

2018 26th Euromicro International Conference on Parallel, Distributed and Network-Based Processing (PDP 2018)

**Cambridge, United Kingdom
21 – 23 March 2018**



**IEEE Catalog Number: CFP18169-POD
ISBN: 978-1-5386-4976-3**

**Copyright © 2018 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP18169-POD
ISBN (Print-On-Demand):	978-1-5386-4976-3
ISBN (Online):	978-1-5386-4975-6
ISSN:	1066-6192

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

26th Euromicro International Conference on Parallel, Distributed, and Network-Based Processing

PDP 2018

Table of Contents

Message from General Chairs	xix	.....
Message from Organizing Chairs	xxi	.....
Conference Organization	xxii	.....
Program Committee	xxiii	.....
Reviewers	xxviii	.....

Main Track

A Generic Learning Multi-agent-System Approach for Spatio-Temporal-, Thermal- and Energy-Aware Scheduling	.1	.....
<i>Christina Herzog (University of Pau and Adour Country) and Jean-Marc Pierson (University of Toulouse)</i>		
A Parallel Implementation of WAND on GPUs	.10	.....
<i>Roussian Gaioso (Federal University of Sao Carlos), Veronica Gil-Costa (CONICET-UNSL), Helio Guardia (Federal University of Sao Carlos), and Hermes Senger (Federal University of Sao Carlos)</i>		
A Portable Multidimensional Coarray for C++	.18	.....
<i>Felix Mößbauer (Ludwig-Maximilians-Universität München; Munich), Roger Kowalewski (Ludwig-Maximilians-Universität München; Munich), Tobias Fuchs (Ludwig-Maximilians-Universität München; Munich), and Karl Fürlinger (Ludwig-Maximilians-Universität München; Munich)</i>		
A Unified Programming Model for Time- and Data-Driven Embedded Applications	.26	.....
<i>Gabriela Breaban (Eindhoven University of Technology), Sander Stuijk (Eindhoven University of Technology), and Kees Goossens (Eindhoven University of Technology)</i>		
An Improved One-to-All Broadcasting in Higher Dimensional Eisenstein-Jacobi Networks	.34	.....
<i>Zaid Hussain (Kuwait University)</i>		

Collective I/O Performance on the Santos Dumont Supercomputer	.45.....
<i>André Ramos Carneiro (National Laboratory for Scientific Computing (LNCC)), Jean Luca Bez (Federal University of Rio Grande do Sul), Francieli Zanon Boito (Federal University of Rio Grande do Sul), Bruno Alves Fagundes (National Laboratory for Scientific Computing (LNCC)), Carla Osthoff (National Laboratory for Scientific Computing (LNCC)), and Philippe Olivier Alexandre Navaux (Federal University of Rio Grande do Sul)</i>	
Context-Aware Optimization for Energy-Efficient and QoS Wireless Body Area Networks with Human Dynamics	.53.....
<i>Da-Ren Chen (Department of Information Management National Taichung University of Science and Technology) and Ping-Feng Wang (Institute for Information Industry subsidized by the Ministry of Economy Affairs of R.O.C)</i>	
CSSMT: Compiler Based Software Simultaneous Multithreading (SMT)	.60.....
<i>Yuanfang Chen (University of Delaware), Qingchuan Shi (Advanced Micro Devices), and Xiaoming Li (University of Delaware)</i>	
Developing and Using a Geometric Multigrid, Unstructured Grid Mini-Application to Assess Many-Core Architectures	.68.....
<i>Andrew Owenson (University of Warwick), Steven Wright (University of Warwick), Richard Bunt (University of Warwick), Stephen Jarvis (University of Warwick), Yoon Ho (Rolls-Royce), and Matthew Street (Rolls-Royce)</i>	
Divisible Load Scheduling of Image Processing Applications on the Heterogeneous Star Network Using a new Genetic Algorithm	.77.....
<i>Sahar Nikbakht Aali (Iran University of Science and Technology), Hadi Shahriar Shahhosseini (Iran University of Science and Technology), and Nader Bagherzadeh (University of California)</i>	
Geo-Distributed BigData Processing for Maximizing Profit in Federated Clouds Environment	.85.....
<i>Thouraya Gouasmi (Faculty of Economics and Management of Sfax), Wajdi Louati (National School of Engineers of Sfax), and Ahmed Hadj Kacem (Faculty of Economics and Management of Sfax)</i>	
Improving Communication and Load Balancing with Thread Mapping in Manycore Systems	.93.....
<i>Eduardo H.M. Cruz (Federal University of Rio Grande do Sul), Matthias Diener (University of Illinois at Urbana-Champaign), Matheus S. Serpa (Federal University of Rio Grande do Sul), Philippe Olivier Alexandre Navaux (Federal University of Rio Grande do Sul), Laércio Pilla (Federal University of Santa Catarina), and Israel Koren (University of Massachusetts)</i>	
Integrating Learning, Optimization, and Prediction for Efficient Navigation of Swarms of Drones	.101.....
<i>Amin Majd (Abo Akademi University), Adnan Ashraf (Abo Akademi University), Elena Troubitsyna (Abo Akademi University), and Masoud Daneshthalab (Malardalen University)</i>	
Low Precision Deep Learning Training on Mobile Heterogeneous Platform	.109.....
<i>Olivier Valery (National Taiwan University), Pangfeng Liu (National Taiwan University), and Jan-Jan Wu (Academia Sinica)</i>	

