

2015 44th International Conference on Parallel Processing Workshops (ICPPW 2015)

**Beijing, China
1 – 4 September 2015**



IEEE Catalog Number: CFP15190-POD
ISBN: 978-1-4673-7590-0

2015 44th International Conference on Parallel Processing Workshops

ICPPW 2015

Table of Contents

Message from the ICPP 2015 Workshop

Co-Chairs.....x

AWASN 2015 Workshop Foreword

and Program Committeexi

EMS 2015 Workshop Foreword and Program

Committee.....xiii

HPC4BD 2015 Workshop Foreword

and Program Committeexv

P2S2 2015 Workshop Foreword and Program

Committee.....xvii

PASA 2015 Workshop Foreword and Program

Committee.....xix

SRMPDS 2015 Workshop Foreword

and Program Committee.....xxi

AWASN 2015: International Workshop on Applications of Wireless Ad-Hoc and Sensor Networks

Session 1: Network Protocols

Energy-Aware Priority for Tree-Based CDS Protocols1

Kazuya Sakai, Min-Te Sun, and Satoshi Fukumoto

Side Effect Mitigation Algorithm for Cache Maintenance in Opportunistic

Networks8

Satoshi Fukumoto, Masayuki Arai, and Kazuya Sakai

Session 2: Network Applications

Simple Floor Plan Construction via Cloudsourcing	14
<i>Guang Chen, Yi-Heng Lin, Min-Te Sun, and An-Kai Jeng</i>	
Using Open edX Forum for Supporting Collaborative Learning	20
<i>Yu-Chun Lin, Yi Chiou, Timothy K. Shih, and Min-Te Sun</i>	

EMS 2015: International Workshop on Embedded Multicore Systems

Session 1

Towards an Automatic Prediction of Image Processing Algorithms Performances on Embedded Heterogeneous Architectures	27
<i>Romain Saussard, Boubker Bouzid, Marius Vasiliu, and Roger Reynaud</i>	
CUDABlock: A GUI Programming Tool for CUDA	37
<i>Hsih-Hsin Lin, Chia-Heng Tu, and Yuan-Shin Hwang</i>	
Multi-core Approach towards Efficient Biometric Cryptosystems	43
<i>Charles McGuffey and Chen Liu</i>	

Session 2

XPDL: Extensible Platform Description Language to Support Energy Modeling and Optimization	51
<i>Christoph Kessler, Lu Li, Aras Atalar, and Alin Dobre</i>	
Accelerating 3D Digital Differential Analyzer Ray Tracing Algorithm on the GPU Using CUDA	61
<i>Yan Li, Hongyu Sun, Jingchao Yuan, Ting Wu, Yanshan Tian, Yanlin Li, Rui Zhou, and Kuan-Ching Li</i>	
Sparse Matrix Sparse Vector Multiplication - A Novel Approach	67
<i>Monika Shah</i>	

Session 3

Thread-Level Value Speculation for Image-Processing Applications	74
<i>Jun-Si Wu, Yuan-Fu Sheiue, and Peng-Sheng Chen</i>	
A Special Sorting Method for Neighbor Search Procedure in Smoothed Particle Hydrodynamics on GPUs	81
<i>Hongyu Sun, Yanshan Tian, Yulong Zhang, Jiong Wu, Sen Wang, Qiong Yang, and Qingguo Zhou</i>	

The Design and Implementation of Embedded Online Laboratory	86
<i>Qingguo Zhou, Yulong Zhang, Hongyu Sun, Ting Wu, Minqiang Yang,</i> <i>Rui Zhou, Wenkuang Chou, and Kuan-Ching Li</i>	

HPC4BD 2015: International Workshop on High Performance Computing for Big Data

Spatial Join Query Processing in Cloud: Analyzing Design Choices and Performance Comparisons	90
<i>Simin You, Jianting Zhang, and Le Gruenwald</i>	
Efficient Parallelization of the Google Trigram Method for Document Relatedness Computation	98
<i>Xinxin Kou, Jie Mei, Zhimin Yao, Andrew Rau-Chaplin, Aminul Islam,</i> <i>Abidrahman Moh'd, and Evangelos Milios</i>	
A High-Performance DSM Leveraging Software Defined Network	105
<i>Gao Qiang, Tong Weiqin, and Samina Kausar</i>	

