

2011 International Conference on High Performance Computing and Simulation

(HPCS 2011)

**Istanbul, Turkey
4 – 8 July 2011**



**IEEE Catalog Number: CFP1178H-PRT
ISBN: 978-1-4577-1899-1**

Table of Contents

HPCS 2010 TECHNICAL PAPERS

Invited Papers

Dynamic Placement of Virtual Machines for Cost Optimization in Multi-Cloud Environments	1
<i>Jose Luis Lucas Simarro, Rafael Moreno-Vozmediano, Ruben S. Montero, I.M. Llorente</i> (Universidad Complutense Madrid, Spain)	
Machines, Methods and Music: On the Evolution of e-Research	8
<i>David De Roure</i> (Oxford e-Research Centre, University of Oxford, United Kingdom)	
Parallel and Distributed Simulation from Many Cores to the Public Cloud	14
<i>Gabriele D'Angelo</i> (University of Bologna, Bologna, Italy)	

Regular Papers

Exploiting Concurrent Kernel Execution on Graphic Processing Units	24
<i>Lingyuan Wang, Miaoqing Huang, Tarek El-Ghazawi</i> (The George Washington University, Virginia; University of Arkansas – Fayetteville, Arkansas, USA)	
Natural HPC Substrate: Exploitation of Mixed Multicore CPU and GPUs	33
<i>Moussa Taift, Abdallah Khreishah, Justin Y. Shi</i> (Temple University, Pennsylvania, USA)	
ShoveRand: A Model-Driven Framework to Easily Generate Random Numbers on GP-GPU	41
<i>Jonathan Passerat-Palmbach, Claude Mazel, Bruno Bachelet, David R.C. Hill</i> (Clermont Université; CNRS, Université Blaise Pascal, LIMOS; ISIMA, Computer Science and Modelling Institute, Aubière, France)	
Advantages and GPU Implementation of High-Performance Indexed DNA Search based on Suffix Arrays	49
<i>Gustavo Encarnação, Nuno Sebastião, Nuno Roma</i> (INESC-ID, IST-TU Lisbon, Portugal)	
Parallelization of the Functional Flow Algorithm for Prediction of Protein Function using Protein-Protein Interaction Networks	56
<i>Emrah Akkoyun, Tolga Can</i> (Turkish Academic Network and Information Center; Middle East Technical University, Ankara, Turkey)	
Towards Self-Caring MapReduce: Proactively Reducing Fault-Induced Execution-Time Penalties	63
<i>Selvi Kadirvel, José A.B. Fortes</i> (University of Florida – Gainesville, Florida, USA)	

