

Commenced Publication in 1973

Founding and Former Series Editors:

Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

Editorial Board

David Hutchison

Lancaster University, UK

Takeo Kanade

Carnegie Mellon University, Pittsburgh, PA, USA

Josef Kittler

University of Surrey, Guildford, UK

Jon M. Kleinberg

Cornell University, Ithaca, NY, USA

Alfred Kobsa

University of California, Irvine, CA, USA

Friedemann Mattern

ETH Zurich, Switzerland

John C. Mitchell

Stanford University, CA, USA

Moni Naor

Weizmann Institute of Science, Rehovot, Israel

Oscar Nierstrasz

University of Bern, Switzerland

C. Pandu Rangan

Indian Institute of Technology, Madras, India

Bernhard Steffen

TU Dortmund University, Germany

Madhu Sudan

Microsoft Research, Cambridge, MA, USA

Demetri Terzopoulos

University of California, Los Angeles, CA, USA

Doug Tygar

University of California, Berkeley, CA, USA

Gerhard Weikum

Max Planck Institute for Informatics, Saarbruecken, Germany

Geuk Lee Daniel Howard
Dominik Ślęzak (Eds.)

Convergence and Hybrid Information Technology

5th International Conference, ICHIT 2011
Daejeon, Korea, September 22-24, 2011
Proceedings

 Springer

Volume Editors

Geuk Lee

Hannam University, Computer Engineering Department
70 Hannamro, Daedeuk-gu, Daejeon, Korea
E-mail: leegeuk@hnu.kr

Daniel Howard

QinetiQ Company Fellow, Howard Science Limited
24 Sunrise, Malvern, WR14 2NJ, UK
E-mail: dr.daniel.howard@gmail.com

Dominik Ślęzak

University of Warsaw, Institute of Mathematics
ul. Banacha 2, 02-097 Warsaw, Poland
E-mail: slszak@mimuw.edu.pl

ISSN 0302-9743

e-ISSN 1611-3349

ISBN 978-3-642-24081-2

e-ISBN 978-3-642-24082-9

DOI 10.1007/978-3-642-24082-9

Springer Heidelberg Dordrecht London New York

Library of Congress Control Number: Applied for

CR Subject Classification (1998): H.4, C.2, I.2, H.3, K.6.5, H.5, K.4

LNCS Sublibrary: SL 3 – Information Systems and Application, incl. Internet/Web and HCI

© Springer-Verlag Berlin Heidelberg 2011

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer. Violations are liable to prosecution under the German Copyright Law.

The use of general descriptive names, registered names, trademarks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

This volume contains 94 out of 179 papers presented at the 5th International Conference on Convergence and Hybrid Information Technology (ICHIT) held during September 22–24, 2011, at the Hotel Riviera Yuseong in Daejeon, Korea. ICHIT is a series of scientific events spanning the last six years, placing a special emphasis on new theoretical inspirations and hybrid solutions to complex problems with real world application. It investigates the meeting points between a number of areas related to the IT research, such as communications and networking, security and safety systems, pattern recognition and information retrieval, data mining and knowledge discovery, as well as soft computing and intelligent systems, to mention a few domains represented this year.

We received 467 paper submissions from over 20 countries. Each paper was reviewed by at least two Chairs or Program Committee members. Author contributions were considered for inclusion into one of two volumes of proceedings: volume one published by Springer within the Lecture Notes in Computer Science series and volume two published also by Springer within the Communications in Computer and Information Science series. The LNCS volume with 323 papers submitted and an acceptance ratio below 30%, contains the more scientifically oriented papers, while the CCIS volume with 144 papers submitted and an acceptance ratio below 60%, contains the more technically oriented papers.

We would like to thank all authors and reviewers for their work and excellent contributions. We are very grateful to Miyagi Hayao for accepting our invitation to deliver the keynote talk. We would also like to acknowledge the following organizations and sponsoring institutions: SERC (Security Engineering Research Center), IWIT (Institute of Webcasting, Internet Television and Telecommunication), KIAS (Korea Information Assurance Society), and KIISE (Korea Institute of Information Science and Engineering).

