# Table of Contents

**2011 11th IEEE International Conference on Computer and Information Technology**

**CIT 2011**

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>xiv</td>
</tr>
<tr>
<td>Message from the CIT 2011 General Chair</td>
<td>xv</td>
</tr>
<tr>
<td>Message from the CIT-2011 Steering Chairs</td>
<td>xvi</td>
</tr>
<tr>
<td>CIT 2011 Committees</td>
<td>xvii</td>
</tr>
<tr>
<td>Message from the SCALCOM-2011 General Chairs</td>
<td>xxiii</td>
</tr>
<tr>
<td>Message from the SCALCOM-2011 Steering Committee</td>
<td>xxiv</td>
</tr>
<tr>
<td>SCALCOM 2011 Committees</td>
<td>xxv</td>
</tr>
<tr>
<td>Message from the P2P-RDM 2011 Workshop Chairs</td>
<td>xxvii</td>
</tr>
<tr>
<td>P2P-RDM 2011 Committees</td>
<td>xxviii</td>
</tr>
<tr>
<td>Message from DSOC 2011 Workshop Chairs</td>
<td>xxix</td>
</tr>
<tr>
<td>DSOC 2011 Committees</td>
<td>xxx</td>
</tr>
<tr>
<td>Message from SCALSOL 2011 Workshop Chairs</td>
<td>xxxi</td>
</tr>
<tr>
<td>SCALSOL 2011 Committees</td>
<td>xxxii</td>
</tr>
<tr>
<td>Message from the SLSIS 2011 Workshop Chairs</td>
<td>xxxiii</td>
</tr>
<tr>
<td>SLSIS 2011 Committees</td>
<td>xxxiv</td>
</tr>
<tr>
<td>Keynote Addresses</td>
<td>xxxv</td>
</tr>
</tbody>
</table>

---

**SCALCOM 1: Networking and Applications**

Scalable Wide-Area Multicast with Temporal Rate Filtering Distribution Framework ...........................................1

*Harald Gjermundrod, Carl Hauser, and David Bakken*

The Potential of Using Network Coding with Geographical Forwarding Routing for Wireless Multimedia Sensor Networks .................................................................9

*Fahed Awad, Omar Banimelhem, and Nadia Al-Rousan*

An Energy-Aware Clustering Scheme for Mobile Applications .................................................................15

*Carmela Comito, Domenico Talia, and Paolo Trunfio*
Dynamic Active Window Management: A Method for Improving Revenue Generation in Dynamic Enterprise Systems..........................................................................................23

M. Al-Ghamdi, A.P. Chester, L. He, S.A. Jarvis, and J.W.J. Xue

P2P-RDM Workshop

DRing: A Layered Scheme for Range Queries over DHTs .........................................................................................................................29

Nicolas Hidalgo, Erika Rosas, Luciana Arantes, Olivier Marin, Pierre Sens, and Xavier Bonnaire

VoroStore—A Secure and Reliable Data Storage for Peer-to-Peer-Based MMVEs ................................................................................35

Sebastian Holzapfel, Sebastian Schuster, and Torben Weis

Implementation and Evaluation of a P2P Service Discovery System: Application in a Dynamic Large Scale Computing Infrastructure ..................................................................................................41

Eddy Caron, Florent Chuffart, Haiwu He, and Cédric Tedeschi

Probabilistic Dropping in Push and Pull Dissemination over Distributed Hash Tables ......................................................................................47

Emanuele Carlini, Massimo Coppola, and Laura Ricci

Experiences with Complex User Profiles for Approximate P2P Community Matching ....................................................................................53

Patrizio Dazzi, Matteo Mordacchini, and Fabio Baglini

SCALCOM 2: Parallel and Cloud Computing

An Abstraction to Support Design of Deadlock-free Routing Algorithms for Large and Hierarchical NoCs ..................................................................................................................................59

Rickard Holsmark and Shashi Kumar

A Framework for Data Center Scale Dynamic Resource Allocation Algorithms ......................................................................................................................67

A.P. Chester, M. Leeke, M. Al-Ghamdi, A. Jhumka, and S.A. Jarvis

A Grid-Based Cloaking Scheme for Continuous Queries in Distributed Systems ...............................................................................................75

Hyeong-Il Kim, Young-sung Shin, and Jae-Woo Chang

Proximity-Aware Resource Discovery Architecture in Peer-to-Peer Based Volunteer Computing System ..................................................................................................83

Toktam Ghafarian-M., Hossein Deldari, and Mohhamad-H. Yaghmaee-M.