Linear Programming based Parallel Job Scheduling for Power Constrained Systems	72
<i>Maja Etinski, Julita Corbalan, Jesus Labarta, Mateo Valero</i> (Barcelona Supercomputing Center and Technical University of Catalonia, Barcelona, Spain)	
Improved Real-Time Scheduling for Periodic Tasks on Multiprocessors	81
<i>Prapaporn Rattanathamrong, José A.B. Fortes</i> (University of Florida – Gainesville, Florida, USA)	
Task Scheduling Strategies for Dynamic Reconfigurable Processors in Distributed Systems	90
<i>M. Faisal Nadeem, S. Arash Ostadzadeh, Stephan Wong, Koen Bertels</i> (Delft University of Technology, The Netherlands)	
A Hybrid Scheduling Technique for Grid Workflows in Advance Reservation Environments	98
<i>Jawad Ashraf, Thomas Erlebach</i> (University of Leicester, United Kingdom)	
Meeting Deadlines within Object-Oriented Systems	107
<i>Amal Abd El-Raouf</i> (Southern Connecticut State University, Connecticut, USA)	
A Data-Aware Workflow Scheduling Algorithm for Heterogeneous Distributed Systems	114
<i>Dengpan Yin, Teyfik Kosar</i> (Louisiana State University, Louisiana; University at Buffalo (SUNY), New York, USA)	
A Fuzzy Algorithm for Adaptive Multilevel Queue Management with QoS Feedback	121
<i>Ali Rezaee, Amir Masoud Rahmani, Sahar Adabi, Sepideh Adabi</i> (Islamic Azad University, Tehran, Iran)	
Efficient Method for Multiple Resource Discoveries in Grid Environment	128
<i>Leyli Mohammad Khanli, Ali Kazemi Niari, Saeed Kargar</i> (University of Tabriz; Islamic Azad University – Tabriz Branch, Tabriz, Iran)	
AOI-Cast by Compass Routing in Delaunay based DVE Overlays	135
<i>Laura Ricci, Luca Genovali, Emanuele Carlini, Massimo Coppola</i> (University of Pisa; MT, Institutions, Markets, Technology, Lucca; ISTI, CNR, Pisa, Italy)	
Determining the Maximum Clique Size in Large Random Geometric Graphs	143
<i>Ilteris Murat Derici, Mihai Tudor Panu</i> (Southern Methodist University, and SIAM, Texas, USA)	
Achieving Optimal Elastic Traffic Rewards in Dynamic Multichannel Access	155
<i>M. NoroozOliaee, B. Hamdaoui, K. Tumer</i> (Oregon State University – Corvallis, Oregon, USA)	
An Improved IEEE 802.11 MAC Protocol for Wireless Ad-Hoc Networks with Multi-Channel Access Capabilities	162
<i>Megha Maiya, Bechir Hamdaoui</i> (Oregon State University – Corvallis, Oregon, USA)	
Performance Analysis of Virtual Layer Handoff Scheme based on MAP Changing in HMIPv6 Networks	169
<i>Jongpil Jeong, Dong Ryeol Shin, Hyunseung Choo, Junwoo Shin</i> (Sungkyunkwan University, Kyunggi-do, Suwon; National IT Industry Promotion Agency, Daejeon, Republic of Korea)	

Large-Scale Parallel Null Space Calculation for Nuclear Configuration Interaction	176
<i>Hasan Metin Aktulga, Chao Yang, Esmond G. Ng, Pieter Maris, James P. Vary</i> (Lawrence Berkeley National Laboratory, California; Iowa State University, Iowa, USA)	
Task-Parallel Global Optimization with Application to Protein Folding	186
<i>C. Voglis, P.E. Hadjidoukas, V.V. Dimakopoulos, I.E. Lagaris, D.G. Papageorgiou</i> (University of Ioannina, Ioannina, Greece)	
Grid based Architectural Components for SWAT Model Calibration	193
<i>Victor Bacu, Danut Mihon, Denisa Rodila, Teodor Stefanut, Dorian Gorgan</i> (Technical University of Cluj-Napoca, Romania)	
High Performance Implementation of Planted Motif Problem using Suffix Trees	200
<i>Naga Shailaja Dasari, Desh Ranjan, Zubair M</i> (Old Dominion University, Virginia, USA)	
Loop Unrolling Minimisation in the Presence of Multiple Register Types: A Viable Alternative to Modulo Variable Expansion	207
<i>Mounira Bachir, Frederic Brault, Sid-Ahmed-Ali Touati, Albert Cohen</i> (INRIA Saclay, Orsay; University of Versailles, France)	
High-Performance Polynomial GCD Computations on Graphics Processors	215
<i>Pavel Emeliyanenko</i> (Max-Planck-Institut für Informatik, Saarbrücken, Germany)	
On the Relation between Centrality Measures and Consensus Algorithms	225
<i>Amir Noori</i> (Islamic Azad University – Karaj, Iran)	
An Energy Saving Model of Exclusive Cache	N/A
<i>S. Subha</i> (SITE, VIT, Vellore, India, India)	
P-Means, a Parallel Clustering Algorithm for a Heterogeneous Multi-Processor Environment	239
<i>Aislan G. Foïna, Judit Planas, Rosa M. Badia, Francisco Javier Ramirez-Fernandez</i> (Barcelona Supercomputing Center, Spanish National Research Council (CSIC), Barcelona, Spain; Universidade de São Paulo (USP), São Paulo, Brazil)	
A Simple Bridging Model for High-Performance Computing	249
<i>Chong Li, Gaétan Hains</i> (LACL, Université Paris-Est, Créteil; EXQIM S.A.S., Paris, France)	
Parallel Programming and Performance Predictability with Orléans Skeleton Library	257
<i>Noman Javed, Frédéric Loulergue</i> (LIFO, Université d'Orléans Orléans, France)	
Software Prefetch on Core Micro-Architecture Applied to Irregular Codes	264
<i>Samir Ammenouche, David E. Singh, Jesús Carretero, William Jalby</i> (University of Versailles, France; University Carlos III of Madrid, Spain)	
Performance Evaluation and Analysis of Thread Pinning Strategies on Multi-Core Platforms: Case Study of SPEC OMP Applications on Intel Architectures	273
<i>Abdelhafid Mazouz, Sid-Ahmed-Ali Touati, Denis Barthou</i> (University of Versailles Saint-Quentin en Yvelines, Versailles; University of Bordeaux, France)	

