Data-Driven Ultra-Low-Power Networking Platform Architecture 604

Shuji Sannomiya, Yukikuni Nishida, Makoto Iwata, Hiroaki Nishikawa

An Implementation of Platform Simulator for Congestion-Free Ultra-Low-Power Data-Driven Networking System 611

Kazuhiro Aoki, Shuji Sannomiya, Makoto Iwata, Hiroshi Ishii, Hiroaki Nishikawa

Low-Powered Self-Timed Pipeline with Variable-Grain Power Gating and Suspend-Free Voltage Scaling 618

Kei Miyagi, Shuji Sannomiya, Makoto Iwata, Hiroaki Nishikawa

Self-Timed Single Circular Pipeline for Multiple FFTs 625

Ryuichi Taguchi, Hajime Ohiso, Keizo Mendori, Kei Miyagi, Makoto Iwata

SESSION: POSTERS AND SHORT RESEARCH PAPERS

Perfect Difference Networks and Graphs and Their Applications 633

Mikhail Rakov, John Mackall

Parallelization of Initial Thread-level Work in Depth-First-Search Tree-Search on GPUs 635
Mark Fienup

Runtime Performance Evaluation of GPU and CPU using a Genetic Algorithm Based on Neighborhood Model 637
Vincent Tadaiesky, Adamo Santana, Lilian Dias, Ivan Oliveira, Antonio Jacob, Fabio Lobato

Key Management Schemes Roadmap for Body Sensor Networks Based on Physiological Signals 639
Zhao Huawei, Shu Minglei, Qin Jing

Analyze the Effect of Contextual Based Fuzzy MRF Models in Satellite Images 641
Rakesh Dwivedi, Sanjay Ghosh, Anil Kumar

Practical Simulatable Adaptive Oblivious Transfer Protocol 643
Jing Qin, Hua-wei Zhao, Jie Cai

A Simulation Platform for SRAM-TCAM Based Memory Architectures 645
Oluleye Olorode, Mehrdad Nourani

**SESSION: POSITION AND REGULAR - COMMUNICATION SYSTEMS,
CLOUD COMPUTING, RECONFIGURABLE SYSTEMS, PARALLEL AND
DISTRIBUTED COMPUTING, SCHEDULING, ARCHITECTURES, AND
APPLICATIONS**

Study of Link Utilization of Perfect Difference Network and Hypercube 649
Rakesh Kumar Katare, Narendra Shivaji Chaudhari, Shazad Ahmed Mughal, Shah Imran, Rajesh Roshan Raina, Shashi Kant Verma

Scalable Software Practice Environments Featuring Automatic Provision and Configuration in the Cloud 658
German Molto, Miguel Caballer

Partial Reconfiguration of a Linear Recursive Process and Application on [Q,R]-Decomposition 665
Etienne Aubin Mbe Mbock

A Graphical Language for Development of Parallel Applications 672
Jose Luis Quiroz-Fabian, Graciela Roman-Alonso, Miguel Alfonso Castro-Garcia, Manuel Aguilar-Cornejo, Jorge Buenabad-Chavez

A Proposal for an Efficient Integral Multi-Agent Sensor Network Simulation Architecture Design 679
Alexander Filippou, Dimitrios Karras

Automatic Run-time Mapping of Polyhedral Computations to Heterogeneous Devices with Memory-size Restrictions 686

Yuri Torres de la Sierra, Arturo Gonzalez-Escribano, Diego R. Llanos

Optimizing Data Locality for Iterative Matrix Solvers on CUDA 692

Raymond Flagg, Jason Monk, Yifeng Zhu, Bruce Segee

DLML-IO: A Library for Processing Large Data Volumes 699

Luis Alberto Perez-Suarez, Miguel Alfonso Castro-García, Graciela Roman-Alonso, Manuel Aguilar-Cornejo, Jorge Buenabad-Chavez

Dynamic Scheduling Scheme for Linearly Extensible Multiprocessor Systems 706

Abdus Samad, Qasim Rafiq, Omar Farooq

Pathfinding on a Specialized Vector Processor 711

Mikhail Tatur, Yerzhan Seitkulov, Nicolay Verenik, Alexey Girel

Control Synthesis of For-Loops in a Pipeline System 717

Heung Sun Yoon, Jae Young Park, Jong Tae Kim

SESSION: LATE BREAKING PAPER - cloud computing, optimization, sensor networks, scheduling, and applications

Deployment of Customized Virtual Machine on Cloud Platform 723

Gaochao Xu, Yushuang Dong, Kun Yang, Xiaodong Fu, Jia Zhao

Optimizing Performance for Coalition Structure Generation Problems IDP Algorithm 730

Francisco Cruz-Mencia, Jesús Cerquides, Antonio Espinosa, Juan Carlos Moure, Juan Antonio Rodriguez-Aguilar

Partial Parallelization of the Successive Projections Algorithm using Compute Unified Device Architecture 737

Lauro Cássio Martins de Paula, Anderson da Silva Soares, Telma Woerle de Lima, Wellington Santos Martins, Arlindo Rodrigues Galvão Filho, Clarimar José Coelho

A New Key Negotiation Method Based on Fuzzy Extractor Technology for Body Sensor Networks 742

Zhao Huawei, Shu Minglei, Qin Jing

Performance Evaluation of Two-Dimensional Distributed Factoring Self-Scheduling Scheme for Heterogeneous Computer Systems 749

Satish Penmatsa, Abel Oji

A Method for Eliminating Abnormal Values of Received Signal Strength Indicator (RSSI) in WLAN 754

Yanfang Jing, Minglei Shu, Ming Yang, Huawei Zhao, Jiankun Hu