Novel Application of Parallel Computing Techniques in Soft X-Rays Plasma Measurement Systems for the WEST Experimental Thermal Fusion Reactor .1.18.....	
<i>Rafa Krawczyk (Warsaw University of Technology), Pawe Linczuk (Warsaw University of Technology), Andrzej Wojeski (Warsaw University of Technology), Krzysztof Poniak (Warsaw University of Technology), Grzegorz Kasprowicz (Warsaw University of Technology), Wojciech Zabootny (Warsaw University of Technology), Micha Gaska (Warsaw University of Technology), Didier Mazon (CEA Cadarache), Axel Jardin (CEA), Tomasz Czarski (Institute of Plasma Physics and Laser Microfusion), Piotr Kolasiski (Warsaw University of Technology), Maryna Chernyshova (Institute of Plasma Physics and Laser Microfusion), Ewa Kowalska-Strzciwilk (Institute of Plasma Physics and Laser Microfusion), and Karol Malinowski (Institute of Plasma Physics and Laser Microfusion)</i>	
Parallel Simulation of Sinoatrial Node Cells Synchronization .1.26.....	
<i>Aurelio Nicolás Mata (Universidad Autónoma Metropolitana), Norma Pilar Castellanos Abrego (Universidad Autónoma Metropolitana), Graciela Roman Alonso (Universidad Autónoma Metropolitana), Miguel Alfonso Castro García (Universidad Autónoma Metropolitana), Gabriel López Garza (Universidad Autónoma Metropolitana), and José Rafael Godínez Fernández (Universidad Autónoma Metropolitana)</i>	
Parallelizable Strategy for the Estimation of the 3D Structure of Biological Macromolecules .1.34.....	
<i>Claudia Caudai (CNR), Monica Zoppè (CNR), Emanuele Salerno (CNR), Ivan Merelli (CNR), and Anna Tonazzini (CNR)</i>	
Quantifying the Interaction Between Structural Properties of Software and Hardware in the ARM Big.LITTLE Architecture .1.38.....	
<i>Srboljub Stepanovic (Åbo Akademi University), Georgios Georgakarakos (Åbo Akademi University), Simon Holmbacka (Åbo Akademi University), and Johan Lilius (Åbo Akademi University)</i>	
Reducing Message Latency and CPU Utilization in the CAF Actor Framework .1.45.....	
<i>Massimo Torquati (University of Pisa), Tullio Menga (ATS Advanced Technology Solutions S.p.A.), Tiziano De Matteis (University of Pisa), Daniele De Sensi (University of Pisa), and Gabriele Mencagli (University of Pisa)</i>	
Resizing of Heterogeneous Platforms and the Optimization of Parallel Applications .1.54.....	
<i>Moussa Beji (Faculty of Sciences of Tunis) and Sami Achour (Higher Institute of Applied Sciences and Technology of Sousse)</i>	
Scheduler Accelerator for TDMA Data Centers .1.62.....	
<i>Ioannis Patronas (National and Kapodistrian University of Athens), Nikolaos Gkatzios (National and Kapodistrian University of Athens), Vasileios Kitsakis (National and Kapodistrian University of Athens), Dionysios Reisis (National and Kapodistrian University of Athens), Konstantinos Christodoulopoulos (National Technical University of Athens), and Emmanouel Varvarigos (National Technical University of Athens)</i>	

