

**2015 IEEE 17th International Conference
on High Performance Computing and
Communications (HPCC 2015), 2015 IEEE
7th International Symposium on
Cyberspace Safety and Security
(CSS 2015), and 2015 IEEE 12th
International Conference on Embedded
Software and Systems (ICESS 2015)**

**New York, New York, USA
24-26 August 2015**

Pages 1-944



IEEE Catalog Number: CFP1589E-POD
ISBN: 978-1-4799-8938-6

**Copyright © 2015 by the Institute of Electrical and Electronic 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 publication is a representation of what appears in the IEEE Digital Libraries. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number: CFP1589E-POD
ISBN (Print-On-Demand): 978-1-4799-8938-6

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

CURRAN ASSOCIATES INC.
proceedings
.com

**2015 IEEE 17th International Conference on High
Performance Computing and Communications
(HPCC), 2015 IEEE 7th International Symposium
on Cyberspace Safety and Security (CSS), and 2015
IEEE 12th International Conf on Embedded Software
and Systems (ICESS)**

HPCC-CSS-ICESS 2015

Table of Contents

Message from the General Chairs of HPCC/ICESS/CSS	
2015	xxix
Message from the Program Chairs of HPCC 2015.....	xxx
HPCC 2015 Committee Members.....	xxii
Message from the Program Chairs of ICESS 2015.....	xxxv
ICESS 2015 Committee Members.....	xxxvi
Message from the Program Chairs of CSS 2015.....	xxxix
CSS 2015 Committee Members.....	xl
Message from the Program Chairs of BigDataSecurity	
2015	xlii
BigDataSecurity 2015 Committee Members.....	xliii

IEEE International Conference on High Performance Computing and Communications

HPCC CCC 1: Cloud and Cluster Computing

Availability-Aware Virtual Network Embedding for Multi-tier Applications in Cloud Networks	1
<i>Meng Shen, Xu Ke, Fuliang Li, Fan Li, Liehuang Zhu, and Lei Guan</i>	
CPPStreaming: A Cloud-Assisted Peer-to-Peer Live Streaming System	7
<i>Laizhong Cui, Genghui Li, Xianghua Fu, and Nan Lu</i>	
A Cluster-Based Hybrid Access Strategy Using Non-cooperative Game Theory for Ultra-dense HetNet	14
<i>Yang Sun, Yongyu Chang, Mengshi Hu, and Bin Wang</i>	

HPCC CCC 2: Cloud and Cluster Computing

Modeling for CPU-Intensive Applications in Cloud Computing	20
<i>Junjie Peng, Yongchuan Dai, Yi Rao, Xiaofei Zhi, and Meikang Qiu</i>	
A Cost and Contention Conscious Scheduling for Recovery in Cloud Environment	26
<i>Pham Phuoc Hung and Eui-Nam Huh</i>	
Customer Churn Aware Resource Allocation and Virtual Machine Placement in Cloud	32
<i>Qiyuan Yang, Xiaoyu Li, and Suman Kumar</i>	

HPCC CCC 3: Cloud and Cluster Computing

RaHeC: A Mechanism of Resource Management for Heterogeneous Clouds	40
<i>Wenyun Dai, Haopeng Chen, and Wenting Wang</i>	
A Head Record Cache Structure to Improve the Operations on Big Files in Cloud Storage Servers	46
<i>Yuechen Tao, Hongjun Dai, Bingyong Sun, Shulin Zhao, Meikang Qiu, and Zhilou Yu</i>	
Critical Node Detection Problem Solving on GPU and in the Cloud	52
<i>Cholpon Degenbaeva and Matthias Klusch</i>	
Predicting Scheduling Failures in the Cloud: A Case Study with Google Clusters and Hadoop on Amazon EMR	58
<i>Mbarka Soualhia, Foutse Khomh, and Sofiène Tahar</i>	

HPCC PEM 1: Performance Evaluation and Measurement

Performance and Power Analysis of High-Density Multi-GPGPU Architectures: A Preliminary Case Study	66
<i>Yuxiang Gao, Saeed Iqbal, Peng Zhang, and Meikang Qiu</i>	
Rethinking Prefetching in GPGPUs: Exploiting Unique Opportunities	72
<i>Ahmad Lashgar and Amirali Baniasadi</i>	
Autotuning GPU-Accelerated QAP Solvers for Power and Performance	78
<i>Abhilash Chaparala, Clara Novoa, and Apan Qasem</i>	
Agent-Based High-Performance Simulation of Biological Systems on the GPU	84
<i>Savas Konur, Mariam Kiran, Marian Gheorghe, Mark Burkitt, and Florentin Ipate</i>	

HPCC BDIA 1: Big Data Infrastructure and Applications

Efficiently Trigger Data Races through Speculative Execution	90
<i>Zhendong Wu, Kai Lu, and Xiaoping Wang</i>	
Node Scaling Scheduling of Real-Time Tasks in a Power-Aware Datacenter	96
<i>Fei Teng, Lei Yu, and Tianrui Li</i>	
MDDM: A Method to Improve Multiple Dimension Data Management Performance in HBase	102
<i>Zhuang Wei, Qu JunMei, Liu Liang, Zhu ChaoQiang, and Yin WenJun</i>	

RALD: Reliable Transactional Software Controller for Redundancy Array of Log Structured Disks	110
<i>Zhenyuan Sun, Mingyang Guo, Huanqing Dong, Yunqiu Liu, Zhenjun Liu, and Lu Xu</i>	

HPCC BDIA 2: Big Data Infrastructure and Applications

An Efficient Data Selection Policy for Search Engine Cache Management	122
<i>Xinhua Dong, Ruixuan Li, Heng He, Xiwu Gu, Mudar Sarem, Meikang Qiu, and Keqin Li</i>	
Exploiting Spatial Smoothness in HPC Applications to Detect Silent Data Corruption	128
<i>Leonardo Bautista-Gomez and Franck Cappello</i>	
Maximizing Data Credibility Under Budget Constraint for Participatory Sensing	134
<i>Hui Gao, Chi Harold Liu, Wendong Wang, Zhengguo Sheng, Alvin Chin, and Ye Tian</i>	
Hybrid Storage Throughput Allocation Among Multiple Clients in Heterogeneous Data Center	140
<i>Zhisheng Huo, Limin Xiao, Qiaoling Zhong, Shupan Li, Ang Li, Li Ruan, Kelong Liu, Yuanyuan Zang, Pei Wang, and Zheqi Lu</i>	

HPCC PDC 1: Parallel and Distributed Computing

VarFS: A Variable-sized Objects Based Distributed File System	148
<i>Yili Gong, Yanyan Xu, Yingchun Lei, and Wenjie Wang</i>	
Distributed Discord Discovery: Spark Based Anomaly Detection in Time Series	154
<i>Yafei Wu, Yongxin Zhu, Tian Huang, Xinyang Li, Xinyi Liu, and Mengyun Liu</i>	
WHOBBS: An Object-Based Distributed Hybrid Storage Providing Block Storage for Virtual Machines	160
<i>Shen Lingxuan, Haopeng Chen, Sixiang Ma, Zhenwei Du, and Fei Hu</i>	
Performance Prediction for Apache Spark Platform	166
<i>Kewen Wang and Mohammad Maifi Hasan Khan</i>	

HPCC PDC 2: Parallel and Distributed Computing

Contention-Free Fair Queuing for High-Speed Storage with RAID-0 Architecture	174
<i>Myung Hyun Jo and Won Woo Ro</i>	
Delay Performance of Direct Reads in Distributed Storage Systems with Coding	184
<i>Qiqi Shuai and Victor O. K. Li</i>	
SAUD: Semantics-Aware and Utility-Driven Deduplication Framework for Primary Storage	190
<i>Yan Tang, Jianwei Yin, and Wei Lo</i>	
GA Based Placement Optimization for Hybrid Distributed Storage	198
<i>Yizi Wu and Youtao Zhang</i>	