Accelerating Circle Detection Based on Generalized Projection Method with GPUs .........................................................................................91

Su Chen and Hai Jiang

DSOC Workshop

An Efficient Role Based Access Control System for Cloud Computing ........................................................................................................97

Zhu Tianyi, Liu Weidong, and Song Jiaxing

WSRank: A Collaborative Ranking Approach for Web Service Selection ......................................................................................................103

Linlin Meng, Jianxin Li, and Hailong Sun
SCENETester: A Testing Framework to Support Fault Diagnosis for Web Service Composition......................................................................................................................................................................................................................................................................109
Zekun Zhu, Jianxin Li, Yongwang Zhao, and Zhuqing Li

Middleware Services at Cloud Virtual Layer ..........................................................................................................................................................................................................................................................................115
Imad M. Abbadi

Cloud Computing: Characteristics and Deployment Approaches .....................................................................................................................................................................................................................................................................121
Zaigham Mahmood

Towards a Data Complexity Metric Set for Web Service Composition ................................................................................................................................................................................................................................................................127
Chengying Mao

Y. Kirsal, E. Ever, O. Gemikonakli, and G. Mapp

SOHO Network Performance Optimization via Local Caching with the Presence of a Main Bottleneck, the Accessing WAN Link ......................................................................................................................................................................................................................................................................138
Daniel James Waters and Jianjun Zhang

CIT 1: Graphics and Image Processing

MRF-based Particle Filters for Multi-touch Tracking and Gesture Likelihoods ......................................................................................................................................................................................................................................................................144
Chi-Min Oh, Md. Zahidul Islam, and Chil-Woo Lee

Geometric Active Model for Lesion Segmentation on Breast Ultrasound Images ......................................................................................................................................................................................................................................................................150
Myungeun Lee, Yanjuan Chen, Soohyung Kim, and Kwanggi Kim

A Bit Collision Detection Based Hybrid Query Tree Protocol for Anti-collision in RFID System ......................................................................................................................................................................................................................................................................158
Haosong Gou and Younghwan Yoo

A Secure Recognition Based Graphical Password by Watermarking ......................................................................................................................................................................................................................................................................164
Arash Habibi Lashkari, Azizah Abdul Manaf, and Maslin Masrom

Vehicle Detection on Aerial Images by Extracting Corner Features for Rotational Invariant Shape Matching ......................................................................................................................................................................................................................................................................171
Sheng Wang

The Elderly Fall Risk Assessment and Prediction Based on Gait Analysis ......................................................................................................................................................................................................................................................................176
Susu Jiang, Bofeng Zhang, and Daming Wei

CIT 2: Computer Architecture and Networks

Change Function of 2D/3D Network-on-Chip ......................................................................................................................................................................................................................................................................181
Alexander Wei Yin, Thomas Canhao Xu, Bo Yang, Pasi Liljeberg, and Hannu Tenhunen

Designing Efficient Parallel Prefix Sum Algorithms for GPUs ......................................................................................................................................................................................................................................................................189
Gabriele Capannini
Wavelet Filter Bank-Based Non Uniform Multi-tone Transceiver for Digital Subscriber Line ................................................................. 197
   Samah Mustafa, Velar Hikmat, and Salar Shekha

Time Synchronization of Distributed Readers for a Large-Scale Active RFID Network ................................................................. 204
   Hyuntae Cho, Sanghyun Son, Jongdeok Kim, and Yunju Baek

Design and Implementation of MAC Protocol for SmartGrid HAN Environment ................................................................. 212
   Min Seok Kim, Sung Ryul Kim, Jeonghyun Kim, and Younghwan Yoo

Policy-Driven Reconfiguration Incorporating Multi-objective Optimization for Performance Management in a Ship Backbone Network ................................................................. 218
   Sungwoo Tak and Hyejin Kim

CIT 3: Computer Networks

LHCDs: A Novel Deployment Strategy of Proxy Caches for P2P Traffic in ISP Networks .................................................................. 224
   Haibin Zhai, Hai Jiang, Yi Sun, Jun Li, Jing Liu, Gengfa Fang, and Eryk Dutkiewicz