SharP Data Constructs: Data Constructs to Enable Data-Centric Computing	.170.....
<i>Ferrol Aderholdt (Oak Ridge National Laboratory), Manjunath Gorenla Venkata (Oak Ridge National Laboratory), and Zachary Parchman (Tennessee Technological University)</i>	
Shrink or Substitute: Handling Process Failures in HPC Systems Using In-Situ Recovery	.178.....
<i>Rizwan A. Ashraf (Oak Ridge National Laboratory), Saurabh Hukerikar (Oak Ridge National Laboratory), and Christian Engelmann (Oak Ridge National Laboratory)</i>	
Social Auto-Scaling	.186.....
<i>Peter Smith (National College of Ireland), Horacio González-Vélez (National College of Ireland), and Simon Caton (National College of Ireland)</i>	
Solving Sparse Triangular Linear Systems in Modern GPUs: A Synchronization-Free Algorithm	.196.
<i>Ernesto Dufrechou (Instituto de Computación - Universidad de la República) and Pablo Ezzatti (Instituto de Computación - Universidad de la República)</i>	
Stingray-HPC: A Scalable Parallel Seismic Raytracing System	.204.....
<i>Mohammad Alaul Haque Monil (University Of Oregon), Allen D. Malony (University Of Oregon), Doug Toomey (University Of Oregon), and Kevin Huck (University Of Oregon)</i>	
TMbarrier: Speculative Barriers Using Hardware Transactional Memory	.214.....
<i>Manuel Pedrero (Dept. Computer Architecture), Eladio Gutierrez (Dept. Computer Architecture), and Oscar Plata (Dept. Computer Architecture)</i>	
A Dynamic Multi-Core Multicast Approach for Delay and Delay Variation Multicast Routing	.222.....
<i>Hovhannes A. Harutyunyan (Concordia University) and Meghrig Terzian (Concordia University)</i>	
A Hybrid Parallel Implementation for the Maximum Flow Problem	.229.....
<i>Marco Aurélio Stefanés (UFMS) and Luiz Fernando Alvino (IFMS)</i>	
A New Execution Model for Improving Performance and Flexibility of CAPE	.234.....
<i>Van Long Tran (SAMOVAR), Éric Renault (SAMOVAR), Xuan Huyen Do (College of Science), and Viet Hai Ha (College of Education)</i>	
A Safe and User-Friendly Graphical Programming Model for Parallel Stream Processing	.239.....
<i>Stefan Sydow (Technische Universität Berlin), Mohannad Nabelsee (Technische Universität Berlin), Helge Parzy jegla (Universität Rostock), and Paula Herber (Technische Universität Berlin)</i>	
Accelerating Blockchain Search of Full Nodes Using GPUs	.244.....
<i>Shin Morishima (Keio University) and Hiroki Matsutani (Keio University)</i>	
Characterizing Memory-Latency Sensitivity of Sparse Matrix Kernels	.249.....
<i>Noboru Tanabe (Tokyo Institute of Technology) and Toshio Endo (Tokyo Institute of Technology)</i>	
Data-Layout Reorganization for an Efficient Intra-Node Assembly of a Spectral Finite-Element Method	.255.....
<i>Gauthier Sornet (BRGM and LIFO from Orléans University), Sylvain Jubertie (LIFO from Orléans University), Fabrice Dupros (BRGM), Florent De Martin (BRGM), Philippe Thierry (Intel), and Sébastien Limet (LIFO from Orléans University)</i>	

Distributed Heuristics for Optimizing Cohesive Groups: A Support for Clinical Patient Engagement in Social Network Analysis .259.....	
<i>Italo Zoppis (University of Milano Bicocca. Dep. Computer Science), Riccardo Dondi (University of Bergamo; Department of Letters), Davide Coppetti (ITC "B. Belotti"), Alessandro Beltramo (university of Milano Bicocca. Dep. Computer Science), and Giancarlo Mauri (University of Milano Bicocca. Dep Computer Science)</i>	
Efficient and Fast Approximate Consensus with Epidemic Failure Detection at Extreme Scale .267...	
<i>Amogh Katti (University of Minnesota) and David J Lilja (University of Minnesota)</i>	
Evaluating and Optimizing OpenCL Base64 Data Unpacking Kernel with FPGA .273.....	
<i>Zheming Jin (Argonne National Laboratory), Iris Johnson (Northern Illinois University), and Hal Finkel (Argonne National Laboratory)</i>	
Evaluating the Effect of Multi-Tenancy Patterns in Containerized Cloud-Hosted Content Management System .278.....	
<i>Adekunbi A. Adewojo (University of Salford) and Julian M. Bass (University of Salford)</i>	
Evaluation of Time-Triggered Traffic in Time-Sensitive Networks Using the OPNET Simulation Framework .283.....	
<i>Maryam Pahlevan (University of Siegen) and Roman Obermaisser (University of Siegen)</i>	
Extending PluTo for Multiple Devices by Integrating OpenACC .288.....	
<i>Tim Süß (Johannes Gutenberg University Mainz), Tunahan Kaya (Johannes Gutenberg University Mainz), and Dustin Feld (Fraunhofer SCAI)</i>	
Heterogeneous Computing and Multi-Clustering Support Via Peer-To-Peer HPC .292.....	
<i>Bilal Fakih (LAAS-CNRS) and Didier El Baz (LAAS-CNRS)</i>	
Hybrid OpenMP-MPI Parallelism: Porting Experiments from Small to Large Clusters .297.....	
<i>Marco Ferretti (University of Pavia) and Luigi Santangelo (University of Pavia)</i>	
Improving Availability in Distributed Tuple Spaces Via Sharing Abstractions and Replication Strategies .302.....	
<i>Vitaly Buravlev (IMT School for Advanced Studies Lucca), Rocco De Nicola (IMT School for Advanced Studies Lucca), Alberto Lluch Lafuente (Technical University of Denmark), and Claudio Antares Mezzina (IMT School for Advanced Studies Lucca)</i>	
Increasing Efficiency in Parallel Programming Teaching .306.....	
<i>Marco Danelutto (Dept. Computer Science) and Massimo Torquati (Dept. Computer Science)</i>	
Lazy Allocation and Transfer Fusion Optimization for GPU-Based Heterogeneous Systems .311.....	
<i>Lu Li (Linköping University) and Christoph Kessler (Linköping University)</i>	
Local and Global Shared Memory for Task Based HPC Applications on Heterogeneous Platforms .316	
<i>Chao Liu (Northeastern University) and Miriam Leeser (Northeastern University)</i>	
Memory-Aware Tree Partitioning on Homogeneous Platforms .321.....	
<i>Changjiang Gou (LIP), Anne Benoit (LIP), and Loris Marchal (LIP)</i>	