HPCC PDC 3: Parallel and Distributed Computing

Research of Massive Small Files Reading Optimization Based on Parallel Network File System	204
<i>Yang Hongzhang, Junwei Zhang, Xiangchao Zeng, Huanqing Dong, and Lu Xu</i>	
Optimal Performance Prediction of ADAS Algorithms on Embedded Parallel Architectures	213
<i>Romain Saussard, Boubker Bouzid, Marius Vasiliu, and Roger Reynaud</i>	
A Parallel Algorithm for Statistical Multiword Term Extraction from Very Large Corpora	219
<i>Carlos Gonçalves, Joaquim F. Silva, and Jose C. Cunha</i>	
Vertex-centric Parallel Algorithms for Identifying Key Vertices in Large-Scale Graphs	225
<i>Bo Li, Zhuangliang Gao, Jianwei Niu, YanFei Lv, and Hong Zhang</i>	

HPCC PDC 4: Parallel and Distributed Computing

A Parallelizing Matlab Compiler Framework and Run Time for Heterogeneous Systems	232
<i>Sam Skalicky, Sonia Lopez, Marcin Lukowiak, and Andrew G. Schmidt</i>	
Application Modeling for Scalable Simulation of Massively Parallel Systems	238
<i>Eric Anger, Damian Dechev, Gilbert Hendry, Jeremiah Wilke, and Sudhakar Yalamanchili</i>	
Distributed and Real-Time Query Framework for Processing Participatory Sensing Data Streams	248
<i>Chi Harold Liu, Zhen Zhang, Yue Huang, and Kin K. Leung</i>	
GPrege: A GPU-Based Parallel Graph Processing Model	254
<i>Siyan Lai, Guangda Lai, Guojun Shen, Jing Jin, and Xiaola Lin</i>	

HPCC EES 1: Emerging Embedded Systems

On the Design of High-Performance and Energy-Efficient Probabilistic Self-Timed Systems	260
<i>Edwin H.-M. Sha, Weiwen Jiang, Qingfeng Zhuge, Lei Yang, and Xianzhang Chen</i>	
Buffer Filter: A Last-Level Cache Management Policy for CPU-GPGPU Heterogeneous System	266
<i>Songyuan Li, Jinglei Meng, Licheng Yu, Jianliang Ma, Tianzhou Chen, and Minghui Wu</i>	
Equidistant Memory Access Coalescing on GPGPU	272
<i>Yulong Pei, Licheng Yu, Minghui Wu, and Tianzhou Chen</i>	
A Novel Fast Approach for Convolutional Networks with Small Filters Based on GPU	278
<i>Wenbin Jiang, Yiming Chen, Hai Jin, Bin Luo, and Ye Chi</i>	

HPCC EES 2: Emerging Embedded Systems

AIMR: An Adaptive Page Management Policy for Hybrid Memory Architecture with NVM and DRAM	284
<i>Zhiwen Sun, Zhiping Jia, Xiaojun Cai, Zhiyong Zhang, and Lei Ju</i>	

Minimizing Update Bits of NVM-Based Main Memory Using Bit Flipping and Cyclic Shifting	290
--	-----

Wei Dong, Xin Li, Yanbin Li, Meikang Qiu, Lei Dou, Lei Ju, and Zhiping Jia

A Novel Memory Block Management Scheme for PCM Using WOM-Code	296
---	-----

Kun Ling, Lei Ju, Xiaojun Cai, and Zhiping Jia

Addressing Memory Wall Problem of Graph Computation in Reconfigurable System	302
--	-----

Xu Wang, Linan Huang, Yongxin Zhu, Yipeng Zhou, Huwan Peng, and Haifei Xiong

HPCC EES 3: Emerging Embedded Systems

A Dynamic Contention-aware Application Allocation Algorithm for Many-core Processor	308
---	-----

Chang Wang, Yongxin Zhu, Jiang Jiang, Xu Liu, and Xing Han

Fast Convolution Operations on Many-Core Architectures	316
--	-----

Shigang Li, Yunquan Zhang, Chunyang Xiang, and Lei Shi

Exploring Predictable Redundant Instruction Parallelism in Fault Tolerant

Microprocessors	324
-----------------------	-----

Hongjun Dai, Chao Yan, Bin Gong, Zhun Yang, and Tianzhou Chen

Communication-Avoiding Seismic Numerical Kernels on Multicore Processors	330
--	-----

Fabrice Dupros, Faiza Boulahya, Hideo Auchi, and Philippe Thierry

HPCC SEC 1: Scientific and Engineering Computing

Auditing and Revocation Enabled Role-Based Access Control over Outsourced Private

EHRs	336
------------	-----

Weiran Liu, Xiao Liu, Jianwei Liu, Qianhong Wu, Jun Zhang, and Yan Li

SFDC: File Access Pattern Aware Cache Framework for High-performance Computer	342
---	-----

Wenrui Dong, Guangming Liu, Jie Yu, Wei Hu, and Xin Liu

Cross-Domain Sentiment Analysis of Product Reviews by Combining Lexicon-Based

and Learn-Based Techniques	351
----------------------------------	-----

Kaili Mao, Jianwei Niu, Xuejiao Wang, Lei Wang, and Meikang Qiu

Request Squeezers: Mitigating Tail Latency through Pruned Request Replication	357
---	-----

Zuowei Zhang, Hailong Yang, Zhongzhi Luan, and Depei Qian

HPCC SEC 2: Scientific and Engineering Computing

Semantic Process Mining Towards Discovery and Enhancement of Learning Model

Analysis	363
----------------	-----

Kingsley Okoye, Abdel Rahman H. Tawil, Usman Naeem, and Elyes Lamine

Tracking Many Solution Paths of a Polynomial Homotopy on a Graphics Processing
--

Unit in Double Double and Quad Double Arithmetic	371
--	-----

Jan Verschelde and Xiangcheng Yu

Binarization-Based Human Detection with Hardware Reconfigurability	377
--	-----

Yibin Li, Zhiping Jia, and Shuai Xie

Maximizing Hardware Prefetch Effectiveness with Machine Learning	383
<i>Saami Rahman, Martin Burtscher, Ziliang Zong, and Apan Qasem</i>	

HPCC SEC 3: Scientific and Engineering Computing

A Stochastic Task Scheduling Algorithm Based on Importance-ratio of Makespan to Energy for Heterogeneous Parallel Systems	390
<i>Yuqing Yang, Xinqiao Lu, Hai Jin, and Xiaofei Liao</i>	
Heterogeneous Virtual Machine Consolidation Using an Improved Grouping Genetic Algorithm	397
<i>Quanwang Wu and Fuyuki Ishikawa</i>	
Compiling HPC Kernels for the REDEFINE CGRA	405
<i>Kavitha T. Madhu, Saptarsi Das, Nalesh S., S. K. Nandy, and Ranjani Narayan</i>	
Novel Routing Algorithm for Minimum on Delay with Process Variation and Congestion in Asynchronous NoC	411
<i>Rabab Ezz-Eldin, Magdy A. El-Moursy, and Hesham F. A. Hamed</i>	

HPCC SEC 4: Scientific and Engineering Computing

Improving Power Grid Monitoring Data Quality: An Efficient Machine Learning Framework for Missing Data Prediction	417
<i>Weiwei Shi, Yongxin Zhu, Jinkui Zhang, Xiang Tao, Gehao Sheng, Yong Lian, Guoxing Wang, and Yufeng Chen</i>	
Time-Dimension Communication Characterization of Representative Scientific Applications on Tianhe-2	423
<i>Wenhai Zhou, Juan Chen, Zhiyuan Wang, Xinhai Xu, Liyang Xu, and Yuhua Tang</i>	
Design and Architecture of Dell Acceleration Appliances for Database (DAAD): A Practical Approach with High Availability Guaranteed	430
<i>Kai Yu, Yuxiang Gao, Peng Zhang, and Meikang Qiu</i>	

HPCC SEC 5: Scientific and Engineering Computing

A Load-Distributed Linpack Implementation for Heterogeneous Clusters	436
<i>David Rohr and Volker Lindenstruth</i>	
MPI+ULT: Overlapping Communication and Computation with User-Level Threads	444
<i>Huiwei Lu, Sangmin Seo, and Pavan Balaji</i>	
How Small Can it Be?: The Design of a Cost-Effective Side-core for I/O Virtualization	455
<i>Chung Lee and Peter Strazdins</i>	

