

Proceedings

The International Conference on Computational Sciences and its Applications

*Perugia, Italy
June 30- July 3, 2008*



Los Alamitos, California
Washington • Tokyo



Table of Contents

The 2008 International Conference on Computational Science and Applications ICCSA 2008

Foreword from the Editors	x
Committees	xi

Information Systems and Information Technologies

Chair(s): Youngsong Mun (Soongsil University, Korea)

On Multicast-Based Binding Update Scheme for NEMO Environments	3
<i>Moonseong Kim, Hayder Radha, and Hyunseung Choo</i>	
Heuristic Features for Color Correlogram for Image Retrieval	9
<i>Jongan Park, Seungjo Han, and Youngeun An</i>	
Key Objects Based Profile for a Content-Based Video Information Retrieval and Streaming System Using Viewpoint Invariant Regions	14
<i>Waqas Rasheed, Junguk Beak, Pankoo Kim, Jonghun Chun, and Jongan Park</i>	
Call-Flow Aware API Fuzz Testing for Security of Windows Systems.....	19
<i>YoungHan Choi, HyoungChun Kim, HyungGeun Oh, and DoHoon Lee</i>	
An Efficient Event Matching Algorithm for Information Dissemination on Grid.....	26
<i>Mohammad Mehedi Hassan, Bo-Hyun Seok, Ki-Moon Choi, and Eui-Nam Huh</i>	
Plant Selection System	33
<i>Sofianita Mutalib, Nurulwahidah Mohammad Azlan, Marina Yusoff, Shuzlina Abdul Rahman, and Azlinah Mohamed</i>	
A Novel Weight for Recommendation: Item Quality	39
<i>Sunghoon Cho, Moohun Lee, Jeongseok Kim, Bonghoi Kim, and Euiin Choi</i>	
A Scheme to Reduce Packet Loss during PMIPv6 Handover considering Authentication	47
<i>Seonggeun Ryu, Gye-Young Kim, Byunggi Kim, and Youngsong Mun</i>	
A Resource Utilization Framework Using Partial State Information on Grid.....	52
<i>Mohammad Mehedi Hassan, Eui-Nam Huh, Jai-Ho Oh, Kyoung-Min Lee, and Ok-Hwan Byeon</i>	
Distributed Control Scheme for DiffServ in Heterogeneous Mobile IP Networks.....	60
<i>Misun Kim and Youngsong Mun</i>	
Mutual Authentication Scheme in Proxy Mobile IP.....	65
<i>Youngsong Mun, Miyoung Kim, and GyeYoung Kim</i>	

Energy Efficient Cluster Management Scheme for Ubiquitous Sensor Networks	73
<i>Jaeseung Lim, Eunjoo Jeong, Kwanjoong Kim, Jongchan Lee, Youngsong Mun, and Byunggi Kim</i>	
Propagation Service Decision Method for Web Services Composition in u-Lifecare System	84
<i>Ki-moon Choi, Mohammad Mehedi Hassan, and Eui-Nam Huh</i>	
Enhanced Westwood as per Vegas-Based Estimator with Slowstart Threshold for High-Speed Networks	92
<i>Minu Park, Jung Hwan Choi, and Hyunseung Choo</i>	
Enabling Effective User Interface Design Using Compound and Layered Structures.....	100
<i>Ali Sajedi Badashian, Mehregan Mahdavi, and Amir Pourshirmohammadi</i>	
Fundamental Usability Guidelines for User Interface Design	106
<i>Ali Sajedi Badashian, Mehregan Mahdavi, Amir Pourshirmohammadi, and Minoo Monajjemi nejad</i>	

Data Storage Devices and Systems

Chair(s): Yeonseung Ryu (Myongji University, Korea)

Improvement and Design 1R PoRAM with Read/Write/Erase Operation.....	117
<i>Jung Ha Kim, Sa Yong Shim, and Sang Sun Lee</i>	
Lake: Towards Highly Manageable Cluster Storage for Extremely Scalable Services	122
<i>Keun-Tae Park, Hong-Yeon Kim, Young-Chul Kim, Sang-Min Lee, Young-Kyun Kim, and Myung-Joon Kim</i>	
Caching and Data Allocation for Streaming Service in MEMS-Based Storage.....	132
<i>Ohhoon Kwon, Yunjung Yoo, Hyokyung Bahn, and Kern Koh</i>	
PRUN : Eliminating Information Redundancy for Large Scale Data Backup System	139
<i>Youjip Won, Rakie Kim, Jongmyeong Ban, Jungpil Hur, Sangkyu Oh, and Jangsun Lee</i>	
Hard Disk Drive for HD Quality Multimedia Home Appliance	145
<i>Jongmin Gim, Jaehyeok Chang, Hyungwon Jung, Youjip Won, Junseok Shim, and Youngseon Park</i>	
A New Linux Swap System for Flash Memory Storage Devices.....	151
<i>Sohyang Ko, Seonsoo Jun, Yeonseung Ryu, Ohhoon Kwon, and Kern Koh</i>	
Improving the Demand Paging Performance with NAND-Type Flash Memory.....	157
<i>Seunghwan Hyun, Sehwan Lee, Sungyong Ahn, and Kern Koh</i>	