July 2011

Geuk Lee
Daniel Howard
Dominik Ślęzak

International Committee

General Chairs

Geuk Lee	Hannam University, Korea
Daniel Howard	QinetiQ, UK

Program Chairs

Dominik Slezak	University of Warsaw, Poland
You-Sik Hong	Sangji University, Korea
Chung-Huang Yang	National Kaohsiung Normal University, Taiwan

Publicity Chairs

Wai Chi Fang	National Chiao Tung University, Taiwan
Osvaldo Gervasi	University of Perugia, Italy
Dae Yeol Kim	National Institute for Mathematical Science, Korea

Publication Chairs

Dhananjay Singh	National Institute for Mathematical Sciences, India
Andrzej Skowron	Warsaw University, Poland
Eun Ser Lee	ANU, Korea

Workshop Chairs

Jeong Jin Kang	Dong Seoul University, Korea
SangSuk Lee	Sangji University, Korea

Organization Chairs

Hanku Lee	Konkuk University, Korea
Keun Ho Ryu	Chungbuk National University, Korea
BongHwa Hong	KyungHee Cyber University, Korea

Local Arrangement Chairs

Jeom Goo Kim	NSU, Korea
Phil Kyu Rhee	Inha University, Korea
Tae Nam Ahn	SERC, Korea

Advisory Board

Aboul Ella Hassanien
Adrian Stoica
Cheon Hee, Yi
Hojjat Adeli
James F. Peters
Juan-Carlos Cubero
Jun Liu
Kouichi Sakurai
Lotfi A. Zadeh
Nicholas Cercone
Patrick Doherty
Sankar Kumar Pal
Zbigniew Michalewicz

Kuwait University, Kuwait
JPL NASA, Pasadena, USA
Cheong Ju University, Korea
Ohio State University, USA
University of Manitoba, Canada
University of Granada, Spain
Harvard University, USA
Kyushu University, Japan
University of California, USA
Dalhousie University, Canada
HLinkoping University, Sweden
Indian Statistical Institute, India
University of Adelaide, Australia

Program Committee

Ajith Abraham
Akingbehin Kiumi
Andrew Kusiak
Antonio Lagana
Bing Chen
CheonShik Kim
Chunnian Liu
Conor Ryan
Dieter Kranzmueller
Edward David Moreno
Elena Zudilova-Seinstra
Frank Klawonn
Gary B. Fogel
Gongzhu Hu
Guenther Gediga
Gustavo Olague
Hai Jin
Hans-Dieter Burkhard
Hassan Diab
Hideyuki Sawada
Hideyuki Suzuki
Hisao Ishibuchi
Igor Kotenko
Injoo Jeong Kim
J. A. Rod Blais

Norway University of Science and Technology,
Norway
University of Michigan-Dearborn, USA
The University of Iowa, USA
University of Perugia, Italy
Memorial University, Canada
Anyang University, Korea
Beijing Polytechnic University, China
University of Limerick, Ireland
Joh. Kepler University Linz, Austria
Euripides Foundation of Marilia, Brazil
University of Amsterdam, The Netherlands
Fachhochschule Braunschweig, Germany
NSI, USA
Central Michigan University, USA
University of Muenster, Germany
CICESE Research Center, USA
Huazhong University of Science and
Technology, China
Humboldt Universitat Berlin, Germany
American University of Beirut, Lebanon
Kagawa University, Japan
The University of Tokyo, Japan
Osaka Prefecture University, Japan
St. Petersburg Institute for Informatics
and Automation, Russia
East-West University, USA
University of Calgary, Canada

Jawed Siddiqi	Sheffield Hallam University, UK
Jianbing Li	University of Northern British Columbia, Canada
Jiman Hong	Kwangwon University, Korea
Jiming Liu	Hong Kong Baptist University, China
JingTao Yao	University of Regina, Canada
Jiong Yang	Case Western Reserve University, USA
Jongmoo Choi	Dankook University, Korea
Jose Negrete-Martinez	Universidad Nacional Autonoma de Mexico, Mexico
Joseph Kolibal	University of Southern Mississippi, USA
Karin Kailing	IBM Research, USA
Kuan-Ching Li	Providence University, Taiwan
Kuntinee Maneeratana	Chulalongkorn University, Thailand
Lei Liu	Dalhousie University, Canada
Ling Zhang	Anhui University, China
Mike Nachtegael	Ghent University, Belgium
Min-Ling Zhang	Hohai University, China
Min Wook Kil	Mun Kyung College, Korea
Mokhtar Beldjehem	Ste-Anne's University, Canada
Pabitra Mitra	Indian Institute of Technology, INDIA
Pablo Moscato	The University of Newcastle, Australia
Pawan Lingras	Saint Mary's University, Canada
Phil Kyu Rhee	Inha University, Korea
Rainer Unland	University of Duisburg-Essen, Germany
Rajkumar Buyya	University of Melbourne, Melbourne, Australia
Rene Mayorga	University of Regina, Canada
Robert C. meurant	Institute of Traditional Studies, New Zealand
Roman Slowinski	Pozna University of Technology, Poland
SeokSoo Kim	University of Hannam, Korea
Sergey O. Kuznetsov	Russia Institute for Scientific and Technical Information, Russia
Shoji Hirano	Shimane University, Japan
Shuiyuan Cheng	Beijing Polytechnic University, China
Shusaku Tsumoto	Shimane University School of Medicine, Japan
Stefano Cagnoni	University of Parma, Italy
Sushmita Mitra	Indian Statistical Institute, India
Thomas M. Gatton	National University, USA
Torab Torabi	La Trobe University, Australia
Tsau Young Lin	San Jose State University, USA
Umberto Straccia	ISTI-CNR, Italy
Vijay Raghavan	University of Louisiana, USA
Witold Pedrycz	University of Alberta, Canada
Wojciech Ziarko	University of Regina, Canada
Xia Jun	Chinese Academy of Sciences, China
Xiaohua Hu	Drexel University, USA