HPCC SEC 6: Scientific and Engineering Computing

A Fault-Tolerant Java Virtual Machine Using Fast Rejuvenation for Soft-Error-Prone Systems	463
<i>Qi Ao, Longbing Zhang, Shuai Chen, Jie Fu, and Bin Liao</i>	
Marriage Between Coordinated and Uncoordinated Checkpointing for the Exascale Era	470
<i>Omer Subasi, Ferad Zyulkyarov, Osman Unsal, and Jesus Labarta</i>	

TERN: A Self-Adjusting Thermal Model for Dynamic Resource Provisioning in Data Centers	479
--	-----

Yuanqi Chen, Mohammed I. Alghamdi, Xiao Qin, Jifu Zhang, Minghua Jiang, and Meikang Qiu

Querying Large and Expressive Biomedical Ontologies	491
---	-----

Zhenzhen Gu and Songmao Zhang

HPCC MCCN 1: Mobile Computing and Communication Networks

SwapBench: The Easy Way to Demystify Swapping in Mobile Systems	497
---	-----

Xiao Zhu, Duo Liu, Liang Liang, Kan Zhong, Meikang Qiu, and Edwin H.-M. Sha

DWDP: A Double Warning Thresholds with Double Preemptive Scheduling Scheme for Wireless Rechargeable Sensor Networks	503
--	-----

Chi Lin, Bingbing Xue, Zhiyuan Wang, Ding Han, Jing Deng, and Guowei Wu

On Resource Scheduling of Wireless Converged Broadcasting and Cellular Networks with Popular Services Being Preferentially Delivered	509
--	-----

Jian Xiong, Meikang Qiu, Lin Gui, and Xia Li

Static Node Center Hexagonal Deployment in Hybrid Crowd Sensing	515
---	-----

Shuang Ding, Xin He, Jicheng Wang, Wenyun Dai, and Xilong Wang

HPCC MCCN 2: Mobile Computing and Communication Networks

Minimizing Energy Consumption with a CloneAnt-Based Routing Algorithm for Communication Network	521
---	-----

Yanqing Gao, Hua Wang, Runshui Zhu, Shanwen Yi, Chuangen Gao, and Fuqiang Huang

A Space-Efficient Parallel Algorithm for Counting Exact Triangles in Massive Networks	527
---	-----

Shaikh Arifuzzaman, Maleq Khan, and Madhav Marathe

Towards High-Performance Network Processing in Virtualized Environments	535
---	-----

Victor Moreno, Rafael Leira, Ivan Gonzalez, and Francisco J. Gomez-Arribas

Adaptive Assignment for Quality-Aware Mobile Sensing Network with Strategic Users	541
---	-----

Ning An, Rui Wang, Zhongzhi Luan, Depei Qian, Jihong Cai, and Han Zhang

HPCC OAA 1: Optimization Algorithms and Architectures

Cost Minimization for Heterogeneous Systems with Gaussian Distribution Execution Time	547
---	-----

Meikang Qiu, Yunjiang Jiang, and Wenyun Dai

Optimization for Communication Energy Efficiency of Air-Based Information Network While Satisfying Timing Constraints	553
---	-----

Xiao Liu, Meikang Qiu, Xiaodong Wang, Weiran Liu, and Jun Zhang

Parallel Dynamic Step Size Sphere-Gap Transferring Algorithm for Solving Conditional Nonlinear Optimal Perturbation	559
---	-----

Shijin Yuan, Jinghao Yan, Bin Mu, and Hongyu Li

Porting and Optimizing SOAP2 on Loongson Architecture	566
---	-----

Qiuming Luo, Guoqiang Liu, Zhong Ming, and Feng Xiao

HPCC OAA 2: Optimization Algorithms and Architectures

Traffic-Aware Application Mapping for Network-on-Chip Based Multiprocessor System-on-Chip	571
<i>Lei Yang, Weichen Liu, Weiwen Jiang, Wei Zhang, Mengquan Li, Juan Yi, Duo Liu, and Edwin H.-M. Sha</i>	
Optimizing Tasks Assignment on Heterogeneous Multi-core Real-Time Systems with Minimum Energy	577
<i>Ying Li, Jianwei Niu, Meikang Qiu, and Xiang Long</i>	
JolokiaC++: Optimizing Irregular Accesses for GPGPU	583
<i>Vibha Patel, Sanjeev Aggarwal, and Amey Karkare</i>	
Optimized Password Recovery for Encrypted RAR on GPUs	591
<i>Xiaojing An, Haipeng Jia, and Yunquan Zhang</i>	

HPCC WSSD 1: Web Service and Software Development

Fast Numerical Evaluation for Symbolic Expressions in Java	599
<i>Yueming Liu, Peng Zhang, and Meikang Qiu</i>	
SiNUCA: A Validated Micro-Architecture Simulator	605
<i>Marco Antonio Zanata Alves, Carlos Villavieja, Matthias Diener, Francis Birck Moreira, and Philippe Olivier Alexandre Navaux</i>	
Simulated Annealing to Generate Numerically Stable Real Number Error Correction Codes	611
<i>Teresa Davies, Xin Liang, Jieyang Chen, and Zizhong Chen</i>	
Low-Power Sensor Polling for Context-Aware Services on Smartphones	617
<i>Jihe Wang, Meikang Qiu, Bing Guo, Yan Shen, and Qiang Li</i>	

HPCC WSSD 2: Web Service and Software Development

SLA-Aware Energy-Efficient Scheduling Scheme for Hadoop YARN	623
<i>Ping Li, Lei Ju, Zhiping Jia, and Zhiwen Sun</i>	
Inferring Information Propagation over Online Social Networks: Edge Asymmetry and Flow Tendency	629
<i>Jianwei Niu, Danning Wang, Chao Tong, and Meikang Qiu</i>	
Discovering Event Evolution Chain in Microblog	635
<i>Zhongyu Lu, Weiren Yu, Richong Zhang, Jianxin Li, and Hua Wei</i>	
A New Matching Structure and Interval Division on Content Based Publish/Subscribe System	641
<i>Baojun Qiao, Ning Jiang, Zhipeng Wang, and Fangfang Gao</i>	

HPCC Invited Paper CCNT 1: Cloud Computing and Networking Techniques

User-Controlled Security Mechanism in Data-Centric Clouds	647
<i>Qin Liu, Guojun Wang, Jie Wu, and Wei Chang</i>	
Symbiot: Congestion-Driven Multi-resource Fairness for Multi-user Sensor Networks	654
<i>Yad Tahir, Shusen Yang, Usman Adeel, and Julie McCann</i>	
Time-Sensitive Virtual Machines Provisioning and Resource Allocation in Clouds	660
<i>Rehana Begam and Dakai Zhu</i>	
Cost-Efficient Heterogeneous Data Transmission in Software Defined Vehicular Networks	666
<i>Zongjian He, Daqiang Zhang, and Junbin Liang</i>	

HPCC Invited Paper EST 1: Embedded System Techniques

Optimizing Emerging Storage Primitives with Virtualization for Flash Memory Storage Systems	672
<i>Yi Wang, Lisha Dong, and Zhong Ming</i>	
HcDD: The Hybrid Combination of Disk Drives in Active Storage Systems	678
<i>Shu Yin, Zhiyang Ding, Xiaojun Ruan, Xiaomin Zhu, Zhuo Tang, Kenili Li, and Xiao Qin</i>	
Time-Triggered Mixed-Critical Scheduler on Single and Multi-processor Platforms	684
<i>Dario Socci, Peter Poplavko, Saddek Bensalem, and Marius Bozga</i>	
An Efficient Technique for Chip Temperature Optimization of Multiprocessor Systems in the Dark Silicon Era	688
<i>Mengquan Li, Juan Yi, Weichen Liu, Wei Zhang, Lei Yang, and Edwin H.-M. Sha</i>	

HPCC Invited Paper EST 2: Embedded System Techniques

A Data-Oriented Method for Scheduling Dependent Tasks on High-Density Multi-GPU Systems	694
<i>Peng Zhang, Yuxiang Gao, and Meikang Qiu</i>	
Detecting Fault Injection Attacks on Embedded Real-Time Applications: A System-Level Perspective	700
<i>Liang Wen, Wei Jiang, Ke Jiang, Xia Zhang, Xiong Pan, and Keran Zhou</i>	
Impact of Partitioning Cache Schemes on the Cache Hierarchy of SMT Processors	706
<i>Samantha Kenyon, Sonia López Alarcon, and Julio Sahuquillo</i>	
Gregarious Data Re-structuring in a Many Core Architecture	712
<i>Sunil Shrestha, Joseph Manzano, Andres Marquez, Stephane Zuckerman, Shuaiwen Song, and Guang R. Gao</i>	