xSim: The Extreme-Scale Simulator	280
<i>Swen Böhm, Christian Engelmann</i> (Oak Ridge National Laboratory, Tennessee, USA)	
Performance Modeling of a Consolidated Java Application Server	N/A
<i>Hitoshi Oi, Kazuaki Takahashi</i> (The University of Aizu, Japan)	
Deadline Constrained Scheduling in Hybrid Clouds with Gaussian Processes	294
<i>Andreas Zinnen, Thomas Engel</i> (University Luxembourg, Luxembourg)	
An Environment for Evaluation and Testing of Service Workflow Schedulers in Clouds	301
<i>Carlos R. Senna, Luiz F. Bittencourt, Edmundo R.M. Madeira</i> (Institute of Computing – University of Campinas (UNICAMP), São Paulo, Brazil)	
Automatic Multi-Objective Optimization of Parameters for Hardware and Code Optimizations	308
<i>Ralf Jahr, Theo Ungerer, Horia Calborean, Lucian Vintan</i> (University of Augsburg, Germany; “Lucian Blaga” University of Sibiu, Sibiu, Romania)	
An Efficient Method for Parallel Interval Global Optimization	317
<i>Adam Baldwin, Asai Asaithambi</i> (The University of South Dakota, South Dakota; University of North Florida – Jacksonville, USA)	
A Dynamic Workflow Simulation Platform	322
<i>Laurentiu Trifan, Toàn Nguyễn</i> (Centre de Recherche INRIA Grenoble – Rhône-Alpes, Saint Ismier, France)	
Effective Sender-Based Message Logging Algorithm with Checkpointing Considering Transient Communication Errors	330
<i>Jinho Ahn</i> (Kyonggi University, Republic of Korea)	
A Dependable System based on Adaptive Monitoring and Replication	336
<i>Keinosuke Matsumoto, Akifumi Tanimoto, Naoki Mori</i> (Osaka Prefecture University, Osaka, Japan)	
CPU-Aware, Process-Level Redundancy to Tolerate Faults in Multi-Cores	343
<i>Hananeh Aliee, Hamid R. Zarandi, Alireza Tajary</i> (Amirkabir University of Technology, Tehran, Iran)	
Adaptive Sparsity-Aware Parameter Vector Reconstruction with Application to Compressed Sensing	350
<i>M.A. Tinati, T. Yousefi Rezaii</i> (University of Tabriz, Tabriz, Iran)	
Handwritten Arabic Word Recognition based on Ridgelet Transform and Support Vector Machines	357
<i>Hassiba Nemmour, Youcef Chibani</i> (University of Sciences and Technology Houari Boumèdiene, Algiers, Algeria)	
Improving the Performance of 2D Discrete Wavelet Transform using Data-Level Parallelism	362
<i>Asadollah Shahbahrani</i> (University of Guilan, Rasht, Iran)	
Indexing and Images Retrieval by Content	369
<i>Boulbaba Guedri, Mourad Zaied, Chokri Ben Amar</i> (National Engineering School of Gabes, Gabes, Tunisia)	