Xiao-Lin Li	Nanjing University, China
Xin Geng	Deakin University, Australia
Xue-wen Chen	The University of Kansas, USA
Yiming Li	National Chiao Tung University, Taiwan
Yiyu Yao	University of Regina, Canada
Young-Jun Song	Chungbuk National University, Korea
Yong-Kee Jun	Gyeongsang National University, Korea

Table of Contents

Communications and Networking

An Efficient Mobile Peer to Peer Architecture in Wireless Ad Hoc Network	1
<i>He Li, Kyoungsoo Bok, Yonghun Park, and Jaesoo Yoo</i>	
Performance Evaluation of MINTRoute Protocol at Different Scenarios	9
<i>Ki-Il Kim and Min-Jung Baek</i>	
Modified Packet Scheduling Algorithm for Real-Time Service	16
<i>Ha-Sung Koo</i>	
Virtual Research Domains Management on L2 Optical Private Network	24
<i>Min-Ki Noh, Byung-Yeon Park, Dong-Kyun Kim, and Joon-Min Gil</i>	
Charging Algorithm for Quality-Based VoIP Charging Mechanism	35
<i>Al Ann Ibanez, Youngjin Hon, and Younchan Jung</i>	
A Study on Dynamic Gateway System for MOST GATEWAY Scheduling Algorithm in MOST25 and MOST150 Networks	45
<i>Seong-Jin Jang and Jong-Wook Jang</i>	
Study on Asynchronous Data Transmission of MediaLB Bus Communication	54
<i>Jong-Wook Jang, Chang-Young Kim, Gil-Bong Kwak, and Yun-Sik Yu</i>	
TCP Throughput Improvement over Vertical Handover between 3G LTE and WLAN	64
<i>Sujin Park and Ju-Wook Jang</i>	
An Adaptive QoS Control Scheme Based on Traffic Estimation for Efficient Multimedia Services in Wireless Access Networks	72
<i>Moonsik Kang and Kilhung Lee</i>	
Utilizing Intelligent Middleware for Reconfiguration of Applications on Android	81
<i>Narasimha Bharadwaj Srirangam, Venkata Susheel Aiswarya, S. Kami Makki, and Shui Yu</i>	

