2010 International Conference on Computational Science and Its Applications

(ICCSA 2010)

Fukuoka, Japan
23-26 March 2010

IEEE Catalog Number: CFP1072C-PRT
ISBN: 978-1-4244-6461-6

2010 International Conference on Computational Science and Its Applications

ICCSA 2010

Table of Contents

Message from ICCSA 2010 General Chairs x
Message from ICCSA 2010 Program Committee Chairs xi
ICCSA 2010 Organzing Committee xii
ICCSA 2010 Program Committee xiv
ICCSA 2010 Reviewers xvii
Message from CASA 2010 Workshop Organizing Chairs xx
CASA 2010 Program Committee xxi
CASA 2010 Reviewers xxii
Message from CGA 2010 Workshop General Chair xxiii
CGA 2010 Program Committee xxiv
CGA 2010 Reviewers xxv
Message from CGVR 2010 Workshop Organizing Chairs xxvi
CGVR 2010 Program Committee xxvii
CGVR 2010 Reviewers xxviii
Message from FISTA 2010 Workshop Organizing Chairs xxix
FISTA 2010 Program Committee xxx
FISTA 2010 Reviewers xxxi
Message from MSA 2010 Workshop Organizing Chair xxxii
MSA 2010 Program Committee xxxiii
MSA 2010 Reviewers xxxiv
Message from TTSDP 2010 Workshop Organizing Chair xxxv
TTSDP 2010 Program Committee xxxvi
TTSDP 2010 Reviewers xxxvii

Computer Algebra Systems and Their Applications

A Morphing Capacitor and an RC Transient Electric Circuit 3
Haiduke Sarafian
Visualizations of Nonlinear Phenomena of an Inclined Cantilevers by Mathematica 10
Shuhei Miyake and Ryuzaburo Sugino
Gröbner Basis Technique for Algebraic Formulas in Electron Correlation Theories 17
Takeshi Osoekawa, Naoyuki Shinohara, Yuji Mochizuki, and Kazuhiro Yokoyama
Teaching Materials of Physics about Lorentz Contraction Generated by KETpic 24
Kenji Fukazawa and Setsuo Takato
A Secret Sharing Scheme via Skew Polynomials 33
Yang Zhang
Handier Use of Scilab to Draw Fine LaTeX Figures: Usage of KETpic Version for Scilab 39
Hiroaki Koshikawa, Masataka Kaneko, Satoshi Yamashita, Kiyoshi Kitahara, and Sestuo Takato

Computational Geometry and Applications

On the Minimization of a Circular Function on the Isomorphic Shrunk Subset 51
Liudmila Domakhina
I/O-Efficient Rectangular Segment Search 61
Gautam K. Das and Bradford G. Nickerson
Folding Links is Hard 68
Ishan Behoora
Hyperbolic Voronoi Diagrams Made Easy 74
Frank Nielsen and Richard Nock
An Ant Colony Algorithm for the Minimum Weight Triangulation 81
Malihe Jahani, Bahram Sadeghi Bigham, and Abbas Askari
Real-Time Non-rigid Object Tracking Using CAMShift with Weighted Back Projection 86
Lei Sun, Bingrong Wang, and Takeshi Ikenaga
On Constructing the Voronoi Diagram for Lines in the Plane under a Linear-Function Distance 92
Kira Vyatkina

Computer Graphics and Virtual Reality

Computer Aided Calligraphy in Haptic Virtual Environment 103
Vilém Šustr
A Novel Decorative Islamic Star Pattern Generation Algorithm 111
Azam Bastanfard and Hadi Mansourifar
A CUDA-Based Implementation of Stable Fluids in 3D with Internal and Moving Boundaries 118
Gonçalo Amador and Abel Gomes
The AES Implantation Based on OpenCL for Multi/many Core Architecture 129
Osvaldo Gervasi, Diego Russo, and Flavio Vella
Adaptive Keyframing Animation on the GPU Using Triangle Strips 135
Francisco Ramos, Miguel Chover, and Oscar Ripolles

Future Information System Technologies and Applications

DPLWN: A Novel Model for Designing and Implementing Dynamic Business Processes and Process Changes 145
Yin Li, Chuang Lin, Shanchen Pang, and Mengchu Zhou
A Novel WYSIWYG Approach for Generating Cross-Browser Web Data 155
Jin Zhu, Xiao Liu, Yoshiyori Urano, and Qun Jin
SCONSTREAM: A Spatial Context Stream Processing System 165
Oje Kwon, Yong-Soo Song, Jae-Hun Kim, and Ki-Joune Li
NHVM: Design and Implementation of Linux Server Virtual Machine Using Hybrid Virtualization Technology 171
Inhyuk Kim, Taehyoung Kim, and Young Ik Eom
Usability Comparisons of Seven Main Functions for Automated Teller Machine (ATM) Banking Service of Five Banks in Thailand 176
Kamonwan Taohai, Suphakant Phimoltares, and Nagul Cooharojananone
A QoE-Based Measurement for DiffServ Multicasting Networks 183
Wu-Hsiao Hsu, Sheng-Cheng Yeh, Yuh-Pyng Shieh, and Cheng-Ying Yang
A Paradigm Shift in Smart Card Ownership Model 191
Raja Naeem Akram, Konstantinos Markantonakis, and Keith Mayes