MinVisited: A Message Routing Protocol for Delay Tolerant Network .325.....	
<i>Luis Veas-Castillo (Universidad de Santiago de Chile), Gabriel Ovando-Leon (Universidad de Santiago de Chile), Veronica Gil-Costa (Universidad Nacional de San Luis), and Mauricio Marin (CeBiB)</i>	
Optimizing Machine Learning Algorithms on Multi-Core and Many-Core Architectures Using Thread and Data Mapping .329.....	
<i>Matheus S. Serpa (Federal University of Rio Grande do Sul), Arthur M. Krause (Federal University of Rio Grande do Sul), Eduardo H.M. Cruz (Federal University of Rio Grande do Sul), Philippe Olivier Alexandre Navaux (Federal University of Rio Grande do Sul), Marcelo Pasin (University of Neuchâtel), and Pascal Felber (University of Neuchâtel)</i>	
Performance Evaluation of the Metadata-Driven MASi Research Data Management Repository Service .334.....	
<i>Richard Grunzke (Center for Information Services and High Performance Computing), Volker Hartmann (Institute for Data Processing and Electronics), Thomas Jejkal (Institute for Data Processing and Electronics), Helen Kollai (Monitoring of Settlement and Open Space Development), Christiane Dressler (Digitale Akademie), Julia Dolhoff (Digitale Akademie), Julia Stanek (Institut für Anorganische Chemie), Hendrik Herold (Monitoring of Settlement and Open Space Development), Alexander Hoffmann (Institut für Anorganische Chemie), Ralph Müller-Pfefferkorn (Center for Information Services and High Performance Computing), Torsten Schrade (Digitale Akademie), Sonja Herres-Pawlis (Institut für Anorganische Chemie), Gotthard Meinel (Monitoring of Settlement and Open Space Development), and Wolfgang E. Nagel (Center for Information Services and High Performance Computing)</i>	
Predicting the Price of Bitcoin Using Machine Learning .339.....	
<i>Sean McNally (National College of Ireland), Jason Roche (Dublin Business School), and Simon Caton (National College of Ireland)</i>	
SAWS: Simple and Adaptive Warp Scheduling for Improved Performance in Throughput Processors .344.....	
<i>Francisco Muñoz Martinez (Universidad de Murcia) and Manuel E. Acacio (Universidad de Murcia)</i>	
Scalable Mapping of Streaming Applications onto MPSoCs Using Optimistic Mixed Integer Linear Programming .348.....	
<i>Neela Gayen (Queensland University of Technology), Johannes Ax (Bielefeld University), Martin Flasskamp (Bielefeld University), Christian Klarhorst (Bielefeld University), Thorsten Jungeblut (Bielefeld University), Maolin Tang (Queensland University of Technology), and Wayne Kelly (Queensland University of Technology)</i>	
Utilizing Heterogeneous Memory Hierarchies in the PGAS Model .353.....	
<i>Roger Kowalewski (LMU Munich), Tobias Fuchs (LMU Munich), Karl Fürlinger (LMU Munich), and Tobias Guggemos (LMU Munich)</i>	
Value-Based Allocation of Docker Containers .358.....	
<i>Piotr Dziurzanski (University of York) and Leandro Soares Indrusiak (University of York)</i>	

Variable Batched DGEMM .363.....	
<i>Pedro Valero-Lara (BSC), Ivan Martínez-Pérez (BSC), Sergi Mateo (BSC), Raül Sirvent (BSC), Vicenç Beltran (BSC), Xavier Martorell (BSC), and Jesús Labarta (UPC)</i>	

GPU Computing and Many Integrated Core Computing

Accelerating the RICH Particle Detector Algorithm on Intel Xeon Phi .368.....	
<i>Christina Quast (CERN/TU Berlin), Angela Pohl (TU Berlin), Biagio Cosenza (TU Berlin), Juurlink Ben (TU Berlin), and Rainer Schwemmer (CERN)</i>	
Closed-Form Solutions for Dense Matrix-Matrix Multiplication on Heterogeneous Platforms Using Divisible Load Analysis .376.....	
<i>Gerassimos Barlas (American University of Sharjah) and Lamees El Hiny (American University of Sharjah)</i>	
Fast Blocking of Householder Reflectors on Graphics Processors .385.....	
<i>Andrés E. Tomás Dominguez (Dept. de Ingeniería y Ciencia de Computadores) and Enrique S. Quintana Ortí (Dept. de Ingeniería y Ciencia de Computadores)</i>	
Studying Victim Caches in GPUs .394.....	
<i>Eric M. Taylor (Rose-Hulman Institute of Technology) and Daniel W. Chang (Rose-Hulman Institute of Technology)</i>	