A Full-Distributed Architecture for PoC Application in Data Packet Voice Communication ......................................................... 231
   Qi Wang, Hai Jiang, Albert K. Wong, Jun Li, and Zhongcheng Li

Novel Multicast Operation Method in Metro Ethernet Networks ................................................................................................. 238
   Omayma A. El-Mohsen and Hussein M. Harb

Modified Deterministic Packet Marking for DDoS Attack Traceback in IPv6 Network ................................................................. 245
   You-ye Sun, Cui Zhang, Shao-qing Meng, and Kai-ning Lu

Survey, Analysis and Re-evaluation—How Efficient and Secure a Mix Network Can Be ............................................................................. 249
  Kun Peng

A Poisson Based Bursty Model of Internet Traffic ......................................................................................................................... 255
   Edward Kresch and Sarvesh Kulkarni

CIT 4: Graphics and Image Processing

A New Human Interactive Proof System Using Arbitrary and Fractal Polygon Image ................................................................. 261
   Seon Yeong Kim, Sora Kim, and Hwan-Gue Cho

Decreasing Change Impact Using Smart LSB Pixel Mapping and Data Rearrangement ...................................................................... 269
   Septimiu Fabian Mare, Mircea Vladutiu, and Lucian Prodan

A Review of Gradient-Based and Edge-Based Feature Extraction Methods for Object Detection ................................................................. 277
   Sheng Wang
CIT 5: Graphics and Image Processing

Extracting the Path of Frame Center Points Using Spatial Transformation and Motion

Toan Nguyen Dinh, Jeong Hwan Kim, and Gueesang Lee

GPU Implementation of a Region Based Algorithm for Large Images Segmentation

Gilles Perrot, Stéphane Domas, Raphaël Couturier, and Nicolas Bertaux

Binarization of Degraded Characters Using Tensor Voting Based Color Clustering

Kavitha Madhubalan and Gueesang Lee

Lanes Detection in PCR Gel Electrophoresis Images

Sang Cheol Park, In Seop Na, Soo Hyung Kim, Guee Sang Lee, Kang Han Oh, Jeong Hwan Kim, and Tae Ho Han

Open Multi Processing (OpenMP) of Gauss-Jordan Method for Solving System of Linear Equations

Panagiotis D. Michailidis and Konstantinos G. Margaritis

CIT 6: Software Engineering

Starting Model-Based Testing Based on Existing Test Cases Used for Model Creation

Christoph Torens, Lars Ebrecht, and Karsten Lemmer

Model Tree Based Adaption Strategy for Software Effort Estimation by Analogy

Mohammad Azzeh

A Bug Rule Based Technique with Feedback for Classifying Bug Reports

Tao Zhang and Byungjeong Lee

A Software Architecture for Provision of Context-Aware Web-based m-Commerce Applications

Benou Poulcheria and Vassilakis Costas

Why Groups are Used in Software System Modernization Decisions? Comparing Group Decision-Making in Private and Public Sector

Miia-Maarit Saarelainen

CIT 7: Cloud Computing

User-Defined Adaptive Fault-Tolerant Execution of Workflows in the Grid

Felipe Pontes Guimaraes and Alba Cristina Magalhaes Alves de Melo

AOP4CSM: An Aspect-Oriented Programming Approach for Cloud Service Monitoring

Afef Mdhaffar, Riadh Ben Halima, Ernst Juhnke, Mohamed Jmaiel, and Bernd Freisleben