Future Security Services

Chair(s): Eui-Nam Huh (Kyung Hee University, Korea)

Access Control of Software Source Code by CRYPTEX Model	167
<i>ByungRae Cha</i>	
Mobility Support Secure Coverage Protocol for Monitoring Applications Using Wireless Sensor Networks	174
<i>Nahar Sultana, Ki-moon Choi, and Eui-nam Huh</i>	
Minimizing the Intrusion Detection Modules in Wireless Sensor Networks.....	184
<i>Tran Hoang Hai and Eui-Nam Huh</i>	
A Survey on Cryptography Algorithms in Security of Voting System Approaches	190
<i>Majid Javid Moayed, Abdul Azim Abdul Ghani, and Ramlan Mahmud</i>	

A Robust Session Key Distribution in 802.11i.....	201
<i>Sung-Hyun Eum, Sung-Jae Cho, Hyoung-Kee Choi, and Hyunseung Choo</i>	
Reduction of Inter-MAP Ping-pong Handoff Rate Based on 2-Layers in Hierarchical Mobile IPv6 Networks.....	207
<i>Jongpil Jeong, Min Young Chung, Youho Lee, and Hyunseung Choo</i>	
Enhanced SEND Protocol for Secure Data Transmission in Mobile IPv6 Environment.....	214
<i>ByungGoo Choi, JaeHyun Ryu, ChoongSeon Hong, and DongJin Kwak</i>	

UnConventional High Performance Computing

Chair(s): Anders Hast (University of Gavle, Sweden)

Fast Deformable Registration on the GPU: A CUDA Implementation of Demons.....	223
<i>Pinar Muyan-Özcelik, John D. Owens, Junyi Xia, and Sanjiv S. Samant</i>	
SysCellC: SystemC on Cell.....	234
<i>Linda Kaouane, Dominique Houzet, and Sylvain Huet</i>	
Comparison of Mist Effect on the Heat Transfer Coefficient and Skin Friction Factor in an Impinging Jet.....	245
<i>Mohammad Mahdi Heyhat, Mohammad Moghiman, and Shoaib Mahjoub</i>	
A Novel Method for Unsupervised Anomaly Detection Using Unlabelled Data	252
<i>Abdul Samad bin Haji Ismail, Abdul Hanan Abdullah, Kamalrulnizam bin Abu Bak, Md Asi bin Ngadi, Dahliyusmanto Dahlan, and Witcha Chimphee</i>	
Auditing System Using Rule-Based Reasoning in Ubiquitous Computing.....	261
<i>Moohun Lee, Sunghoon Cho, Hyokyung Chang, Junghee Jo, Hoiyoung Jung, and Euiin Choi</i>	
Design of a High-Accuracy Classifier Based on Fisher Discriminant Analysis: Application to Computer-Aided Diagnosis of Microcalcifications.....	267
<i>Nezha Hamdi, Khalid Auhmani, and Moha M'rabet Hassani</i>	

Computer Algebra Systems and their Applications

Chair(s): Andrés Iglesias and Akemi Galvez (University of Cantabria Santander, Spain)

Monochrome Line Drawings of 3D Objects due to the Programmability of KETpic.....	277
<i>Masayoshi Sekiguchi, Takayuki Abe, Hajime Izumi, Masataka Kaneko, Satoshi Yamashita, Kenji Fukazawa, Kiyoshi Kitahara, and Setsuo Takato</i>	
Designing of the Interface for Nonlinear Boundary Value Problems Solver Using Maple.....	284
<i>Mikhail I. Karyakin, Dmitry Y. Sukhov, and Tatyana V. Gavrilyachenko</i>	
Rotating Elliptical Parallel-Plate Capacitor and a Transient Electric Circuit.....	291
<i>Haiduke Sarafian</i>	
Symbolic Proof of Limits of Functions in <i>Mathematica</i> with Applications to Mathematics Education.....	297
<i>Andrés Iglesias Prieto and Robert Ipanaqué Chero</i>	
Gröbner Basis for Polynomials with Parametric Exponents	306
<i>Tadashi Takahashi</i>	
Learning Numerical and Algebraic Computation Using ANAWEB.....	313
<i>Maria Angélica de Oliveira Camargo-Brunetto and Rafael Yul Arabori</i>	
Matlab Toolbox and GUI for Analyzing One-Dimensional Chaotic Maps	321
<i>Akemi Gálvez Tomida</i>	