Back Light Compensation with Face Detection for Digital Still Camera	N/A
<i>Shih-Chang Hsia, Wen-Chin Yang</i> (National Yunlin University of Science and Technology, Yunlin; National Kaohsiung First University of Science and Technology, Taiwan)	
Design and Implementation of Artificial Immune System for Detecting Flooding Attacks	381
<i>Najla Badie Ibraheem Al-Dabagh, Ismael Ali Ali</i> (University of Mosul, Mosul; University of Zakho, Zakho, Iraq)	
Workshops and Special Sessions	
Applying SWRL-F to Intercloud Constraints Analysis	391
<i>Tomasz Wiktor Wlodarczyk, Chunming Rong</i> (University of Stavanger, Norway)	
Intercloud for Simulation Federations	397
<i>Erdal Cayirci, Chunming Rong</i> (University of Stavanger, Norway)	
Building an Interoperability API for Sky Computing	405
<i>Dana Petcu, Ciprian Crăciun, Marian Neagul, Iñigo Lazcanotegui, Massimiliano Rak</i> (Research Institute e-Austria, Timișoara, Romania; Second University of Naples, Italy; Tecnalia Research & Innovation)	
Data Loss Prevention using an Ephemeral Key	412
<i>William J. Blanke</i> (Symantec Corporation, Mountain View, California, USA)	
Evaluating a Peer-to-Peer Storage System in Presence of Malicious Peers	419
<i>Samira Chaou, Gil Utard, Franck Pommereau</i> (UbiStorage; University of Évry, France)	
Enhancing Data Privacy and Integrity in the Cloud	427
<i>Jeffrey Naruchitparames, Mehmet Hadi Günes</i> (University of Nevada – Reno, Nevada, USA)	
Automated Inventory Tracking System Prototype in Cloud	435
<i>Rob Grmek, Youry Khmelevsky, Dmitry Syrotovsky</i> (Okanagan College, British Columbia, Canada; Reckitt Benckiser, Ukraine)	
Lifetime Extension based on Residual Energy for Receiver-Driven Multi-Hop Wireless Network	442
<i>Chuluunsuren Damdinsuren, Daichi Kominami, Masayuki Murata, Masashi Sugano, Takaaki Hatauchi</i> (Osaka University, Osaka; Osaka Prefecture University, Osaka; Fuji Electric Systems, Tokyo, Japan)	
A Low Energy and Adaptive Routing Architecture for Efficient Field Monitoring in Heterogeneous Wireless Sensor Networks	449
<i>Fco. Javier Atero, Juan Jose Vinagre, Julio Ramiro, Mark Wilby</i> (School of Telecommunications Engineering Rey Juan Carlos University, Madrid, Spain)	
A Pareto-Based GA for Scheduling HPC Applications on Distributed Cloud Infrastructures	456
<i>Yacine Kessaci, Nouredine Melab, El-Ghazali Talbi</i> (INRIA Lille, CNRS/LIFL, Université Lille 1, France; UMons/FPMs, Mons, Belgium)	