Advances in High-Performance Bioinformatics and Biomedicine

Combining Parallel Genetic Algorithms and Machine Learning to Improve the Research of Optimal Vaccination Protocols .399.....	
<i>Marzio Pennisi (University of Catania), Giulia Russo (University of Catania), and Francesco Pappalardo (University of Catania)</i>	
Computing Empirical P-Values for Estimating Gene-Gene Interactions in Genome-Wide Association Studies: A Parallel Computing Approach .406.....	
<i>Valentina Giansant (CNR-ITB), Daniele D'Agostino (CNR-IMATI), Carlo Maj (IRCCS Istituto Centro San Giovanni di Dio Fatebenefratelli), Stefano Beretta (CNR-ITB), and Ivan Merelli (CNR-ITB)</i>	
GPU-Accelerated Differential Dependency Network Analysis .410.....	
<i>Gil Speyer (The Translational Genomics Research Institute), Juan Rodriguez (The Translational Genomics Research Institute), Tomas Bencomo (The Translational Genomics Research Institute), and Seungchan Kim (Prairie View A&M University)</i>	
ParallelHashClone: A Parallel Implementation of HashClone Suite for Clonality Assessment from NGS Data .415.....	
<i>Greta Romano (University of Turin), Elisa Genuardi (University of Turin), Raffaele Calogero (University of Turin), and Simone Ferrero (University of Turin)</i>	

ParallNormal: An Efficient Variant Calling Pipeline for Unmatched Sequencing Data	.423.....
<i>Laura Follia (University of Turin), Fabio Tordini (University of Turin), Simone Pernice (University of Turin), Greta Romano (University of Turin), Giulia Beatrice Piaggeschi (University of Turin), and Giulio Ferrero (University of Turin)</i>	

Security in Parallel, Distributed and Network-Based Computing

A Secure Distributed Framework for Agglomerative Hierarchical Clustering Construction	.430.....
<i>Mona Hamidi (Universita di Siena), Mina Sheikhalishahi (Consiglio Nazionale delle Ricerche (CNR)), and Fabio Martinelli (Consiglio Nazionale delle Ricerche (CNR))</i>	
An Approach for Securing Critical Applications in Untrusted Clouds	.436.....
<i>Luigi Coppolino (University of Naples Parthenope), Salvatore D'Antonio (University of Naples Parthenope), Giovanni Mazzeo (University of Naples Parthenope), Gaetano Papale (University of Naples Parthenope), Luigi Sgagliione (University of Naples Parthenope), and Ferdinando Campanile (Synclab srl)</i>	
Business Model of a Botnet	.441.....
<i>C.G.J. Putman (University of Twente), _ Abhishta (University of Twente), and Lambert J. M. Nieuwenhuis (University of Twente)</i>	
CARS: Context Aware Reputation Systems to Evaluate Vehicles' Behaviour	.446.....
<i>Gianpiero Costantino (IIT-CNR), Fabio Martinelli (IIT-CNR), Ilaria Matteucci (IIT-CNR), Antonia Bertolino (ISTI-CNR), Antonello Calabro (ISTI-CNR), and Eda Marchetti (ISTI-CNR)</i>	
Enabling Dynamic and Efficient Data Access Control in Cloud Computing Based on Attribute Certificate Management and CP-ABE	.454.....
<i>Somchart Fugkeaw (Thai Digital ID Co.) and Hiroyuki Sato (The University of Tokyo)</i>	
Parallelization of Security Event Correlation Based on Accounting of Event Type Links	.462.....
<i>Igor Kotenko (St. Petersburg Institute for Informatics and Automation of the Russian Academy of Sciences (SPIIRAS)), Andrey Fedorchenco (St. Petersburg Institute for Informatics and Automation of the Russian Academy of Sciences (SPIIRAS)), Igor Saenko (St. Petersburg Institute for Informatics and Automation of the Russian Academy of Sciences (SPIIRAS)), and Alexey Kushnerevich (St. Petersburg Institute for Informatics and Automation of the Russian Academy of Sciences (SPIIRAS))</i>	
The Multi-Layer Graph Based Technique for Proactive Automatic Response Against Cyber Attacks	.470.....
<i>Elena Doynikova (St. Petersburg Institute for Informatics and Automation of the Russian Academy of Sciences (SPIIRAS)) and Igor Kotenko (St. Petersburg Institute for Informatics and Automation of the Russian Academy of Sciences (SPIIRAS))</i>	

