

# 2014 Sixth International Symposium on Parallel Architectures, Algorithms and Programming

## PAAP 2014

### Table of Contents

Message from the General Chairs.....	x
Message from the Program Committee Chair.....	xi
Conference Organization.....	xii
Program Committee.....	xiii
Message from the HPCBD Workshop Chairs.....	xv
HPCBD Workshop Organization.....	xvi
External Reviewers.....	xvii
Keynotes.....	xviii

---

#### Session 1: Architectures

Design and Evaluation of Dynamically-Allocated Multi-queue Buffers with Multiple Packets for NoC Routers .....	1
<i>Yung-Chou Tsai and Yarsun Hsu</i>	
Algorithmic Aspects for Bi-Objective Multiple-Choice Hardware/Software Partitioning .....	7
<i>Wenjun Shi, Jigang Wu, Siew-Kei Lam, and Thambipillai Srikanthan</i>	
Fault-Tolerant Distributed Publish/Subscribe Using Self-Stabilization .....	13
<i>Yihua Ding, James Z. Wang, and Pradip K. Srimani</i>	
A Runtime Framework for GPGPU .....	19
<i>Shang-Chieh Lin and Yarsun Hsu</i>	
A Sensitive and Robust Grid Reputation System Based on Rating of Recommenders .....	23
<i>Yongrui Cui, Hang Zhao, Jun Wu, Zhiyuan Su, and Mingchu Li</i>	
Efficient FPGA-mapping of 1024 point FFT Pipeline SDF Processor .....	29
<i>Imran Ali Qureshi, Fahad Qureshi, and Ghulam Muhammad Shaikh</i>	

## Session 2: Big Data on Electrical Applications

Multi-parameter Online Identification Algorithm of Induction Motor for Hybrid Electric Vehicle Applications .....	35
<i>Yan Liu</i>	
Wide Area Power System Fault Detection Using Compressed Sensing to Reduce the WAN Data Traffic .....	40
<i>Bei Li, Jinghan He, Tony Yip, and Jiangchen Li</i>	
PSO Applied to Optimal Operation of a Micro-Grid with Wind Power .....	46
<i>Guangke Hao, Rong Cong, and Hui Zhou</i>	
A Fuzzy Multi-objective Optimization Method Solving the Output of Energy Storage System .....	52
<i>Yiyi Wang, Mei Huang, and Caiping Zhang</i>	

## Session 3: Big Data Mining

Multiple Feature-Sets Method for Dependency Parsing .....	57
<i>Xianchao Zhang, Dong Du, Xinyue liu, and Wenxin Liang</i>	
Adaptive Centroid-Based Clustering Algorithm for Text Document Data .....	63
<i>Ximing Li, Jihong Ouyang, Xiaotang Zhou, and Bo Fu</i>	
Topic-Sensitive Multi-document Summarization Algorithm .....	69
<i>Na Liu, Xiao-Jun Tang, Ying Lu, Ming-Xia Li, Hai-Wen Wang, and Peng Xiao</i>	
Object Enhancement and Recognition Based on Hough Forest for Underground Video .....	75
<i>Bo Fu and Chuan-Ming Song</i>	

## Session 4: Combinatorial and Graph Algorithms

Parallel Algorithms for Testing Length Four Permutations .....	81
<i>Yijie Han and Sanjeev Saxena</i>	
On-Line Algorithms for 2-Space Bounded Cube and Hypercube Packing .....	87
<i>Xiaofan Zhao and Hong Shen</i>	
Efficient Parallelization of a Two-List Algorithm for the Subset-Sum Problem on a Hybrid CPU/GPU Cluster .....	93
<i>Letian Kang, Lanjun Wan, and Kenli Li</i>	
Approximating the Shallow-Light Steiner Tree Problem When Cost and Delay are Linearly Dependent .....	99
<i>Longkun Guo, Nianchen Zou, and Yidong Li</i>	

## **Session 5: High Performance Systems I**

Parallel Optimization Strategies for MIC Heterogeneous Parallel Systems .....	104
<i>Tao Ju, Xiaoshe Dong, Endong Wang, Liang Li, and Zhengdong Zhu</i>	
Performance Evaluation of Read and Write Operations in Hadoop Distributed File System .....	110
<i>Talluri Lakshmi Siva Rama Krishna, Thirumalaisamy Ragunathan, and Sudheer Kumar Battula</i>	
Characteristic Analysis of Operating Systems for Large Scale Hierarchical NUMA System .....	114
<i>Qiuming Luo, Yuanyuan Zhou, Mei Wang, and Ye Cai</i>	
Bandwidth Based Performance Optimization of Multi-threaded Applications .....	118
<i>Sheheeda Manakkadu and Sourav Dutta</i>	
Global Load Instruction Aggregation Based on Array Dimensions .....	123
<i>Yasunobu Sumikawa and Munehiro Takimoto</i>	

## **Session 6: High Performance Systems II**

Secure Clustering and Reliable Multi-path Route Discovering in Wireless Sensor Networks .....	130
<i>Cheng Zhong, Yinghong Mo, Jing Zhao, Cong Lin, and Xiangyan Lu</i>	
XML Optimistic Concurrency Control Protocol for DOM API .....	135
<i>Weifeng Shan and Husheng Liao</i>	
A Parallel Implementation of Acoustic Propagation Model on Cloud Platform .....	140
<i>Binbin Yu, Simin Cheng, Dan Wang, Xichen Wu, Hongkun Mai, and Guangzhong Sun</i>	
A Robust Feature Point Matching Method for Dynamic Aerial Image Registration .....	144
<i>Zhaoxia Liu, Yaxuan Wang, Yu Jing, and Oujun Lou</i>	
Anomaly Detection by Diffusion Wavelet-Based Analysis on Traffic Matrix .....	148
<i>Teng Sun and Hui Tian</i>	
Study on a New Model for Network Traffic Matrix Estimation .....	152
<i>Yanning Niu and Hui Tian</i>	