Detecting Behavioral Variations in System Resources of Large Data Centers

Sara Casolari, Michele Colajanni, and Stefania Tosi
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application of Live Video Streaming over GRID and Cloud Infrastructures</td>
<td>379</td>
</tr>
<tr>
<td>Dimitris Karakasilis, Fotis Georgatos, Lambros Lambrinos, and Theodoros Alexopoulos</td>
<td></td>
</tr>
<tr>
<td>On Application-Level Approaches to Cloudy Computing Service in Agent-Base Distributed System</td>
<td>384</td>
</tr>
<tr>
<td>Mi-Young Kang, Hyung-Ok Lee, and Ji-Seung Nam</td>
<td></td>
</tr>
<tr>
<td>A Software Architecture for the Analysis of Large Sets of Data Streams in Cloud Infrastructures</td>
<td>389</td>
</tr>
<tr>
<td>Mauro Andreolini, Michele Colajanni, and Stefania Tosi</td>
<td></td>
</tr>
<tr>
<td><strong>CIT 8: Data Management and Visualization</strong></td>
<td></td>
</tr>
<tr>
<td>Using Network Science to Understand the Structure of Brazilian Popular Music</td>
<td>395</td>
</tr>
<tr>
<td>Charith Gunaratna and Ronaldo Menezes</td>
<td></td>
</tr>
<tr>
<td>An Interactive Web-Based Visualization Tool in Action: User Testing and Usability Aspects</td>
<td>403</td>
</tr>
<tr>
<td>Bahtijar Vogel, Arianit Kurti, Marcelo Milrad, and Andreas Kerren</td>
<td></td>
</tr>
<tr>
<td>Navigating Measurements by Cross-Classifications in Multi-use Data Warehouse</td>
<td>409</td>
</tr>
<tr>
<td>Jie Song, Yubin Bao, and Zhiliang Zhu</td>
<td></td>
</tr>
<tr>
<td>Design of a Hierarchical Based DHT Overlay P2P Routing Algorithm</td>
<td>415</td>
</tr>
<tr>
<td>Patrik Emanuel Mezö, Mircea Vladutiu, and Lucian Prodan</td>
<td></td>
</tr>
<tr>
<td><strong>CIT 9: Security and Web Applications</strong></td>
<td></td>
</tr>
<tr>
<td>A New K-NN Query Processing Algorithm Enhancing Privacy Protection in Location-Based Services</td>
<td>421</td>
</tr>
<tr>
<td>Mi Young Jang and Jae Woo Chang</td>
<td></td>
</tr>
<tr>
<td>Independent and Personal SMS Spam Filtering</td>
<td>429</td>
</tr>
<tr>
<td>M. Taufiq Nuruzzaman, Changmoo Lee, and Deokjai Choi</td>
<td></td>
</tr>
<tr>
<td>Greedy and Randomized Feature Selection for Web Search Ranking</td>
<td>436</td>
</tr>
<tr>
<td>Feng Pan, Tim Converse, David Ahn, Franco Salvetti, and Gianluca Donato</td>
<td></td>
</tr>
<tr>
<td>Generation of Semantic Interactive Environment for Personalized Search</td>
<td>443</td>
</tr>
<tr>
<td>Jie Yu, Jie Gong, and Fangfang Liu</td>
<td></td>
</tr>
<tr>
<td>Predicting the Virtual Temperature of Web-Blog Articles as a Measurement Tool for Online Popularity</td>
<td>449</td>
</tr>
<tr>
<td>Su-Do Kim, Sung-Hwan Kim, and Hwan-Gue Cho</td>
<td></td>
</tr>
<tr>
<td>Utilizing SSTAG: A Novel Tag Recommendation Mechanism to Web Page Search</td>
<td>455</td>
</tr>
<tr>
<td>Guijia He, Tao Zhang, Byungjeong Lee, and Jin Suk Kim</td>
<td></td>
</tr>
<tr>
<td>A Fully Automatic Approach for Fixing Firewall Misconfigurations</td>
<td>461</td>
</tr>
<tr>
<td>Nihel Ben Youssef Ben Souayeh and Adel Bouhoula</td>
<td></td>
</tr>
</tbody>
</table>
CIT 10: IT and E-Health Systems

Flexible Homecare Application Personalization and Integration Using Pattern-Based Service Tailoring: Supporting Independent Living of Elderly with IT .................................................................467
Mohammad Zarifi Eslami, Alireza Zarghami, Brahmananda Sapkota, and Marten van Sinderen

The Use of Electronic Health Record in Greece: Current Status ........................................................................475
Leonidas L. Fragidis and Prodromos D. Chatzoglou

Contourlet-based Feature Extraction for Computer Aided Diagnosis of Medical Patterns ........................................................................................................481
Sherin M. Youssef, Ezzat A. Korany, and Rana M. Salem

Spatial Cloaking Method Based on Reciprocity Property for Users’ Privacy in Road Networks .................................................................487
Amina Hossain, Al-Amin Hossain, and Jae-Woo Chang

CIT 11: Computer Networks

Opportunistic Scheduling and Performance Analysis on Wireless Network Coding .................................................491
Rui Zhang, Quan Qian, Mingjun Xin, and Bofeng Zhang