P2S2 2015: International Workshop on Parallel Programming Models and Systems Software for High-End Computing

Programming Models and Runtime Systems

A Bandwidth-Saving Optimization for MPI Broadcast Collective Operation	111
<i>Huan Zhou, Vladimir Marjanovic, Christoph Niethammer, and José Gracia</i>	
HetroCV: Auto-tuning Framework and Runtime for Image Processing and Computer Vision Applications on Heterogeneous Platform	119
<i>Daihou Wang, David J. Foran, Xin Qi, and Manish Parashar</i>	
Collective Computing for Scientific Big Data Analysis	129
<i>Jialin Liu, Yong Chen, and Surendra Byna</i>	

Heterogeneous Computing and Performance Optimizations

High Performance Computing of Fast Independent Component Analysis for Hyperspectral Image Dimensionality Reduction on MIC-Based Clusters	138
<i>Minquan Fang, Yi Yu, Weimin Zhang, Heng Wu, Mingzhu Deng, and Jianbin Fang</i>	
Mimer and Schedeval: Tools for Comparing Static Schedulers for Streaming Applications on Manycore Architectures	146
<i>Nicolas Melot, Johan Janzén, and Christoph Kessler</i>	
Open JDK Meets Xeon Phi: A Comprehensive Study of Java HPC on Intel Many-Core Architecture	156
<i>Yang Yu, Tianyang Lei, Haibo Chen, and Binyu Zang</i>	

Communication Avoiding Power Scaling	166
<i>John Leidel and Yong Chen</i>	

Data Movement and I/O

Utility-Based Scheduling for Bulk Data Transfers between Distributed Computing Facilities	175
<i>Xin Wang, Wei Tang, Rajkumar Kettimuttu, and Zhiling Lan</i>	
Alignment-Free Sequence Comparison over Hadoop for Computational Biology	184
<i>Giuseppe Cattaneo, Umberto Ferraro Petrillo, Raffaele Giancarlo, and Gianluca Roscigno</i>	

PASA 2015: International Workshop on Power-Aware Algorithms, Systems, and Architectures

Session 1

A Methodology to Build Models and Predict Performance-Power in CMPs	193
<i>Rajiv Nishtala, Marc Gonzalez Tallada, and Xavier Martorell</i>	
HPC-Oriented Power Evaluation Method	203
<i>Feng Zhang and Liang Chen</i>	

Session 2

Flex: Flexible and Energy Efficient Scheduling for Big Data Storage	213
<i>Daokuan Ma, Yongwei Wu, Kang Chen, and Weimin Zheng</i>	
Flexible Desktop Application Management and Its Influence on Green Computing	221
<i>Wenlei Zhu, Yongwei Wu, and Kang Chen</i>	
A State-Based Energy/Performance Model for Parallel Applications on Multicore Computers	230
<i>Yawen Chen, Jason Mair, Zhiyi Huang, David Eysers, and Haibo Zhang</i>	

SRMPDS 2015: International Workshop on Scheduling and Resource Management for Parallel and Distributed Systems

Session 1

Achieving Dynamic Workload Balancing for P2P Volunteer Computing	240
<i>Wei Li, William Guo, and Eugenie Franzinelli</i>	
Scalable Tree-Based Consistency Maintenance in Heterogeneous P2P File Sharing Systems	250
<i>Taishi Nakashima and Satoshi Fujita</i>	

Session 2

Job Flow Distribution and Ranked Jobs Scheduling in Grid Virtual Organizations	257
<i>Victor Toporkov, Anna Toporkova, Alexey Tselishchev, Dmitry Yemelyanov, and Petr Potekhin</i>	
Utilization-Based Schedulability Test of Real-Time Systems on Virtual Multiprocessors	267
<i>Christine Niyizamwiyitira, Lars Lundberg, and Hakan Lennerstad</i>	
Case Study on Co-scheduling for HPC Applications	277
<i>Jens Breitbart, Josef Weidendorfer, and Carsten Trinitis</i>	
Author Index	286