Improving Power Efficiency of Dense Linear Algebra Algorithms on Multi-Core Processors via Slack Control	463
<i>Pedro Alonso, Manuel F. Dolz, Rafael Mayo, Enrique S. Quintana-Ortí</i> (Universidad Politécnica de Valencia, Spain; Universitat Jaume I, Castellón, Spain)	
A Two-Phase Heuristic for the Scheduling of Independent Tasks on Computational Grids	471
<i>Frédéric Pinel, Johnatan Pecero, Pascal Bouvry, Samee U. Khan</i> (University of Luxembourg, Luxembourg; North Dakota State University, North Dakota, USA)	
Energy-Aware Fast Scheduling Heuristics in Heterogeneous Computing Systems	478
<i>Cesar O. Diaz, Mateusz Guzek, Johnatan E. Pecero, Grégoire Danoy, Pascal Bouvry, Samee U. Khan</i> (University of Luxembourg, Luxembourg; North Dakota State University, North Dakota, USA)	
Matryoshka: Tunneled Packets Breaking the Rules	485
<i>Cesar Ghali, Faisal Hamady, Imad H. Elhadj, Ayman Kayssi</i> (American University of Beirut, Beirut, Lebanon)	
Access Control Enforcement on Outsourced Data Ensuring Privacy of Access Control Policies	491
<i>Parastou Tourani, Mohammad Ali Hadavi, Rasool Jalili</i> (Sharif University of Technology, Iran)	
An Algorithm for Petro-Graphic Colour Image Segmentation used for Oil Exploration	498
<i>Vesna Zeljković, Wail Mousa</i> (King Fahd University of Petroleum and Minerals – Dhahran, Kingdom of Saudi Arabia)	
Machine Learning of Syndromes for Different Types of Features	504
<i>Ventzeslav Valev</i> (Institute of Mathematics and Informatics, Bulgarian Academy of Sciences, Sofia, Bulgaria)	
On the Numerical Sensitivity of Computer Simulations on Hybrid and Parallel Computing Systems	510
<i>Wenbin Li, Sven Simon, Steffen Kiefl</i> (SimTech & Institute of Parallel and Distributed Systems, University of Stuttgart, Germany)	
Making TifaMMy fit for Tomorrow: Towards Future Shared Memory Systems and Beyond	517
<i>Alexander Heinecke, Carsten Trinitis</i> (Technische Universität München, Germany)	
Evaluation and Improvements of Programming Models for the Intel SCC Many-Core Processor	525
<i>Carsten Clauss, Stefan Lankes, Pablo Reble, Thomas Bemmerl</i> (RWTH Aachen University, Germany)	
Low Power Heterogeneous 3D Networks-on-Chip Architectures	533
<i>Michael Opoku Agyeman, Ali Ahmadinia, Alireza Shahrabi</i> (Glasgow Caledonian University, Glasgow, United Kingdom)	
TMPL: A Hardware Transactional Memory Product Line	539
<i>Matthias Meier, David Austin, Horst Schirmeier, Olaf Spinczyk</i> (Technische Universität Dortmund, Dortmund, Germany)	
Prototyping and Evaluating Communication-Centric Multicore Systems (Invited Paper)	N/A
<i>Lars Middendorf, Benjamin Andres, Christophe Bobda</i> (University of Potsdam, Germany; University of Arkansas, Arkansas, USA)	
Creating HW/SW Co-Designed MPSoPC's from High Level Programming Models (Invited Paper)	554
<i>Eugene Cartwright, Sen Ma, David Andrews, Miaoqing Huang</i> (University of Arkansas, Arkansas, USA)	