HPCC Invited Paper EAA 1: Engineering Architectures and Algorithms

A Framework for Learning Based DVFS Technique Selection and Frequency Scaling for Multi-core Real-Time Systems	721
<i>Fakhruddin Muhammad Mahbub ul Islam and Man Lin</i>	
A Hierarchical Resource Allocation Game for Heterogeneous Networks with Relays	727
<i>Liang Liang, Gang Feng, Wen Wang, Yujian Jia, and Duo Liu</i>	
Emergency Vehicle Signalling Using VANETS	734
<i>Vandana Jayaraj and Hemanth. C.</i>	
A Resource Supply-Demand based Approach for Automatic MapReduce Job Optimization	740
<i>Jinjun Xiong, Dzung T. Phan, and David Kung</i>	

HPCC Invited Paper EAA 2: Engineering Architectures and Algorithms

SmartBackup: An Efficient and Reliable Backup Strategy for Solid State Drives with Backup Capacitors	746
<i>Min Huang, Yi Wang, Liyan Qiao, Duo Liu, and Zili Shao</i>	
Electronic Health Record Error Prevention Approach Using Ontology in Big Data	752
<i>Keke Gai, Meikang Qiu, Li-Chiou Chen, and Meiqin Liu</i>	
The Potential of the Intel (R) Xeon Phi for Supervised Deep Learning	758
<i>André Viebke and Sabri Pllana</i>	
Bandwidth-Aware Energy Efficient Routing with SDN in Data Center Networks	766
<i>Guan Xu, Bin Dai, Benxiong Huang, and Jun Yang</i>	

HPCC Short Paper CCN 1: Cloud Computing and Networks

Cluster Scheduler on Heterogeneous Cloud	772
<i>Xiao Ling, Jiahai Yang, Dan Wang, and Ye Wang</i>	
Trust Assurance in Cloud Services with the Cloud Broker Architecture for Dependability	778
<i>Wiem Abderrahim and Zied Choukair</i>	
Research on Campus Mobile Model Based on Periodic Purpose for Opportunistic Network	782
<i>Xin He, Chunxi Wang, Tianxu Liu, Keke Gai, Dehong Chen, and Lin Bai</i>	
Agent and Spatial Based Parallelization of Biological Network Motif Search	786
<i>Matthew Kipps, Wooyoung Kim, and Munehiro Fukuda</i>	
Run Time Approximation of Non-blocking Service Rates for Streaming Systems	792
<i>Jonathan Curtis Beard and Roger Dean Chamberlain</i>	

HPCC Short Paper CCN 2: Cloud Computing and Networks

An Improved Hybrid Time Synchronization Approach in Wireless Sensor Networks for Smart Grid Application	798
<i>Fen Li, Guanghui He, and Xu Wang</i>	
NV-CFS: NVRAM-Assisted Scheduling Optimization for Virtualized Mobile Systems	802
<i>Dan Zhang, Duo Liu, Liang Liang, Lei Yao, Kan Zhong, and Zili Shao</i>	
A High Level Framework to Develop and Run E-science Applications on Cloud Infrastructures	806
<i>Nabil Abdennadher and Mohamed Ben Belgacem</i>	
Towards Optimal Task Distribution on Computer Clusters with Intel MIC Coprocessors	811
<i>Chenggang Lai, Miaoqing Huang, and Genlang Chen</i>	
Mining Relations between Courses and Research Directions from Educational Data	815
<i>Xiaopeng Gao, Shuai Ruan, Xuejiao Wang, and Shufan Ji</i>	

HPCC Short Paper ESEC 1: Embedded Systems and Engineering Computing

Having Memory Storage Under Control of a File System	819
<i>Shuichi Oikawa</i>	
Using Artificial Neural Network for Predicting Thread Partitioning in Speculative Multithreading	823
<i>Yuxiang Li, Yinliang Zhao, and Huan Gao</i>	
GPU-Memory Coordinated Energy Saving Approach Based on Extreme Learning Machine	827
<i>Junke Li, Bing Guo, Yan Shen, Deguang Li, Jihe Wang, Yanhui Huang, and Qiang Li</i>	
TLC-FTL: Workload-Aware Flash Translation Layer for TLC/SLC Dual-Mode Flash Memory in Embedded Systems	831
<i>Lei Yao, Duo Liu, Kan Zhong, Linbo Long, and Zili Shao</i>	
Shared Write Buffer to Support Data Sharing Among Speculative Multi-threading Cores	835
<i>John Ye, Songyuan Li, and Tianzhou Chen</i>	

HPCC Short Paper ESEC 2: Embedded Systems and Engineering Computing

Real-Time Memory Controller for Embedded Multi-core System	839
<i>Ahmed S. S. Mohamed, Ali A. El-Moursy, and Hossam A. H. Fahmy</i>	
Deploying OpenMP Task Parallelism on Multicore Embedded Systems with MCA Task APIs	843
<i>Peng Sun, Sunita Chandrasekaran, Suyang Zhu, and Barbara Chapman</i>	
FPGA Design and Implementation for Real-Time Electromagnetic Transient Simulation System	848
<i>Xing Zhou, Guanghui He, and Xiaoxin Zhou</i>	
Game Based Resource Allocation Scheme for Dynamic Environments	852
<i>Youngjae Park and Sungwook Kim</i>	

Preventing Access to Residual Data Exposed by Packet Expansion Operations	855
<i>Ralph Duncan, Kenneth Ross, Jim Frandein, and Alfredo Chorro-Rivas</i>	

HPCC Short Paper ESEC 3: Embedded Systems and Engineering Computing

Flexible Linear Algebra Development and Scheduling with Cholesky Factorization	861
<i>Azzam Haidar, Asim YarKhan, Chongxiao Cao, Piotr Luszczek, Stanimire Tomov, and Jack Dongarra</i>	
Vector Folding: Improving Stencil Performance via Multi-dimensional SIMD-vector Representation	865
<i>Charles Yount</i>	
Realistic Task Parallelization of the H.264 Decoding Algorithm for Multiprocessors	871
<i>Xiaohao Lin, Weichen Liu, Chunming Xiao, Jie Dai, Xianlu Luo, Dan Zhang, Duo Liu, Kaijie Wu, Qingfeng Zhuge, and Edwin H.-M. Sha</i>	
A General Space-filling Curve Algorithm for Partitioning 2D Meshes	875
<i>Aparna Sasidharan, John M. Dennis, and Marc Snir</i>	

HPCC Short Paper PDAA 1: Parallel and Distributed Architecture and Algorithm

User Satisfaction Based Dynamic Priority Assignment Algorithm for Internet of Things	880
<i>Gai Wang and Yongyan Wang</i>	
LiveIndex: A Distributed Online Index System for Temporal Microblog Data	884
<i>Haifei Huang, Jianxin Li, Richong Zhang, Weiren Yu, and Wuyang Ju</i>	
A Grid-Based k-Nearest Neighbor Join for Large Scale Datasets on MapReduce	888
<i>Miyoung Jang, Young-Sung Shin, and Jae-Woo Chang</i>	
A Parallel Framework for Object Detection and Recognition for Secure Vehicle Parking	892
<i>Zahid Mahmood, Muhammad Usman Shahid Khan, Muhammad Jawad, Samee U. Khan, and Laurence T. Yang</i>	
A Distributed Graph Data Storage and Computing Framework	896
<i>Wei Zhou, Yun Gao, Jizhong Han, Yinliang Yue, and Zhiyong Xu</i>	

HPCC Short Paper PAM 1: Performance Analysis and Measures

Hardware Thread-Level Speculation Performance Analysis	900
<i>Ying-Chieh Wang, I-Hsin Chung, Che-Rung Lee, Michael Perrone, and Yeh-Ching Chung</i>	
Performance Evaluation of Heterogeneous Servers Allocation Disciplines in Networks with Retrials	904
<i>Nawel Gharbi, Leila Charabi, and Lynda Mokdad</i>	
Performance Improvement of Seismic Analysis in a Large Scale Interactive Visualization	908
<i>Hui Wang and Ping Lv</i>	
Performance Profiling of VMs on NUMA Multicore Platform by Inspecting the Uncore Data Flow	914
<i>Qiuming Luo, Feng Xiao, Yuanyuan Zhou, and Zhong Ming</i>	