Mobile Sensor and Its Applications

On Relocation of Hopping Sensors for Rugged Terrains 203
Moonseong Kim, Matt W. Mutka, and Hyunseung Choo
Localization for a Mobile Node Based on Chrip Spread Spectrum Ranging 211
Hyeonwoo Cho, Jewon Lee, Younghun Lee, and Sang Woo Kim
Greedy Forwarding with Virtual Destination Strategy for Geographic Routing in Wireless Sensor Networks 217
Ngoc Duy Nguyen, Dang Tu Nguyen, Marc-Aurelien Le Gall, Navrati Saxena, and Hyunseung Choo

Efficient Greedy Forwarding Scheme Using Back-Off Intervals in Wireless Sensor Networks 222
Dongju Bae, Moonshik Choi, Sang-Hun Cho, and Hyunseung Choo

Tools and Techniques in Software Development Processes

An SMT Approach to Bounded Model Checking of Design in State Transition Matrix 231
Weiqiang Kong, Tomohiro Shiraishi, Yuki Mizushima, Noriyuki Katahira, Akira Fukuda, and Masahiko Watanabe
Reference-Based Testing Technique for Automated Test Generation 239
Eunha Kim and Seokmoon Ryoo
Regression Test Generation Approach Based on Tree-Structured Analysis 244
Zhihao Zhang, Jun Huang, Bo Zhang, Jinlong Lin, and Xiaolan Chen
A Discussion on IS and Software Measurement Terminology: Flexibility as an Example 250
O. Tolga Pusatli and Sanjay Misra
An Economy Based Storage Grid Federation with a Decentralized Scheduling Technique 255
Ravin Ahuja, Asok De, and G. Gabrani
A MDA Tool for Data Warehouse 261
L. Zepeda, E. Ceceña, R. Quintero, R. Zatarain, L. Vega, Z. Mora, and Garcia Gerardo Clemente
Estimating Software Effort with Minimum Features Using Neural Functional Approximation 266
Pichai Jodpimai, Peraphon Sophatsathit, and Chidchanok Lursinsap

ICCSA 2010 Poster Papers

Automatic 2D Building Extraction Using High Resolution Image in Bangpli District, Samut Prakan Province, Thailand 277
Kannika Komwong, Ramphing Simking, and Panu Nuangjumnong
Urban Sprawl Processes Joining Cellular Automata, GIS and Remote Sensing Data: Simulation of Details Un-authorized Development 281
Norzailawati Mohd Noor and Mazlan Hashim
Energy Efficient Geographic Routing for Prolonging Network Lifetime in Wireless Sensor Networks 285
Eunil Park, Dongju Bae, and Hyunseung Choo
An Efficient Load Balancing of Mobile Access Gateways in Proxy Mobile IPv6 Domains 289
Hyunjin Kong, Yoonchang Jang, and Hyunseung Choo
Numerical Solutions of the Nonlinear Schrödinger Equation with a Square Root Nonlinearity 293
Sarun Phibanchon and Michael A. Allen

Bootstrap Analysis of Genetic Networks inferred by the Method Using LPMs 296
Shuhei Kimura, Koki Matsumura, and Mariko Okada-Hatakeyama
Stochastic Aspects of Kinase Cascade Pathways in Cellular Signaling 300
Takashi Naka
GUC100 Multi-scanner Fingerprint Database for In-House (Semi-public) Performance and Interoperability Evaluation 303
Davrondzhon Gafurov, Patrick Bours, Bian Yang, and Christoph Busch
Analysis of Routing Protocol Performance in Wireless Mesh Networks 307
Anna Zakrzewska, Leszek Koszalka, Iwona Pozniak-Koszalka, and Andrzej Kasprzak
R-URC: RF4CE-Based Universal Remote Control Framework Using Smartphone 311
Bonhyun Koo, Taewon Ahn, JungSik In, Youngsuk Park, and Taeshik Shon
Analysis of Micro/mesoscale Sheet Stamping Processes Based on Crystalline Plasticity Model 315
K.C. Liao and C.L. Chen
The Effect of Word Recall on English Vocabulary Learning 319
Yeonji Baik, Jiyoun Choi, Taewon Chung, and Kichun Nam
ID-Based Private Key Update Protocol with Anonymity in Mobile Ad-Hoc Networks 323
YoHan Park, YoungHo Park, and SangJae Moon
Low Bit-Rate Motion Block Detection for Uncompressed Indoor Surveillance 327
Jia Su, Qin Liu, and Takeshi Ikenaga
An Unsupervised Method of Exploring Ontologies from Folksonomies 331
Wen-hao Chen, Yi Cai, and Ho-fung Leung
NOPFIT: File System Integrity Tool for Virtual Machine Using Multi-byte NOP Injection 335
Junghan Kim, Inhyuk Kim, and Young Ik Eom
From Friction Measurement to Haptic Rendering with One Point-Based Haptic Device 339
Wataru Wakita, Hirokazu Murai, and Hiromi Tanaka
Estimation and Rendering of Tactile Information Based on Photometric Images 343
Kazuyoshi Nomura, Xin Yin, Yoshiyuki Sakaguchi, and Hiromi T.Tanaka
On a Prototype Environment for Sub-ontology Extraction in Semantic Grid 347
Toshihiro Uchibayashi, Bernady O. Apduhan, Norio Shiratori, Wenny Rahayu, and David Taniar

Author Index 351