

**2014 15th International
Conference on Parallel and
Distributed Computing,
Applications and Technologies**

(PDCAT 2014)

**Hong Kong, China
9-11 December 2014**



**IEEE Catalog Number: CFP14536-POD
ISBN: 978-1-4799-8335-3**

2014 15th International Conference on Parallel and Distributed Computing, Applications and Technologies

PDCAT 2014

Table of Contents

Message from the General Chair.....	ix
Message from the Organizing Committee.....	x
Organizing Committee.....	xi
Reviewers.....	xii
Keynote Talk: Efficiency of Resource	
Abundant Clouds by Albert Y. Zomaya.....	xiii
Invited Talk: Future Distributed Applications	
Based on Mobile Cloud Computing	
and Software-Defined Networks by Sergei	
Gorlatch.....	xiv

Session 1

A Novel Density Based Clustering Algorithm and its Parallelization	1
<i>Xiaokang Li, Binbin Yu, Yinghua Zhou, and Guangzhong Sun</i>	
A Segmentation Pattern Based Approach to Automated Protocol Identification	7
<i>Yafei Sang, Yongzheng Zhang, Yipeng Wang, Yu Zhou, and Xu Tao</i>	
Access-Efficient QoS-Aware Data Replication to Maximize User Satisfaction in Cloud Computing Environments	13
<i>Mohammad Shorfuzzaman</i>	
Bandwidth Modeling in Large Distributed Systems for Big Data Applications	21
<i>Bahman Javadi, Boyu Zhang, and Michela Taufer</i>	

Session 2

Benchmarking and Analysis of Variations of Work Stealing Scheduler on Clustered System	28
<i>Saurav Kumar and Aryabartta Sahu</i>	
Conflict-Free Code Block Scheduling to Hide SpMT Inter-Core Register Sync Delay	36
<i>John Ye, Jason Chen, Tianzhou Chen, and Qingsong Shi</i>	
Dealing with Skewed Data in Structured Overlays Using Variable Hash Functions	42
<i>Maeva Antoine and Fabrice Huet</i>	
Distributive Interoperable Executive Library (DIEL) for Systems of Multiphysics Simulation	49
<i>Kwai Wong, Logan Brown, Jason Coan, and David White</i>	

Session 3

On the Shallow-Light Steiner Tree Problem	56
<i>Longkun Guo, Kewen Liao, and Hong Shen</i>	
Energy-Aware Scheduling for Sensor Node Platforms	61
<i>Sungwoo Tak, Hangeul Kim, Donglyul Kim, and Yougyung Kim</i>	
Fast ICA on Modern GPU Architectures	69
<i>Max Plauth, Frank Feinbube, Peter Tröger, and Andreas Polze</i>	
Fault-Tolerant Routing Based on Improved Safety Levels in Pancake Graphs	76
<i>Yo Nishiyama, Yuki Hirai, and Keiichi Kaneko</i>	

Session 4

Improve LLC Bypassing Performance by Memory Controller Improvements in Heterogeneous Multicore System	82
<i>Jianliang Ma, Jinglei Meng, Tianzhou Chen, Qingsong Shi, Minghui Wu, and Li Liu</i>	
Comparison of Binding Approaches of Scheduled Multiphase Application onto Linear Multicore Architecture	90
<i>Sahil Kumar, Nitesh Singal, and Aryabartta Sahu</i>	
Joint Convergecast and Power Allocation in Wireless Sensor Networks	98
<i>Yaoxin Duan, Wendi Nie, Kai Liu, Qingfeng Zhuge, Edwin H.M. Sha, and Victor C.S. Lee</i>	
Using rCUDA to Reduce GPU Resource-Assignment Fragmentation Caused by Job Scheduler	105
<i>Pak Markthub, Akihiro Nomura, and Satoshi Matsuoka</i>	

Session 5

Fault-Tolerant Routing in (n, k) - Star Graphs	113
<i>Takara Ito, Manabu Myojin, Yuki Hirai, and Keiichi Kaneko</i>	
Practical Anonymization for Protecting Privacy in Combinatorial Maps	119
<i>Dandan Chu, Yidong Li, Tao Wang, Lei Zhang, and Hong Shen</i>	
Prediction of Spatial and Temporal Data: A Web Tool Based on Georeferenced Resources	124
<i>Carlos Roberto Valêncio, Carlos Henrique El Hetti Laurenti, Luiz Carlos Baida, Fernando Ferrari, Thatiane Kawabata, and Angelo Cesar Colombini</i>	
PUF-Based RFID Ownership Transfer Protocol in an Open Environment	131
<i>Qing-Shan Li, Xiao-Lin Xu, and Zhong Chen</i>	

Session 6

Simulating Supercomputer Workload with Hpcwld Package for R	138
<i>Alexander Rummyantsev</i>	
New Replication Strategy Based on Maximal Frequent Correlated Pattern Mining for Data Grids	144
<i>Sarra Slimani, Tarek Hamrouni, and Faouzi Ben Charrada</i>	
Sparse Matrix-Vector Multiplication: A Data Mapping-Based Architecture	152
<i>Ahmad Mansour, Jürgen Götze, Wei-Chun Hsu, and Shanq-Jang Ruan</i>	
Topic Block: Mining User Inner Interests for Text and Link Analysis in Social Networks	159
<i>Wenyu Zang, Chuan Zhou, Xiao Wang, and Li Guo</i>	

Session 7

Online Scheduling of Applications on 3D Stacked Large Chip Multiprocessor	166
<i>Bhoopendra Kumar and Aryabartta Sahu</i>	
TOUGH2-PETS: A Parallel Solver for TOUGH2	174
<i>Daniel Hathorn, Yushu Wu, and Zizhong Chen</i>	
Running Data-Intensive Scientific Workflows in the Cloud	180
<i>Chiaki Sato, Luke M. Leslie, Young Choon Lee, Albert Y. Zomaya, and Rajiv Ranjan</i>	

Session 8

Forced Replicable Execution for a Subset of Piecewise Deterministic Applications with Deterministic Message Passing	186
<i>Arkadiusz Danilecki</i>	
Gravitational Search Algorithm Using CUDA	193
<i>Amirreza Zarrabi, Ettikan K. Karuppiah, Yong Keh Kok, Ngo Chuan Hai, and Simon See</i>	
Towards High-Level Parallel Patterns in OpenCL	199
<i>Jiri Dokulil and Siegfried Benkner</i>	
Author Index	205