Energy Efficient Management of Parallel Systems, Platforms, and Computations

DuoFS: A Hybrid Storage System Balancing Energy-Efficiency, Reliability, and Performance .478.....	
<i>Shu Yin (ShanghaiTech University), Bing Jiao (Hunan University), Xiaomin Zhu (National University of Defense Technology), Xiaojun Ruan (California State University), Si Chen (West Chester University), and Zhuo Tang (Hunan University)</i>	
Energy-Efficient Actor Execution for SDF Application on Heterogeneous Architectures .486.....	
<i>Hergys Rexha (Åbo Akademi University and Turku Centre for Computer Science), Sébastien Lafond (Åbo Akademi University and Turku Centre for Computer Science), and Karol Desnos (IETR)</i>	
Exploring Energy Efficiency Model Generalization on Multicore Embedded Platforms .494.....	
<i>Hergys Rexha (Abo Akademi University) and Sébastien Lafond (Abo Akademi University)</i>	
How do Loop Transformations Affect the Energy Consumption of Multi-Threaded Runge-Kutta Methods? .499.....	
<i>Thomas Rauber (University Bayreuth) and Gudula Rünger (Chemnitz University of Technology)</i>	
Performance and Energy Consumption Analysis of Coprocessors Using Different Programming Models .508.....	
<i>Robson Gonçalves (Universidade Federal do Pampa), Alessandro Girardi (Universidade Federal do Pampa), and Claudio Schepke (Universidade Federal do Pampa)</i>	

Cloud Computing on Infrastructure as a Service and Its Applications

An Adaptive Cloud-Based IoT Back-end Architecture and Its Applications .513.....	
<i>Attila Csaba Marosi (MTA SZTAKI), Attila Farkas (MTA SZTAKI), and Robert Lovas (MTA SZTAKI)</i>	
Cost-Effective Reconfiguration for Multi-Cloud Applications .521.....	
<i>Nikos Parlantzas (Univ Rennes), Linh Manh Pham (Univ Rennes), Arnab Sinha (CEA Saclay), and Christine Morin (Univ Rennes)</i>	
Getmewhere: A Location-Based Privacy-Preserving Information Service .529.....	
<i>Giampaolo Bella (Università degli Studi di Catania), Francesco Marino (Scuola Superiore Sant'Anna), Gianpiero Costantino (Consiglio Nazionale delle Ricerche), and Fabio Martinelli (Consiglio Nazionale delle Ricerche)</i>	
GPU Enabled Serverless Computing Framework .533.....	
<i>Tae Joon Jun (Korea Advanced Institute of Science and Technology), Daeyoun Kang (Korea Advanced Institute of Science and Technology), Dohyeun Kim (Korea Advanced Institute of Science and Technology), and Daeyoung Kim (Korea Advanced Institute of Science and Technology)</i>	
Saving Energy for Cloud Applications in Mobile Devices Using Nearby Resources .541.....	
<i>Anas Toma (TU Dortmund University), Alexander Starinow (TU Dortmund University), Jan Eric Lenssen (TU Dortmund University), and Jian-Jia Chen (TU Dortmund University)</i>	

High Performance Computing in Modelling and Simulation

Analysis of the Impact Factors on Data Error Propagation in HPC Applications .546.....	
<i>Gladys Utrera (Universitat Politècnica de Catalunya. BarcelonaTECH), Marisa Gil (Universitat Politècnica de Catalunya. BarcelonaTECH), and Xavier Martorell (Universitat Politècnica de Catalunya. BarcelonaTECH)</i>	
Cellular Automata Modelling of the Movement of People with Disabilities during Building Evacuation .550.....	
<i>Panagiota Kontou (Democritus University of Thrace), Ioakeim G. Georgoulas (Democritus University of Thrace), Giuseppe A. Trunfio (Democritus University of Thrace), and Georgios Ch. Sirakoulis (University of Sassari)</i>	
Clustering Goes Big: CLUBS-P, an Algorithm for Unsupervised Clustering Around Centroids Tailored For Big Data Applications .558.....	
<i>Michele Ianni (DIMES-UNICAL), Elio Masciari (ICAR-CNR), Giuseppe Massimo Mazzeo (UCLA), and Carlo Zaniolo (UCLA)</i>	
Exploiting Task-Based Parallelism for Parallel Discrete Event Simulation .562.....	
<i>Yizhuo Wang (Beijing Institute of Technology), Zhiwei Gao (Beijing Institute of Technology), Weixing Ji (Beijing Institute of Technology), Han Zhang (Beijing Simulation Center), and Duzheng Qing (Beijing Simulation Center)</i>	
High Performance Computation for the Multi-Parameterized Edit Distance .567.....	
<i>Francesco Cauteruccio (University of Calabria), Davide Consalvo (University of Calabria), and Giorgio Terracina (University of Calabria)</i>	
Low-Effort Task Distribution of Stencil Computation on Heterogeneous Multi-GPUs: Simulating Graphene Superlattices .575.....	
<i>Manuel Rodrigues (Instituto de Telecomunicações), David Fernandes (Instituto de Telecomunicações), Mário Silveirinha (Instituto de Telecomunicações), and Gabriel Falcão (Instituto de Telecomunicações)</i>	
Multi-BSP vs. BSP: A Case of Study for Dell AMD Multicores .579.....	
<i>Guillermo Trabes (Universidad Nacional de San Luis), Veronica Gil-Costa (Universidad Nacional de San Luis), Marcela Printista (Universidad Nacional de San Luis), and Mauricio Marin (Universidad de Santiago de Chile)</i>	
Structured Grid-Based Parallel Simulation of a Simple DEM Model on Heterogeneous Systems .588.	
<i>Alessio De Rango (University of Calabria), Pietro Napoli (University of Calabria), Donato D'Ambrosio (University of Calabria), William Spataro (University of Calabria), Alberto Di Renzo (University of Calabria), and Francesco Di Maio (University of Calabria)</i>	
Task Parallelism in the WRF Model Through Computation Offloading to Many-Core Devices .596....	
<i>Rodrigo Bayá (Facultad de Ingeniería), Claudio Porrini (Facultad de Ingeniería), Martín Pedemonte (Facultad de Ingeniería), and Pablo Ezzatti (Facultad de Ingeniería)</i>	