## **Session 7: Interconnection Networks**

A Novel On-Demand Data Broadcast Scheme in Wireless Networks .....	155
<i>Shuli Luan and Ping He</i>	
Efficient Algorithms for Vehicle Type Identification Using Mobile-Phone Locations .....	161
<i>Peilan He, Wenjun Wang, and Guiyuan Jiang</i>	
A Distributed Multi-hub Translator Trust Model for Interdomain Routing in Large Networks .....	166
<i>Lingjing Kong and Hong Shen</i>	

AB-Chord: An Improved Chord Based on Ant Colony Optimization and Bi-Directional Lookup Routing .....	172
<i>Limin Zhao, Hong Shen, Yidong Li, and Jun Wu</i>	

## **Session 8: Media Computing in Parallel/Distributed Systems**

A Parallel SRM Feature Extraction Algorithm for Steganalysis Based on GPU Architecture .....	178
<i>Kaizhi Chen, Chenjun Lin, Shangping Zhong, and Longkun Guo</i>	
Sound Source Localization Algorithm Based on a Helmet-Mounted Microphone Array .....	183
<i>Yi Zhang and Shujie Meng</i>	
Audio Retrieval Based on Manifold Ranking .....	187
<i>Jing Qin, Xinyue Liu, and Hongfei Lin</i>	
A Two-Step Similarity Ranking Scheme for Image Retrieval .....	191
<i>Di Wu, Jun Wu, Ming-Yu Lu, and Chun-Li Wang</i>	

## **Session 9: Parallel/Distributed Databases and Knowledge Discovery**

Using Category and Keyword for Personalized Recommendation: A Scalable Collaborative Filtering Algorithm .....	197
<i>Ke Ji and Hong Shen</i>	
Clustering Subtrajectories of Moving Objects Based on a Distance Metric with Multi-dimensional Weights .....	203
<i>Yanjun Chen, Hong Shen, and Hui Tian</i>	
The Effect of Outliers in the Design of Data Gathering Tours .....	209
<i>Khaled Almi'ani, Sanjay Chawla, and Anastasios Viglas</i>	
Speed Up Distance-Based Similarity Query Using Multiple Threads .....	215
<i>Fuli Lei, Wenbo Wu, Qiaozhi Li, He Zhang, Ping Li, Qiuming Luo, and Rui Mao</i>	

## **Session 10: Privacy and Security**

A Privacy-Preserving Data Publishing Method for Multiple Numerical Sensitive Attributes via Clustering and Multi-sensitive Bucketization .....	220
<i>Qinghai Liu, Hong Shen, and Yingpeng Sang</i>	
Android Privacy Information Encoding Mechanism (APIEM) .....	224
<i>Lee Mengxuan, Song Jiaying, and Liu Weidong</i>	
KP-ABE with Attribute Extension: Towards Functional Encryption Schemes Integration .....	230
<i>Weiqian Huo, Jisheng Pei, Ke Zhang, and Xiaojun Ye</i>	
Preventing Client Side XSS with Rewrite Based Dynamic Information Flow .....	238
<i>Wenmin Xiao, Jianhua Sun, Hao Chen, and Xianghua Xu</i>	

Using Symmetry Dicke State as Security Detection Particle in Quantum “Ping-Pong” Protocol .....	244
<i>Qinghai Liu, Hong Shen, Hui Tian, and Yingpeng Sang</i>	

## **Session 11: Task Scheduling**

A Task Scheduling Algorithm for Automated Parallel Processing of XQuery .....	250
<i>Yuelong Quan and Husheng Liao</i>	
An Efficient Energy Scheduling Algorithm for Workflow Tasks in Hybrids and DVFS-Enabled Cloud Environment .....	255
<i>Zhuo Tang, Zhenzhen Cheng, Kenli Li, and Keqin Li</i>	
A DAG Task Scheduling Scheme on Heterogeneous Computing Systems Using Invasive Weed Optimization Algorithm .....	262
<i>Kenli Li, Shuai Li, Yuming Xu, and Zhaoxin Xie</i>	
A Heuristic Speculative Execution Strategy in Heterogeneous Distributed Environments .....	268
<i>Huicheng Wu, Kenli Li, Zhuo Tang, and Longxin Zhang</i>	

## **Session 12: International Workshop on High-Performance Computing for Big Data**

PPMA: Parallel Programming Model for an Audio Application Specific Multi-core DSP .....	274
<i>Xu Jiangwei, Wei Zhenqi, and Liu Peilin</i>	
A Novel Multi-bit Watermarking Algorithm Based on HVS .....	278
<i>OuJun Lou, ShaoHua Li, ZhaoXia Liu, and ShuangTong Tang</i>	
An Ensemble of Classifiers Algorithm Based on GA for Handling Concept-Drifting Data Streams .....	282
<i>Jinghua Guan, Wu Guo, Heng Chen, and Oujun Lou</i>	
An Integrated Hierarchical Temporal Memory Network for Real-Time Continuous Multi-interval Prediction of Data Streams .....	285
<i>Jianhua Diao and Hyunsyug Kang</i>	
Design and Implementation for File Monitor System Based on Windows Driver .....	289
<i>Xiao-Jun Tang, Ying Lu, and Na Liu</i>	
Application and Research of Mobile Terminal with Android in the Equipment Monitoring System .....	293
<i>Ying Lu, Xiao-Jun Tang, Na Liu, Yu-Yue Mao, Ming-Xia Li, Peng Xiao, and Hai-Wen Wang</i>	
<b>Author Index</b> .....	297