HPCC Posters

Cognitive Radio Resource Management Scheme Based on Mechanism Design and Negotiation Approach	918
<i>Youngjae Park and Sungwook Kim</i>	
A Crowd Sourcing Service Model for Optimizing User-Desired Storage Resource Scheduling	920
<i>Huigui Rong, Jianfang Li, Bingguo Chang, and Fei Long</i>	
Optimized Inter-domain Communications Among Multiple Virtual Machines Based on Shared Memory	921
<i>Congfeng Jiang, Jian Wan, Hongyuan Wu, Wei Zhang, Jilin Zhang, Zujie Ren, and Zheng Ye</i>	
A Group Order-Preserving Encryption Scheme Based on Periodic Functions for Efficient Query Processing on Encrypted Data	923
<i>Hyunjo Lee, MunChol Choi, and Jae-Woo Chang</i>	
Towards Visualisation of Resilience Assessment for Large-Scale Systems	924
<i>Elena Troubitsyna and Linas Laibinis</i>	

IEEE International Conference on Embedded Software and Systems

ICESS EPM: Energy and Power Management

Power Management in Cluster-Based Energy-Harvesting Sensor Networks through Dynamic Modulation Scaling	925
<i>Maryam Bandari, Robert Simon, and Hakan Aydin</i>	
Sensor-Based Low Power Management for Mobile Platforms	934
<i>Douglas Lautner, Scott DeBates, Jagat Shah, Miao Song, and Shangping Ren</i>	
User Experience Enhanced Task Scheduling and Processor Frequency Scaling for Energy-Sensitive Mobile Devices	941
<i>Jie Dai, Weichen Liu, Xiaohao Lin, Yaoyao Ye, Chunming Xiao, Kaijie Wu, Qingfeng Zhuge, and Edwin H.-M. Sha</i>	
Improving Energy Efficiency and Thermal Comfort of Smart Buildings with HVAC Systems in the Presence of Sensor Faults	945
<i>Volkan Gunes, Steffen Peter, and Tony Givargis</i>	

ICESS MGS: Multicore and GPU Systems

Trio: A Triple Class On-chip Network Design for Efficient Multicore Processors	951
<i>Thomas Canhao Xu, Ville Leppänen, Pasi Liljeberg, Juha Plosila, and Hannu Tenhunen</i>	
Performance Modeling of Multithreaded Programs for Mobile Asymmetric Chip Multiprocessors	957
<i>Ryan W. Moore, Bruce R. Childers, and Jingling Xue</i>	
Automatic Parallelization of Simulink Models for Multi-core Architectures	964
<i>Cumhur Erkan Tuncali, Georgios Fainekos, and Yann-Hang Lee</i>	

Hardware-Based and Hybrid L1 Data Cache Bypassing to Improve GPU Performance	972
<i>Yijie Huangfu and Wei Zhang</i>	

ICESS RTS: Real-Time Systems

Formal Synthesis of Optimal RTOS	977
<i>Tigori Kabland Toussaint Gautier, Jean-Luc Béchennec, and Olivier Henri Roux</i>	
Use of Runtime Enforcement for the Test of Real-time Systems	984
<i>Louis-Marie Givel, Matthias Brun, Camille Constant, Sébastien Faucon, and Olivier H. Roux</i>	
Simulation-Driven Optimization of Real-Time Control Tasks	991
<i>Matteo Morelli, Yasmine Seddik, Marco Di Natale, Chokri Mraidha, and Sara Tucci-Piergiovanni</i>	
A Framework for Compositional Timing Analysis of Embedded Computer Systems	1001
<i>Rob Edman, Hazel Shackleton, John Shackleton, Tyler Smith, and Steve Vestal</i>	

ICESS WSS: Wireless and Sensor Systems

On-demand Indoor Location-Based Service Using Ad-hoc Wireless Positioning Network	1005
<i>Shigemi Ishida, Shigeaki Tagashira, Yutaka Arakawa, and Akira Fukuda</i>	
An Efficient Agent Location Management for Wireless Sensor Network	1014
<i>Hiroaki Fukuda and Paul Leger</i>	
A Framework for Real-Time Information Derivation from Big Sensor Data	1020
<i>Liehuo Chen and Kyoung-Don Kang</i>	
Adopting WirelessHART for In-vehicle-Networking	1027
<i>Zhuo Bi, Deji Chen, Cheng Wang, Changjun Jiang, and Ming Chen</i>	

ICESS ViA: Virtualization and Architecture

Virtual Machine Image Content Aware I/O Optimization for Mobile Virtualization	1031
<i>Renhai Chen, Yi Wang, Jingtong Hu, Duo Liu, Zili Shao, and Yong Guan</i>	
IOMPU: Spatial Separation for Hardware-Based I/O Virtualization for Mixed-Criticality	
Embedded Real-Time Systems Using Non-transparent Bridges	1037
<i>Daniel Muensch, Michael Paulitsch, and Andreas Herkersdorf</i>	
Adaptive Page Packing and Storing Method for PCM-Flash Hybrid Memory Structure	1045
<i>Su-Kyung Yoon, Young-Sun Youn, and Shin-Dug Kim</i>	
ClusterFetch: A Lightweight Prefetcher that Responds to Intensive Disk Read Patterns	1051
<i>Junhee Ryu, Haksu Jeong, Dongeun Lee, Heonshik Shin, and Kyungtae Kang</i>	

ICESS FoM: Formal Methods

Supporting Selective Formalism in CSP++ with Process-Specific Storage	1057
<i>William B. Gardner, Alicia Gumtie, and John D. Carter</i>	
Offline Analysis of Independent Guarded Assertions in Automotive Integration Testing	1066
<i>Guillermo Rodriguez-Navas, Avenir Kobetski, Daniel Sundmark, and Thomas Gustafsson</i>	

STATE—A SystemC to Timed Automata Transformation Engine	1074
---	------

Paula Herber, Marcel Pockrandt, and Sabine Glesner

Extraction of Kahn Process Networks from While Loops in Embedded Software	1078
---	------

*Miguel Angel Aguilar, Juan Fernando Eusse, Rainer Leupers, Gerd Ascheid,
and Maximilian Odendahl*

ICESS FTS: Fault Tolerance and Safety

Hypergraph-Cover Diversity for Maximally-Resilient Reconfigurable Systems	1086
---	------

Ahmad Alzahrani and Ronald F. DeMara

Using Rigorous Simulation to Support ISO 26262 Hazard Analysis and Risk	
---	--

Assessment	1093
------------------	------

Adam Duracz, Henrik Eriksson, Ferenc A. Bartha, Fei Xu, Yingfu Zeng, and Walid Taha

An Algebraic Framework for the Real-Time Solution of Inverse Problems on Embedded Systems	1097
--	------

Christoph Gugg, Matthew Harker, Paul O’Leary, and Gerhard Rath

ICESS DOP: Design and Optimization

Design-Space Reduction for Architectural Optimization of Automotive Embedded Systems	1103
---	------

Xinhai Zhang, Lei Feng, De-Jiu Chen, and Martin Törngren

Comparative Evaluation of Timing Model Extraction Methodologies at EAST-ADL Design Level	1110
---	------

Alessio Bucaioni, Saad Mubeen, Federico Ciccozzi, Antonio Cicchetti, and Mikael Sjödin

A Drift Detecting Anti-Divergent EKF for Online Biodynamic Model Identification	1116
---	------

James L. Coyte, Haiping Du, David Stirling, and Montserrat Ros

A Non-intrusive, Platform-Independent Capture/Replay Test Automation System	1122
---	------

Yung-Pin Cheng, Jen Wei Kuo, Ben Cheng, and Chia Hung Kuo

ICESS AHT: Ad Hoc Topics

Design and Evaluation of a Low-Latency AVB Ethernet Endpoint Based on ARM SoC	1128
---	------

Christian Herber, Ammar Saeed, and Andreas Herkersdorf

Control of Acoustic Signal Processing in Physiological Experiments Using PSoCs	1135
--	------