A Few Lines of Code, Thousands of Cores: High-Level FPGA Programming using Vector Processor Networks	561
<i>W. Vanderbauwhede, S.R. Chalamalasetti, S. Purohit, M. Margala</i> (University of Glasgow, Glasgow, United Kingdom; University of Massachusetts Lowell, Massachusetts, USA)	
Affluenza: An Extendible Approach to Universal Churn Generation	568
<i>Enrique Fernández-Casado, Marc Sánchez-Artigas, Pedro García-López</i> (Universitat Rovira i Virgili, Tarragona, Spain)	
PeerfactSim.KOM: A Simulation Framework for Peer-to-Peer Systems	577
<i>Dominik Stingl, Christian Gross, Julius Rückert, Leonhard Nobach, Aleksandra Kovacevic, Ralf Steinmetz</i> (KOM – Technische Universität Darmstadt, Darmstadt, Germany)	
A Generic KBR Library with Built-In Simulation Capabilities	585
<i>Benedikt Elser, Thomas Fuhrmann</i> (Technische Universität München, Germany)	
LUNES: Agent-Based Simulation of P2P Systems	593
<i>Gabriele D'Angelo, Stefano Ferretti</i> (University of Bologna, Bologna, Italy)	
Parallel and Distributed Simulation with DEUS	600
<i>Michele Amoretti, Marco Picone, Stefano Bonelli, Francesco Zanichelli</i> (Università degli Studi di Parma, Parma, Italy)	
An Analysis of Digital Rights Management based on Cooperative Game	607
<i>Yongjie Yan</i> (Ankang University, Shaanxi, China)	
One Pixel Arrangement Method on Multi-View Optical-Plate Stereo Mobile Phone	612
<i>Yanfeng Chen, Chunping Hou, Baoliang Wang, Lili Shen, Qiushi Han, Zhimin Li, Kefeng Fan</i> (Tianjin University, Tianjin, China; China Electronics Standardization Institute, Beijing, China)	
Research of PCB Common-Mode Interference Suppression Technique	617
<i>Dongyan Wu</i> (Suzhou Institute of Industrial Technology, Suzhou, China)	
A Risk Assessment Model for the Operating System of the DTV	621
<i>Kefeng Fan, Subing Zhang, Yinghua Huang, Zhen Yang</i> (China Electronics Standardization Institute, Beijing, China; Beijing University of Technology, Beijing, China)	
Design of Secure Communications Network System based on Data Encryption and Digital Signature	626
<i>Taiping Mo, Jianhua Wang, Wei Mo</i> (Xidian University, Xi'an, China; Guilin University of Electronic Technology, Guilin, China)	
Understanding the Impact of CUDA Tuning Techniques for Fermi	631
<i>Yuri Torres, Arturo González-Escribano, Diego R. Llanos</i> (Universidad Valladolid, Spain)	
High Performance Matrix Inversion of SPD Matrices on Graphics Processors	640
<i>Peter Benner, Pablo Ezzatti, Enrique S. Quintana-Ortí, Alfredo Remón</i> (Max-Planck-Institute for Dynamics of Complex Technical Systems, Magdeburg, Germany; Centro de Cálculo-Instituto de Computación, Universidad de la República Montevideo, Uruguay; Dept. de Ingeniería y Ciencia de los Computadores, Universidad Jaime I, Spain)	

Runtime Extraction of Memory Access Information from the Application Source Code	647
<i>S. Arash Ostadzadeh, Marco Corina, Carlo Galuzzi, Koen Bertels</i> (Delft University of Technology, The Netherlands)	
Similarity Search Implementations for Multi-Core and Many-Core Processors	656
<i>Roberto Uribe-Paredes, Pedro Valero-Lara, Enrique Arias, José L. Sánchez, Diego Cazorla</i> (University of Magallanes, Chile; Albacete Research Institute of Informatics, University of Castilla-La Mancha, Spain; Computing Systems Dept. University of Castilla-La Mancha, Spain)	
Simulation of Pollutant Transport in Shallow Water on a CUDA Architecture	664
<i>M. Viñas, J. Lobeiras, B.B. Fraguela, M. Arenaz, M. Amor, R. Doallo</i> (Universidad da Coruña, Spain)	
Toward a Distributed Benchmarking Tool for Biometrics	671
<i>Julien Mahier, Mohamad El-Abed, Baptiste Hemery, Christophe Rosenberger</i> (GREYC – ENSICAEN, France)	
Benchmarking DOUG on the Cloud	677
<i>Oleg Batrashev, Satish Narayana Srirama, Eero Vainikko</i> (Institute of Computer Science, University of Tartu, Estonia)	
Distributed Hoeffding Trees for Pocket Data Mining	686
<i>Frederic Stahl, Mohamed Medhat Gaber, Max Bramer, Philip S. Yu</i> (University of Portsmouth, Hampshire, United Kingdom; University of Illinois at Chicago, Illinois, USA)	
Effect of Dynamic Algorithm Selection of All-to-All Communication on Environments with Unstable Network Speed	693
<i>Takeshi Nanri, Motoyoshi Kurokawa</i> (Research Institute for Information Technology, Kyushu University, Fukuoka, Japan; Advanced Center for Computing and Communication RIKEN, Wako, Japan)	
Social Ranking Criteria for Pairwise Gossiping in Large-Scale Resource Scheduling	699
<i>D. Cenk Erdil</i> (Istanbul Bilgi University, Istanbul, Turkey)	
Optimisation and Parallelisation of the Partitioning Around Medoids Function in R	707
<i>Michal Piotrowski, Terence M. Sloan, Muriel Mewissen, Thorsten Forster, Lawrence Mitchell, Savvas Petrou, Bartosz Dobrzelecki, Peter Ghazal, Arthur Trew, Jon Hill</i> (Edinburgh Parallel Computing Centre, Edinburgh; University of Edinburgh Medical School, Edinburgh; Centre for Systems Biology at Edinburgh, Edinburgh; Imperial College; University of London, London, United Kingdom)	
Improving BLAST Runtime using Diskless High Performance Clusters	N/A
<i>Sadiq M. Sait, M. Al-Mulhem, Raed Al-Shaikh</i> (King Fahd University of Petroleum and Minerals; EXPEC Computer Center, Saudi Aramco, Kingdom of Saudi Arabia)	
A Noise Reducing Sampling Approach for Uncovering Critical Properties in Large Scale Biological Networks	721
<i>K. Duraisamy, K. Dempsey, H. Ali, S. Bhowmick</i> (University of Nebraska – Omaha, Nebraska, USA)	
Some New Methodologies for Multiobjective Antenna Design (Invited)	729
<i>Benoît Chaigne</i> (Fakultät für Informatik, Technische Universität München, Germany)	