High-Performance Symbolic Computation in a Hybrid Compiled-Interpreted Programming Environment.....	331
<i>Xin Li, Marc Moreno Maza, Raqeeb Rasheed, and Éric Schost</i>	
The ConstructibleSetTools and ParametricSystemTools Modules of the RegularChains Library in Maple.....	342
<i>Changbo Chen, François Lemaire, Liyun Li, Marc Moreno Maza, Wei Pan, and Yuzhen Xie</i>	
Functional Decomposition of Symbolic Polynomials.....	353
<i>Stephen M. Watt</i>	

Computational Geometry and Applications

Chair(s): Marina L. Gavrilova (University of Calgary, Canada)

The alpha-Embracing Contour	365
<i>Manuel Abellanas, Mercè Claverol, and Inês Matos</i>	
Automatically Approximating 3D Points with Co-Axial Objects.....	373
<i>Russell Tempero, Sergey Bereg, Xiangxu Meng, Changhe Tu, Chenglei Yang, and Binhai Zhu</i>	
On Finding Large Empty Convex Bodies in 3D Scenes of Polygonal Models.....	382
<i>Uday Chebrolu, Piyush Kumar, and Joseph S.B. Mitchell</i>	
Computing Distance Functions from Generalized Sources on Weighted Polyhedral Surfaces.....	394
<i>Marta Fort and J. Antoni Sellarès</i>	
Spherical Distance Transforms.....	405
<i>Takashi Michikawa and Hiromasa Suzuki</i>	
Extraction of Skeletal Meshes from Volumetric Data by Sparse Polynomial Approximation.....	413
<i>Yukie Nagai, Yutaka Ohtake, Kiwamu Kase, and Hiromasa Suzuki</i>	
Estimating the Maximum Hidden Vertex Set in Polygons.....	421
<i>Antonio L. Bajuelos, Santiago Canales, Gregorio Hernández, and A. Mafalda Martins</i>	
Fingerprint Matching Algorithm Based on Voronoi Diagram	433
<i>Hamzeh Khazaei and Ali Mohades</i>	
Multi-Scale 3D Morse Complexes.....	441
<i>Lidija Čomić and Leila De Floriani</i>	
On the Structure of Straight Skeletons	452
<i>Kira Vyatkina</i>	
Locally Delaunay Realizability of Regular Series-Parallel Graphs	461
<i>Luca Grilli, Seok-Hee Hong, Antonios Symvonis, and Camille Wormser</i>	
A Discrete Approach to Multiresolution Curves and Surfaces.....	468
<i>Luke J. Olsen and Faramarz F. Samavati</i>	
A Note on Approximate Minimum Volume Enclosing Ellipsoid of Ellipsoids.....	478
<i>Sachin Jambawalikar and Piyush Kumar</i>	

Computer Graphics and Geometric Modeling

*Chair(s): Andrés Iglesias (University of Cantabria Santander, Spain)
and Deok-Soo Kim (Hanyang University, Seoul, Korea)*

Efficient Image Retrieval Using Adaptive Segmentation of HSV Color Space	491
<i>Muhammad Riaz, Gwangwon Kang, Youngbae Kim, Sungbum Pan, and Jongan Park</i>	
Genetic Blind Image Restoration with Dynamical Local Evaluation	497
<i>Ivan Gerace, Marcello Mastroleo, Alfredo Milani, and Simona Moraglia</i>	
Fast N-Dimensional Hilbert Mapping Algorithm	507
<i>Li Chenyang, Zhu Hong, and Wang Nengchao</i>	
NURBS Fusion	514
<i>Xin Liu, Marina Gavrilova, and Faramarz Samavati</i>	
Solving Error Problems in Visibility Analysis for Urban Environments by Shifting from a Discrete to a Continuous Approach.....	523
<i>Arthur van Bilsen and Egbert Stolk</i>	
Rectification of Illumination on 3D Shape Recovery	529
<i>Mannan Saeed Muhammad and Tae-Sun Choi</i>	

Computational Forensics — Computational Methods and Applications in Criminal Investigations

*Chair(s): Katrin Franke (Gjovik University College, Norway) and Cor J. Veenman
(University of Amsterdam and Netherlands Forensic Institute, The Netherlands)*

Towards an Automated Approach to Offender Profiling.....	537
<i>Richard Bache and Fabio Crestani</i>	
Detection of Resampling Supplemented with Noise Inconsistencies Analysis for Image Forensics	546
<i>Babak Mahdian and Stanislav Saic</i>	
Source Camera Identification for Low Resolution Heavily Compressed Images.....	557
<i>Erwin J. Alles, Zeno J. M. H. Geradts, and Cor J. Veenman</i>	

Author Index	569
---------------------------	-----