Qingshan Shan, David Bullock, Alan R. Palmer, and Trevor M. Shackleton

Crosstalk-Aware Mapping for Tile-Based Optical Network-on-Chip	1139
--	------

Edoardo Fusella and Alessandro Cilardo

XGRID: A Scalable Many-Core Embedded Processor	1143
--	------

Volkan Gunes and Tony Givargis

ICESS 10

Gateway Modeling and Response Time Analysis on CAN Clusters of Automobiles	1147
<i>Guoqi Xie, Gang Zeng, Ryo Kurachi, Hiroaki Takada, and Renfa Li</i>	
Evaluation of Memory Access Arbitration Algorithm on Tilera's TILEPro64 Platform	1154
<i>Mayank Shekhar, Harini Ramaprasad, and Frank Mueller</i>	
Use Two-Level Rejuvenation to Combat Software Aging and Maximize Average Resource Performance	1160
<i>Chunhui Guo, Hao Wu, Xiayu Hua, Douglas Lautner, and Shangping Ren</i>	
Bitvector: Fault Tolerant Aggregation Scheme for Monitoring in Nuclear Power Plants	1166
<i>Wenchen Wang, Daniel Mossé, and Daniel G. Cole</i>	

ICESS 11

Hybrid Apps: Apps for the Internet of Things	1175
<i>Daniel Yunge, Philipp Kindt, Michael Balszun, and Samarjit Chakraborty</i>	
Customizable Heterogeneous Acceleration for Tomorrow's High-Performance Computing	1181
<i>Alessandro Cilardo, José Flich, Mirko Gagliardi, and Rafael T. Gavila</i>	
Process Control over Real-Time Wireless Sensor and Actuator Networks	1186
<i>Terry Blevins, Deji Chen, Song Han, Mark Nixon, and Willy Wojsznis</i>	
Fast and Accurate Workload Characterization Using Locality Sensitive Hashing	1192
<i>Mohammad Shahedul Islam, Matt Gibson, and Abdullah Muzahid</i>	

IEEE International Symposium on Cyberspace Safety and Security

CSS DSCS: Distributed Systems and Cloud Security

Distributed Enforcement of Sticky Policies with Flexible Trust	1202
<i>Jordan Brown and Douglas M. Blough</i>	
A Decentralized Framework for Geolocation-Based Pre-Incident Network Forensics	1210
<i>Robert Koch, Mario Golling, Lars Stiemert, Volker Eiseler, Frank Tietze, and Gabi Dreß Rodosek</i>	
Cyber-Investment and Cyber-Information Exchange Decision Modeling	1219
<i>Deepak K. Tosh, Matthew Molloy, Shamik Sengupta, Charles A. Kamhoua, and Kevin A. Kwiat</i>	
Multi Seed Authentication Using S/Key Scheme	1225
<i>Nader Nassar and Li-Chiou Chen</i>	

CSS ADTS: Active Defense Techniques and Systems

Virtual Keyboard Logging Counter-Measures Using Human Vision Properties	1230
<i>Christophe Bacara, Valentin Lefils, Julien Iguchi-Cartigny, Gilles Grimaud, and Jean-Philippe Wary</i>	
Performance of Adaptive Beam Nulling in Multihop Ad-Hoc Networks under Jamming	1236
<i>Suman Bhunia, Vahid Behzadan, Paulo Alexandre Regis, and Shamik Sengupta</i>	
Dynamic State Estimation and Anomaly Detection in Smart Grid Using Point-Based Gaussian Approximation Filtering	1242
<i>Ziyu Guo, Shang Li, Xiaodong Wang, and Wei Heng</i>	
Impact of Signaling Storms on Energy Consumption and Latency of LTE User Equipment	1248
<i>Frederic Francois, Omer H. Abdelrahman, and Erol Gelenbe</i>	
ADS-B, Friend or Foe: ADS-B Message Authentication for NextGen Aircraft	1256
<i>Emily Cook</i>	

CSS INF: Internet and Network Forensic

Evaluating Sybil Attacks in P2P Infrastructures for Online Social Networks	1262
<i>Francisco de Asís López-Fuentes and Salvador Balleza-Gallegos</i>	
Privacy Pal: Improving Permission Safety Awareness of Third Party Applications in Online Social Networks	1268
<i>Rachel Tucker, Carl Tucker, and Jun Zheng</i>	
A Practical Method to Determine Achievable Rates for Secure Steganography	1274
<i>Lingyu Zhang, Diao Chen, Yun Cao, and Xianfeng Zhao</i>	
Prison: Tracking Process Interactions to Contain Malware	1282
<i>Benjamin Caillat, Bob Gilbert, Richard Kemmerer, Christopher Kruegel, and Giovanni Vigna</i>	
Online Detection of Spoof Fingers for Smartphone-Based Applications	1292
<i>Dongju Li, Hiroaki Kunieda, Supawan Kumpituck, and Tsuyoshi Isshiki</i>	

IEEE International Symposium on Big Data Security on Cloud

BigDataSecurity 1

An Improved Classifier Chain Algorithm for Multi-label Classification of Big Data Analysis	1298
<i>Zhilou Yu, Qiao Wang, Ying Fan, Hongjun Dai, and Meikang Qiu</i>	
Analysis on Urban Collective Call Behavior to Earthquake	1302
<i>Xiaoping Yu, Tao Pei, Keke Gai, and Li Guo</i>	
Identifying Sensitive Data Items within Hadoop	1308
<i>Ashwin Kumar TK, Hong Liu, Johnson P. Thomas, and Goutam Mylavarampu</i>	
An Empirical Study on Preprocessing High-Dimensional Class-Imbalanced Data for Classification	1314
<i>Hua Yin and Keke Gai</i>	

Digital Forensics in the Age of Big Data: Challenges, Approaches, and Opportunities	1320
<i>Shams Zawoad and Ragib Hasan</i>	

A Neural-Network Based DDoS Detection System Using Hadoop and HBase	1326
<i>Teng Zhao, Dan Chia-Tien Lo, and Kai Qian</i>	

BigDataSecurity 2

Proactive Attribute-based Secure Data Schema for Mobile Cloud in Financial Industry	1332
<i>Keke Gai, Meikang Qiu, Bhavani Thuraisingham, and Lixin Tao</i>	

Automated Detection and Analysis for Android Ransomware	1338
<i>Tianda Yang, Yu Yang, Kai Qian, Dan Chia-Tien Lo, Ying Qian, and Lixin Tao</i>	

A Framework for Privacy-Aware Computing on Hybrid Clouds with Mixed-Sensitivity Data	1344
<i>Xiangqiang Xu and Xinghui Zhao</i>	

Improving Encryption Performance Using MapReduce	1350
<i>Sanket Desai, Younghee Park, Jerry Gao, Sang-Yoon Chang, and Chungsik Song</i>	

TSC: Trustworthy and Scalable Cytometry	1356
<i>Mehdi Javanmard, Mohsen Amini Salehi, and Saman Zonouz</i>	

BigDataSecurity 3

Cloud Data Integrity Using a Designated Public Verifier	1361
<i>Syed Rizvi, Abdul Razaque, and Katie Cover</i>	

Analyzing Boundary Device Logs on the In-memory Platform	1367
<i>Feng Cheng, Andrey Sapegin, Marian Gawron, and Christoph Meinel</i>	

Preventing Leakages of Business Secrets from Encrypt Data Stored in the Cloud	1373
<i>Jie Liu</i>	

A Cloud Certificate Authority Architecture for Virtual Machines with Trusted Platform Module	1377
<i>Zhilou Yu, Qiao Wang, Weipin Zhang, and Hongjun Dai</i>	

Privacy-Preserving Data Linkage through Blind Geo-spatial Data Aggregation	1381
<i>Richard O. Sinnott, Prem Chhetri, Yikai Gong, Angus Macaulay, and William Voorsluys</i>	

Internet-Based Anti-Counterfeiting Pattern with Using Big Data in China	1387
<i>Hongyu Liang and Keke Gai</i>	

BigDataSecurity 4

Implementation of DNP Security in Distribution Automation System	1393
<i>Jin Cheol Kim, Jeong Su Cho, and Seung Won Lee</i>	