On-Chip Parallel and Network-Based Systems

- Memory-Aware Genetic Algorithms for Task Mapping on Hard Real-Time Networks-on-Chip .601.....
Lloyd Robert Still (University of York) and Leandro Soares Indrusiak (University of York)
- Performability Analysis of Mesh-Based NoCs Using Markov Reward Model .609.....
Jie Hou (University of Stuttgart) and Martin Radetzki (University of Stuttgart)
- RVNoC: A Framework for Generating RISC-V NoC-Based MPSoC .617.....
Mahmoud A. Elmohr (Alexandria University), Ahmed S. Eissa (Alexandria University), Moamen Ibrahim (University of Oulu), Mostafa Khamis (Mentor Graphics), Sameh El-Ashry (Ain Shams University), Ahmed Shalaby (Benha University), Mohamed AbdElsalam (Mentor Graphics), and M. Watheq El-Kharashi (Ain Shams Universit)
- Simulation-Based Evaluation Strategy for Task Mapping Approaches in WNoC Platforms .622.....
Luis Germán García Morales (University of Antioquia), José Edinson Aedo Cobo (University of Antioquia), and Nader Bagherzadeh (University of California)

Storage Architectures and Data Transfer Systems for Bigdata and Exascale Computing

- Endolith: A Blockchain-Based Framework to Enhance Data Retention in Cloud Storages .627.....
Thomas Renner (Technische Universität Berlin), Johannes Müller (Technische Universität Berlin), and Odej Kao (Technische Universität Berlin)
- Low-Power Storage Bricks and Bioinformatics on Systems-On-Chip .635.....
Lucia Morganti (CNAF - Italian Institute for Nuclear Physics), Daniele Cesini (CNAF - Italian Institute for Nuclear Physics), Elena Corni (CNAF - Italian Institute for Nuclear Physics), Luca Lama (CNAF - Italian Institute for Nuclear Physics), Carmelo Pellegrino (CNAF - Italian Institute for Nuclear Physics), Ivan Merelli (Institute for Biomedical Technologies - National Research Council of Italy), and Daniele D'Agostino (Institute for Applied Mathematics and Information Technologies "E. Magenes")
- O-TF and O-FTF, Optical Fault-Tolerant DCNs .639.....
Saeedeh Akbari Rokn Abadi (Sharif University of Technology) and Somayyeh Koohi (Sharif University of Technology)
- pWebDAV: A Multi-Tier Storage System .643.....
Christos Filippidis (National and Kapodistrian University of Athens) and Yiannis Cotronis (National and Kapodistrian University of Athens)

Storage for Advanced Scientific Use-Cases and Beyond .651.....

Paul Millar (Deutsches Elektron-Synchrotron (DESY)), Olufemi Adeyemi (Deutsches Elektron-Synchrotron (DESY)), Gerd Behrmann (Nordic e-Infrastructure Collaboration (NeIC)), Patrick Fuhrmann (Deutsches Elektron-Synchrotron (DESY)), Vincent Garonne (Nordic e-Infrastructure Collaboration (NeIC)), Dmitry Litvinsev (Fermilab National Laboratory), Tigran Mkrtchyan (Deutsches Elektron-Synchrotron (DESY)), Albert Rossi (Fermilab National Laboratory), Marina Sahakyan (Deutsches Elektron-Synchrotron (DESY)), and Jürgen Starek (Deutsches Elektron-Synchrotron (DESY))

High Performance Computing for Neuroscience

Gaussian and Exponential Lateral Connectivity on Distributed Spiking Neural Network Simulation .658.....