Conventional Computational Electromagnetics toward Nanoscale, Optical, and Plasmonic Applications (Invited)	730
<i>Ergun Simsek</i> (Bahcesehir University, Istanbul, Turkey)	
Numerical Solution for a 3D Rectangular Waveguide using the Finite Volume Control Method	731
<i>Elias Alwan, Karim Y. Kabalan, Ali El-Hajj</i> (The Ohio State University – Columbus Ohio, USA; American University of Beirut, Beirut, Lebanon)	
A Directional Polarization Reconfigurable Microstrip Antenna	739
<i>Ali Ramadan, Georgios Atmatzakis, Mohammed Al-Husseini, Christos G. Christodoulou , Karim Y. Kabalan, Ali El-Hajj</i> (American University of Beirut, Beirut, Lebanon; University of New Mexico – Albuquerque, New Mexico, USA)	
UWB Antenna and LNA Receiver Simultaneous Matching	744
<i>Loay D. Khalaf</i> (The University of Jordan, Jordan)	
Complex Dynamics in a Hexagonal Cellular Automaton	750
<i>Paulina A. León, Rogelio Basurto, Genaro J. Martínez, Juan C. Seck-Tuoh-Mora</i> (Centro de Investigación y de Estudios Avanzados, Instituto Politécnico Nacional, México; Instituto de Ciencias Nucleares y Centro de Ciencias de la Complejidad, Universidad Nacional Autónoma de México, México; Unconventional Computing Centre, University of the West of England, United Kingdom; Centro de Investigación Avanzada en Ingeniería Industrial, Universidad Autónoma del Estado de Hidalgo, Pachuca, Hidalgo, México)	
Bacteria Inspired Patterns Grown with Hyperbolic Cellular Automata	757
<i>Maurice Margenstern</i> (Université Paul Verlaine Metz, and CNRS, LORIA, Campus du Saulcy, Metz, France)	
A Universal Turing Machine in Conway’s Game of Life	764
<i>Paul Rendell</i> (University of the West of England, Bristol, United Kingdom)	
Determination of One-Way Bandwidth of Cellular Automata using Binary Decision Diagrams	773
<i>Andreas C. Doering</i> (IBM Research – Zurich, Rueschlikon, Switzerland)	
Cellular Automata and Discrete Geometry	780
<i>Isabelle Debled-Rennesson, Maurice Margenstern</i> (LORIA, UMR 7503, Nancy University, Vandœuvre-lès-Nancy, France; Université Paul Verlaine Metz, and CNRS, LORIA, Campus du Saulcy, Metz, France)	
Rectangular vs Triangular Routing with Evolved Agents	787
<i>Patrick Ediger, Rolf Hoffmann, Dominique Désérable</i> (Technische Universität Darmstadt, Darmstadt, Germany; Institut National des Sciences Appliquées, LGCGM EA 3913, Campus Universitaire de Beaulieu, Rennes, France)	
Depicting Pathways for Cooperative Miniature Robots using Cellular Automata	794
<i>Konstantinos Ioannidis, Georgios Ch. Sirakoulis, Ioannis Andreadis</i> (Democritus University of Thrace, Xanthi, Greece)	
How to Synchronize Square Arrays in Optimum-Time – A New Square Synchronization Algorithm	801
<i>Hiroshi Umeo, Hiroki Uchino, Akira Nomura</i> (University of Osaka Electro-Communication, Neyagawa-shi, Hatsu-cho, Osaka, Japan)	