Simplified Approach for Representing Part-Whole Relations in OWL-DL Ontologies	1399
<i>A. Aziz Altowayan and Lixin Tao</i>	

Mitigating HTTP Flooding Attacks with Meta-data Analysis	1406
<i>Charles Tang, Andrew Tang, Edward Lee, and Lixin Tao</i>	

Novel Differential Schema for High Performance Big Data Telehealth Systems Using Pre-cache	1412
<i>Hui Zhao, Keke Gai, Jie Li, and Xin He</i>	
Quality Model of Cloud Service	1418
<i>Ping Zhou, Zhipeng Wang, Wenjing Li, and Ning Jiang</i>	
Authentication and Identification Methods Used in Keystroke Biometric Systems	1424
<i>Md Liakat Ali, Charles C. Tappert, Meikang Qiu, and John V. Monaco</i>	

BigDataSecurity 5

User-Level Side Channel Attack on Workflow System in Data-Center	1430
<i>Jihe Wang, Meikang Qiu, Bing Guo, Yan Shen, and Qiang Li</i>	
Real-Time Hybrid Intrusion Detection System Using Apache Storm	1436
<i>Goutam Mylavarapu, Johnson Thomas, and Ashwin Kumar TK</i>	
Continuous Monitoring and Assessment of Cybersecurity Risks in Large Computing Infrastructures	1442
<i>Malik Shahzad Kaleem Awan, Peter Burnap, Omer Rana, and Amir Javed</i>	
Evaluation and Simulation for Civil Aircraft Integrated Avionics Network Based on Multi-performance Indices	1448
<i>Bin Chen, Quanxin Cao, and Ruina Xu</i>	
Secure Proxy Service Using p-Fibonacci Transformation of Cosine Coefficients on Cloud File Sharing Environment	1454
<i>Paul Rad, Mohan Muppidi, Aldo S. Jaimes, Sos S. Agaian, and Mo Jamshidi</i>	

BigDataSecurity 6

Quality Model of Maintenance Service for Cloud Computing	1460
<i>Zhipeng Wang, Ning Jiang, and Ping Zhou</i>	
SMM Revolutions	1466
<i>William Augusto Rodrigues de Souza and Allan Tomlinson</i>	
Multi-thread Connection Based Scheduling Algorithm for Network on Chip	1473
<i>Jia Tian, Wei Hu, Chunqiang Li, Tianpei Li, and Wenjun Luo</i>	
A High-Level Scheme for an Ontology-Based Compliance Framework in Software Development	1479
<i>Ftemeh Zarabi Jorshari and Rahman H. Tawil</i>	

BigDataSecurity 7

Numerical Method and Its Application to Coupled System with Chemical Reaction, Fluid Flow and Heat Transfer: A Case Study of Shell-and-Tube Reactor	1488
<i>Ke Wu, Kai Zhu, Cheng Kang, Junshan Zhang, Xin Zhang, and Chi Zhang</i>	
Shared Write Buffer to Support Speculative Execution	1494
<i>John Ye, Hongjun Dai, Songyuan Li, and Tianzhou Chen</i>	

A Time Slices Based Novel DVS Algorithm for Embedded Systems	1500
<i>Lei Hu, Wei Hu, Ruomiao Li, Chunqiang Li, and Zhanyan Zhang</i>	
Access-Aware In-memory Data Cache Middleware for Relational Databases	1506
<i>Kun Ma and Bo Yang</i>	
MPOID: Multi-protocol Oriented Intrusion Detection Method for Wireless Sensor Networks	1512
<i>Qi Guo, Xiaohong Li, Zhiyong Feng, and Guangquan Xu</i>	
Adaptive Critic Design Based Control of Tunnel Ventilation System with Variable Jet Speed	1518
<i>Ke Wu, Qinmin Yang, Xin Zhang, Cheng Kang, Kai Zhu, Junshen Zhang, Chi Zhang, and Zhiyi Huang</i>	

BigDataSecurity 8

Evaluation Mechanism of Privacy Protection on Dynamic Data Targeted at Data Partition	1524
<i>Zhongmin Zhou, Yuliang Shi, Honglei Zhang, and Lizhen Cui</i>	
Mobile Medical Service System Based on Portable Devices	1530
<i>Junliang Lu, Wei Hu, Mengke Song, Xukuan Zhan, and Xiaoming Liu</i>	
The Application of Data Mining In Finance Industry Based on Big Data Background	1536
<i>Hong Zhang, Ying Li, Chuanhe Shen, Hongfeng Sun, and Yanchun Yang</i>	
Superframe Scheduling for Data Aggregation in WirelessHART Networks	1540
<i>Feng Li, Zhaopeng Zhang, Zhiping Jia, and Lei Ju</i>	
A Novel Critical Path Based Routing Method Based on for NOC	1546
<i>Chunqiang Li, Wei Hu, Puzhang Wang, Mengke Song, and Xinwei Cao</i>	

HPSC 1

An Efficient HPC Framework for Parallel Long-Time and Large-Scale Simulation of a Class of Anomalous Single-Phase Models	1552
<i>Ahmad Alyoubi and Mahadevan Ganesh</i>	
Optimization of Network Bandwidth Allocation in Xen	1558
<i>LiRong Mei and Xiang Lv</i>	
An Improved Localization Framework Based on Maximum Likelihood for Blind WSN Nodes	1567
<i>Chaochen Wang and Yongxin Zhu</i>	
Survey of BigData-as-a-Service Type	1573
<i>Yunkon Kim, Yong-Hyun Kim, Ga-Won Lee, and Eui-Nam Huh</i>	

HPSC 2

Simulation to ARM Processors Based on the Instruction's Eigenvalue	1579
<i>Fei Luo, Chunhua Gu, Bingyong Yan, Changhao Fan, and Shalin Huang</i>	

Fast Quadratic Discriminant Analysis Using GPGPU for Sea Ice Forecasting	1585
<i>Shadi Alawneh, Carl Howell, and Martin Richard</i>	
Reactive Routing Overhead in Mobile Ad-hoc Networks	1591
<i>Quang-My Tran, Arek Dadej, and Thu-Loan Pham</i>	
Millipedes: Distributed and Set-Based Sub-Task Scheduler of Computing Engines Running on Yarn Cluster	1597
<i>Kebing Wang, Zhaojuan Bian, and Qian Chen</i>	
Sustained Wide-Area TCP Memory Transfers over Dedicated Connections	1603
<i>Nageswara S. V. Rao, Don Towsley, Gayane Vardoyan, Bradley W. Settimyler, Ian T. Foster, and Raj Kettimuthu</i>	

HPSC 3

Cache Filter Method Based on DRAM Access Frequency to Improve System Performance	1607
<i>Nagi Mekhie</i>	
Multi-level Processing to Reduce Cost of Synchronization	1611
<i>Nagi Mekhie</i>	
Optimizing Non-contiguous Memory Access on Intel Xeon Phi Coprocessors	1615
<i>Mingfei Ma, Jinlong Hou, Jason Ye, Meena Arunachalam, and Rafael Gutierrez</i>	
Integrated Performance Evaluation Approach Based on an Advanced Traffic Modeling by Traffic Zones: A Case Study in Public Safety Network	1621
<i>Tuyatsetseg Badarch and Otgonbayar Bataach</i>	

HPSC 4

CUDA Grid-Level Task Progression Algorithms	1628
<i>Christos Kartsaklis, Wayne Joubert, Oscar R. Hernandez, Markus Eisenbach, Wael R. Elwasif, and David E. Bernholdt</i>	
Implementation of Short Read Alignment Algorithm in OpenCL on Xeon Phi Coprocessor	1633
<i>Xiquan Zhao, Chuang Liu, and Guangming Tan</i>	
The Myths of Coded Processing	1637
<i>Juergen Braun and Juergen Mottok</i>	
Topology-independent Software-Defined Edge Control for Scalable Ethernet DCN	1645
<i>Jianbiao Mao, Biao Han, Gaofeng Lv, Zhigang Sun, and Xicheng Lu</i>	
A Privacy Preserving Security Protocol-Based Application for Wireless Communication System	1651
<i>Ndibanje Bruce, Young-Sil Lee, Sang-Gon Lee, and Hoon-Jae Lee</i>	