Elena Pastorelli (INFN Sezione di Roma and PhD Program in Behavioural Neuroscience), Pier Stanislao Paolucci (INFN Sezione di Roma), Francesco Simula (INFN Sezione di Roma), Andrea Biagioni (INFN Sezione di Roma), Fabrizio Capuani (INFN Sezione di Roma), Paolo Cretaro (INFN Sezione di Roma), Giulia De Bonis (INFN Sezione di Roma), Francesca Lo Cicero (INFN Sezione di Roma), Alessandro Lonardo (INFN Sezione di Roma), Michele Martinelli (INFN Sezione di Roma), Luca Pontisso (INFN Sezione di Roma), Piero Vicini (INFN Sezione di Roma), and Roberto Ammendola (INFN Sezione di Tor Vergata and Electronic Engineering Dept.)

Implementation of Bayesian Inference In Distributed Neural Networks .666.....

Zhaofei Yu (School of Electronics Engineering and Computer Science), Tiejun Huang (School of Electronics Engineering and Computer Science), and Jian K. Liu (Institute for Theoretical Computer Science)

High Performance Computing in Astronomy and Astrophysics

ECHO-3DHPC: Relativistic Accretion Disks onto Black Holes .674.....

Matteo Bugli (Max Planck Institute for Astrophysics)

High-Resolution Numerical Relativity Simulations of Spinning Binary Neutron Star Mergers .682.....

Tim Dietrich (Max Planck Institute for Gravitational Physics (Albert Einstein Institute)), Sebastiano Bernuzzi (Universita di Parma), Bernd Bruegmann (University of Jena), and Wolfgang Tichy (Florida Atlantic University)

Parallel and Distributed High-Performance Computing Solutions in Systems Biology

Evaluation of Parallel Tempering to Accelerate Bayesian Parameter Estimation in Systems Biology .690.....

Sanjana Gupta (University of Pittsburgh School of Medicine), Liam Hainsworth (University of Pittsburgh School of Medicine), Justin Hogg (University of Pittsburgh School of Medicine), Robin Lee (University of Pittsburgh School of Medicine), and James Faeder (University of Pittsburgh School of Medicine)

GPU-Powered Multi-Swarm Parameter Estimation of Biological Systems: A Master-Slave Approach .698.....

Andrea Tangherloni (University of Milano-Bicocca), Leonardo Rundo (University of Milano-Bicocca), Simone Spolaor (University of Milano-Bicocca), Paolo Cazzaniga (University of Bergamo), and Marco S. Nobile (University of Milano-Bicocca)

Leveraging Compute Clusters for Large-Scale Parametric Screens of Reaction-Diffusion Systems .706.....

Md Shahriar Karim (Purdue University), Hans G. Othmer (University of Minnesota), and David M. Umulis (Purdue University)

Parallel Numerical Methods and Libraries for Heterogeneous Multi/Many-Cores

A High-Level C++ Approach to Manage Local Errors, Asynchrony and Faults in an MPI Application .714.....

Christian Engwer (University of Munster), Mirco Altenbernd (University of Stuttgart), Nils-Arne Dreier (University of Munster), and Dominik Göddeke (University of Stuttgart)

A Parallel Implementation of the Hestenes-Jacobi-One-Sides Method Using GPU-CUDA .722.....

Salvatore Cuomo (University of Naples Federico II), Livia Marcellino (University of Naples Parthenope), and Guglielmo Navarra (University of Naples Federico II)

CudaPre2D: A Straightforward Preprocessing Approach for Accelerating 2D Convex Hull Computations on the GPU .726.....

Gang Mei (China University of Geosciences Beijing) and Sixu Guo (China University of Geosciences Beijing)

Efficient NAS Benchmark Kernels with C++ Parallel Programming .733.....

Dalvan Griebler (Pontifical Catholic University of Rio Grande do Sul (PUCRS)), Junior Loff (Pontifical Catholic University of Rio Grande do Sul (PUCRS)), Gabriele Mencagli (University of Pisa), Marco Danelutto (University of Pisa), and Luiz Gustavo Fernandes (Pontifical Catholic University of Rio Grande do Sul (PUCRS))

Parallelizing and Optimizing LHCb-Kalman for Intel Xeon Phi KNL Processors .741.....

Plácido Fernández (CERN), David del Rio Astorga (University Carlos III of Madrid), Manuel F. Dolz (University Carlos III of Madrid), Javier Fernández (University Carlos III de Madrid), Omar Awile (CERN), and J. Daniel García (University Carlos III of Madrid)

Scaling Dense Linear Algebra on Multicore and Beyond: A Survey .751.....

Paolo Viviani (University of Turin; Noesis Solutions NV), Maurizio D’Rocco (University of Turin), and Marco Aldinucci (University of Turin)

Solving Multiple Tridiagonal Systems on a Multi-GPU Platform .759.....

Adrián Pérez Diéguez (University of A Coruña), Margarita Amor López (University of A Coruña), and Ramón Doallo Biempica (University of A Coruña)

Author Index 765