Extending the Lifetime of Heterogeneous Sensor Networks Using a Two-Level Topology .................................................................................................499
Mei Wu and Martin Collier

Fast Augmentation Algorithms for Maximising the Flow in Repairable Flow Networks After a Component Failure ..................................................................................................................505
Michael T. Todinov

Design and Implementation of a Smartphone-Based Reliable Real-Time Wi-Fi Broadcast System ...............................................................513
Se-Mi Kim, Seung-Chur Yang, and Jong-Deok Kim

CIT 12: Software Engineering and Security

A Novel Adjustable Matrix Bloom Filter-Based Copy Detection System for Digital Libraries ..........................................................518
Shahabeddin Geravand and Mahmoud Ahmadi

A Global Dictionary Based Approach to Fast Similar Text Search in Document Repository ..........................................................526
Sun-Young Park, Seon Yeong Kim, Sung-Hwan Kim, and Hwan-Gue Cho

ArchMDE Approach for the Formal Verification of Real Time Systems ........................................................................533
Nourchène Elleuch, Adel Khalfallah, and Samir Ben Ahmed

A Clustering Data Fusion Method for Intrusion Detection System .................................................................539
B.A. Fessi, S. Ben Abdallah, Y. Djemaiel, and N. Boudriga

Pranesh Sthapit and Jae-Young Pyun

Effective SQL Injection Attack Reconstruction Using Network Recording ..............................................................552

Allen Pomeroy and Qing Tan

CIT 13: AI and Multi-agent Systems

Extending Linear Discriminant Analysis by Using Unlabeled Data .................................................................................557

Young Tae Lee, Yong Joon Shin, and Cheong Hee Park

Efficient Team Formation Based on Learning and Reorganization and Influence of Communication Delay ..........................................................563

Ryota Katayanagi and Toshiharu Sugawara

Machine Learning Approach to the Power Management of Server Clusters ..............................................................571

Satoru Ohta and Takehito Hirota

New Approach to System Level Self-Diagnosis ..............................................................................................................579

Viktor Mashkov

CIT 14: Ubiquitous Computing and Computer Architecture

Design and Evaluation of Hybrid Congestion Control Mechanism for Video Streaming .................................................585

Hiroki Oda, Hiroyuki Hisamatsu, and Hiroshi Noborio

Exploring the Effect of Buffer Behaviour on Perceived Video Quality ........................................................................591

Colin Bailey and Xiao-Hong Peng

A Novel Mobility Model for Realistic Behavior in Vehicular Ad Hoc Network ...............................................................597

Dhananjay S. Gaikwad and Mukesh Zaveri

A Laxity-Aware Memory Access Scheduler for High Performance Multimedia SoC ......................................................603

Guangfei Zhang, Yifei Jiang, Wexiang Wang, and Menghao Su

Software and Hardware Co-designed Multi-level TLBs for Chip Multiprocessors ......................................................609

Xiaohui Zhang, Ming Cong, and Guangqiang Chen

SCALSOl Workshop

A Review on Task Performance Prediction in Multi-core Based Systems .................................................................615

Frédéric Pinel, Johnatan E. Pecero, Pascal Bouvry, and Samee U. Khan

An Instruction-Level Energy Estimation and Optimization Methodology for GPU .....................................................621

Yue Wang and Nagarajan Ranganathan

Green Flexible Opportunistic Computing with Virtualization .........................................................................................629

Harold Castro, German Sotelo, Cesar O. Diaz, and Pascal Bouvry

Energy Efficiency on Scalable Computing Architectures ..................................................................................................635

Carlos J. Barrios Hernández, Daniel A. Sierra, Sebastien Varrette, and Dino Lopez Pacheco
Scalable and Energy-Efficient Scheduling Techniques for Large-Scale Systems .........................................................641
   Cesar O. Diaz, Mateusz Guzek, Johnatan E. Pecero, Pascal Bouvry, and Samee U. Khan

SLSIS Workshop
A Privacy Preserving System for Cloud Computing ........................................................................................................648
   Ulrich Greveler, Benjamin Justus, and Dennis Loehr
Survivable Interaction Distribution Networks .....................................................................................................................654
   Shun-Yun Hu

Author Index .............................................................................................................................................................................660