HPSC 5

Towards Energy-Aware Placement of Real-Time Virtual Machines in a Cloud Data Center	1657
<i>Nima Khalilzad, Hamid Reza Faragardi, and Thomas Nolte</i>	
Task-D: A Task Based Programming Framework for Distributed System	1663
<i>Jiachen Xue, Chong Chen, Lin Ma, Teng Su, Chen Tian, Wenqin Zheng, and Ziang Hu</i>	
Vehicle Dynamics Effect on Energy Efficiency in Hybrid Electric Vehicles	1669
<i>Mihai-Ovidiu Nicolaica</i>	
Radio Dataset Exploration for Dissecting the Network Dysfunctions Due to Handover	1673
<i>Abderrahim Chariete, Oumaya Baala, and Alexandre Caminada</i>	
Improving CPU Service Offerings in Apache CloudStack	1679
<i>F. Gomez-Folgar, A. J. Garcia-Loureiro, and T. F. Pena</i>	
An Effective and Secure User Authentication and Key Agreement Scheme in m-Healthcare Systems	1685
<i>Young Sil Lee, Bruce Ndibanje, Esko Alasaarela, TaeYong Kim, and HoonJae Lee</i>	
Bot Detection via IoT Environment	1691
<i>Jae-geun Moon, Jae J. Jang, and Im Y. Jung</i>	

HPSC 6

A Flexible Cluster System for the Management of Virtual Clusters in the Cloud	1693
<i>F. Gomez-Folgar, G. Indalecio, A. J. Garcia-Loureiro, and T. F. Pena</i>	
Temperature, Voltage, and Aging Effects in Ring Oscillator Physical Unclonable Function	1699
<i>Muslim Mustapa and Mohammed Niamat</i>	
DEFIO: A Software Defined Storage Network Architecture in HPC Environments	1703
<i>Wei Shi, Gaofeng Lv, Zhigang Sun, and Zhenghu Gong</i>	
A Performance Prediction Model for Database Environments: A Preliminary Analysis	1707
<i>Jesus Flores-Contreras, Carlos Ruiz, Pablo Salazar, Hector A. Duran-Limon, Efren Mezura-Montes, Nicandro Cruz-Ramirez, and Héctor-Gabriel Acosta-Mesa</i>	
A Hybrid Cloud Infrastructure for Big Data Applications	1713
<i>Daniela Loretí and Anna Ciampolini</i>	
An FPGA Memory Hierarchy for High-level Synthesized OpenCL Kernels	1719
<i>Hsiang-Yu Tseng, Ssu-Ting Liu, and Sheng-De Wang</i>	

Smart Data 1: Big Data Learning

A Hybrid Method for Incomplete Data Imputation	1725
<i>Liang Zhao, Zhikui Chen, Zhennan Yang, and Yueming Hu</i>	
A Knowledge Resources Based Neural Network for Learning Word and Relation Representations	1731
<i>Shuhan Yuan, Yang Xiang, and Maozhen Li</i>	

An Improved Machine Learning Scheme for Data-Driven Fault Diagnosis of Power Grid Equipment	1737
---	------

Jinkui Zhang, Yongxin Zhu, Weiwei Shi, Gehao Sheng, and Yufeng Chen

Smart Data 2: Big Data Knowledge and Engineering (1)

A Logistic Distribution Routes Solving Strategy Based on the Physarum Network and Ant Colony Optimization Algorithm	1743
---	------

Qianguo Chen, Tao Qian, and Kui Liu

On Efficiency of Semantic Relation Extraction through Low-dimensional Distributed Representations for Substrings	1749
--	------

Zhan Jin, Chihiro Shibata, Jingtao Sun, and Kazuya Tago

BRDPHHC: A Balance RDF Data Partitioning Algorithm Based on Hybrid Hierarchical Clustering	1755
--	------

Yonglin Leng, Zhikui Chen, Fangming Zhong, and Hua Zhong

A Bayesian Treatment for Singular Value Decomposition	1761
---	------

Cheng Luo, Yang Xiang, Bo Zhang, and Qiang Fang

Smart Data 3: Big Data Knowledge and Engineering (2)

Multi-classes Imbalanced Dataset Classification Based on Sample Information	1768
---	------

Chuang Yu, Fengqi Li, Guangming Li, and Nanhui Yang

A Trust-Based User Assignment Scheme in Ad Hoc Social Networks	1774
--	------

Zhaolong Ning, Zhikui Chen, and Xiangjie Kong

Smart Data 4: Security and Privacy

ID-Based Deniable Threshold Ring Authentication	1779
---	------

Chunhua Jin, Chunxiang Xu, Linzhi Jiang, and Fagen Li

Analysis and Comparison of the Network Security Protocol with DoS/DDoS Attack

Resistance Performance	1785
------------------------------	------

Linzhi Jiang, Chunxiang Xu, Xiaofang Wang, and Yanghong Zhou

Privacy Preserving Back-Propagation Based on BGV on Cloud	1791
---	------

Fanyu Bu, Yu Ma, Zhikui Chen, and Han Xu

Inverse Clustering-Based Job Placement Method for Efficient Big Data Analysis	1796
---	------

Dong Zhang, Bing-Heng Yan, Zhen Feng, Kai-Yuan Qi, and Zhi-Yuan Su

Smart Data 5: Wireless and Social Networks

A Dynamic Cooperative Monitor Node Selection Algorithm in Wireless Mesh Networks	1800
--	------

Yao Yu, Zhaolong Ning, Qingyang Song, Lei Guo, and Hongyan Liu

A Novel Hybrid Routing Forwarding Algorithm in SDN Enabled Wireless Mesh Networks	1806
---	------

Yuhuai Peng, Lei Guo, QingXu Deng, Zhaolong Ning, and Lingbing Zhang

Design of Dynamic Traffic Grooming Algorithm in Software-Defined Wireless Mesh Networks	1812
<i>Yuhuai Peng, Qingxu Deng, Lei Guo, Zhaolong Ning, and Lingbing Zhang</i>	
Hierachic Topology Management by Decision Model and Smart Agents in Space Information Networks	1817
<i>Ning Ye, Rong Geng, Xiaoshi Song, Qunyang Wang, and Zhaolong Ning</i>	
A Novel Heterogeneous Scheduling Algorithm with Improved Task Priority	1826
<i>Guan Wang, He Guo, and Yuxin Wang</i>	

EMCA 1

Comparison of the Propagation Loss of a Real-Life Wireless Sensor Network and Its Complimentary Simulation Model	1832
<i>Gilbert E. Perez, Abdulaziz Alsayyari, and Ivica Kostanic</i>	
Design and Implementation of Warehouse Management System Based on RFID Technology	1838
<i>Minghu Zhang and Xin Yin</i>	
Efficient Parallel Muti-pattern Matching Using GPGPU Acceleration for Packet Filtering	1843
<i>Che-Lun Hung, Po-Chang Wu, Hsiao-Hsi Wang, and Chun-Yuan Lin</i>	

EMCA 2

Different Implementations of AES Cryptographic Algorithm	1848
<i>Guang-liang Guo, Quan Qian, and Rui Zhang</i>	
Constructing a Mobility and Acceleration Computing Platform with NVIDIA Jetson TK1	1854
<i>Min Su, Jianjun Tan, Chun-Yuan Lin, Jin Ye, Chung-Hung Wang, and Che-Lun Hung</i>	

M2A2 1

Evaluation of Hybrid Parallel Cell List Algorithms for Monte Carlo Simulation	1859
<i>Kamel Rushaidat, Loren Schwiebert, Brock Jackman, Jason Mick, and Jeffrey Potoff</i>	
HETS: Heterogeneous Edge and Task Scheduling Algorithm for Heterogeneous Computing Systems	1865
<i>Anum Masood, Ehsan Ullah Munir, M. Mustafa Rafique, and Samee Ullah Khan</i>	
Parallel BP Neural Network on Single-chip Cloud Computer	1871
<i>Boyang Li and Chen Liu</i>	
Using GPU and SIMD Implementations to Improve Performance of Robotic Emotional Processes	1876
<i>Abel Martinez, Carlos Dominguez, Houcine Hassan, Juan-Miguel Martínez, and Pedro López</i>	
AzureRender: A Cloud-Based Parallel and Distributed Rendering System	1881
<i>Zhenbang Liu and Hengming Zou</i>	

Author Index