Poster Papers

Improving Basic Thread Operations with Batches of Threads 808

Ioannis E. Venetis

(British Hellenic College, Athens, Greece)

Industrial HPC Activities in KOREA 814

Sang Min Lee, Jaesung Kim, Myungil Kim, Hyunil Kim, Nak Joon Choi

Supercomputing Center, Korea Institute of Science and Technology Information (KISTI), Daejeon;
CFD Business Unit, DNDE Inc., Busan, Republic of Korea)

Self-Related Traces: An Alternative to Full-System Simulation for NoCs 819

Francisco Triviño, Francisco J. Andujar, Francisco J. Alfaro, José L. Sánchez

(Universidad de Castilla-La Mancha; Universidad de Murcia, Spain)

Development of Large-Scale Structural Analysis System on a Supercomputer 825

JaeSung Kim, SangMin Lee, Heeseok Jung, Myungil Kim, JaeYeol Lee, NakJoon Choi

(Supercomputing Center, Korea Institute of Science and Technology Information (KISTI), Daejeon; School of Industrial Engineering, Chonnam University; School of Mechanical Engineering, Pusan National University, Republic of Korea)

Image Encryption using Stream Cipher Algorithm with Nonlinear Filtering Function 830

Belmeguenai Aïssa, Derouiche Nadir, Redjimi Mohamed

(Laboratoire de Recherche en Electronique de Skikda, Université du 20 Août, Skikda, Algeria)

A Hadoop Solution for Ballistic Image Analysis and Recognition 836

Hakan Kocakulak, Tugba Taskaya Temizel

(Turkish Science and Technology Research Council; Middle East Technical University, Ankara, Turkey)

Doctoral Dissertation Colloquium Abstracts

Distributed Localization Algorithms for Node Positioning in Ad Hoc Wireless Sensor NetworksN/A

Prima Kristalina

Advisors: Profs. Gamantyo Hendrantoro and Wirawan

(Institut Teknologi Sepuluh Nopember Surabaya, Indonesia)

Energy-Efficient Overlapping Clustering Algorithm for 3D Wireless Sensor Networks Based-On Parallel Particle Swarm OptimizationN/A

Amin Suharjono

Advisors: Profs. Gamantyo Hendrantoro and Wirawan

(Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia)

Virtualization based Cloud Capacity Prediction 849

Sayanta Mallick

Advisors: Prof. Gaétan Hains

SOMONE and LACL, Université Paris-Est Creteil (UPEC), France

Posters Abstracts

Comparative Study of Genetic and Blackboard Algorithms for Solving QoS-Aware Service Selection Problems 853

Elisabeth Vinek, Peter Paul Beran, Erich Schikuta

(CERN, Genève, Switzerland; University of Vienna, Austria)

CFD Study on Power Output and Flow Characteristics of 110 kW Class BAWT 859
Nak Joon Choi, Sang Hyun Nam, Jae Sung Kim, Sang Min Lee, Kyung Chun Kim
(Pusan National University, Busan, Republic of Korea)