DTR-Filter: An Efficient Transmission Scheme for Real-Time Monitoring in Wireless Bulky Sensor Networks.....	90
<i>Yanli Qian, Jungmuk Kang, Jookyoung Kim, Jooki Min, and Youngmi Kwon</i>	
Multi-Channel MAC Protocol to Improve Network Throughput and End-to-End Delay in OFDMA-Based Wireless Network Systems	98
<i>Jookyoung Kim, Joonki Min, and Youngmi Kwon</i>	
DSRC-Based Channel Allocation Algorithm for Emergency Message Dissemination in VANETs	105
<i>Min-Woo Ryu, Si-Ho Cha, and Kuk-Hyun Cho</i>	
Quadrature Amplitude Position Modulation Combined with Multicarrier Communication System.....	113
<i>Jae-Hoon Choi and Heung-Gyoon Ryu</i>	
Wireless Multimedia Acoustic Transmission with MIMO-OFDM	123
<i>Junyeong Bok and Heung-Gyoon Ryu</i>	
The Impact of Finite Rate Feedback on Adaptive Double Space-Time Transmit Diversity in Rayleigh Fading Channels	131
<i>Ye-Hoon Lee and Dong-Ho Kim</i>	
Viterbi Algorithm Based Noncoherent Detection Scheme for Differential Space-Time Block Code.....	139
<i>Ye-Hoon Lee and Dong-Ho Kim</i>	
Transmission Power Based Source Routing Protocol for MANET with Unidirectional Links.....	146
<i>Jun-Jie Piao and Tae-Mu Chang</i>	
ERID: Edge Router Identification for Fast Forwarding Packet in BGP Domain.....	154
<i>Gohel Bakul, Madhusudan Singh, and Dhananjay Singh</i>	
The Design of Reliable Routing Protocols in Wireless Mesh Networks...	162
<i>Chang-Pyo Yoon, Jae-Wan Lim, Hyun-Jong Cha, Ho-Kyung Yang, and Hwang-Bin Ryou</i>	
Smooth Device Handover System for Seamless Audio Service	175
<i>Jiyeon Son, Jihyun Lee, Junhee Park, Kyongdeok Moon, and Younghee Lee</i>	
Efficient Common Radio Resource Management Techniques for Cloud Systems	183
<i>Jae-Won Ji, Hyun-woo Cheon, Chun-Myoung Park, and Geuk Lee</i>	
An Effective Method for Fairness in the Case of Missing CTS.....	189
<i>Inhye Park and Hyungkeun Lee</i>	

Improved TCP Performance during the Upward Vertical Handover Using an IEEE 802.21 MIHF Framework	197
<i>Seung-Su Kim and Ju-Wook Jang</i>	

Performance Evaluation of Uncompressed High-Definition Content Transmission on Parallelled Digital Subscriber Lines	205
<i>Piboonlit Viriyaphol</i>	

Intelligent Systems and Applications

Smart Pulse Wave Detection System Using Intelligence	213
<i>You-Sik Hong, Sang-Suk Lee, Dong-Hyun Nam, Woo-Beom Lee, Hongkyun Kim, Young Jun Song, Kwang-Baek Kim, Geuk Lee, Jeong-Jin Kang, Rethina Kumar, HyunSoo Jin, Chanwoo Moon, Youngdae Lee, and ChangDuk Chung</i>	

Mean-Risk Model for Hybrid Portfolio Selection with Fuzziness and Randomness	221
<i>Xiaoxia Huang</i>	

Investigation into the Effects of an Individual Amino Acid on Protein Function by Means of a Resonant Recognition Model	229
<i>Charalambos Chrysostomou, Huseyin Seker, and Nizamettin Aydin</i>	

Optimizing a Personalized Cellphone Keypad	237
<i>Joonseok Lee and Bob McKay</i>	

Hidden Node Pruning of Multilayer Perceptrons Based on Redundancy Reduction	245
<i>Sang-Hoon Oh</i>	

Attribute Grammar Genetic Programming Algorithm for Automatic Code Parallelization	250
<i>Daniel Howard, Conor Ryan, and J.J. Collins</i>	

Genetic Algorithms for Automatic Object Movement Classification	258
<i>Omid David, Nathan S. Netanyahu, and Yoav Rosenberg</i>	

Optimizing for Change through Shades	266
<i>Conor Ryan, J.J. Collins, and Daniel Howard</i>	

A Simple Improvement Heuristic for Attributed Grammatical Evolution with Lookahead to Solve the Multiple Knapsack Problem	274
<i>Muhammad Rezaul Karim and Conor Ryan</i>	

Validation Sets for Evolutionary Curtailment with Improved Generalisation	282
<i>Jeannie Fitzgerald and Conor Ryan</i>	

Sensor Network and Cloud Systems

The Design of Personal Virtualization Rule Based on Context-Awareness in Environment of Cloud Computing	290
<i>Hyogun Yoon and Hanku Lee</i>	
Private Cloud Computing Techniques for Inter-processing Bioinformatics Tools	298
<i>Tae-Kyung Kim, Bo-Kyeng Hou, and Wan-Sup Cho</i>	
Data Dissemination Protocol Based on Home Agent and Access Node for Mobile Sink in Mobile Wireless Sensor Networks	306
<i>Joa Hyoung Lee, Jae Myung Kim, Byung Tae Jang, and Eun-Ser Lee</i>	
Energy-Efficient Sensor Node Control Based on Sensed Data and Energy Monitoring	315
<i>Ho-Guen Song, Dae-Cheol Jeon, Hee-Dong Park, and Do-Hyeon Kim</i>	
A Data Recovery Method for High Accuracy in Data Centric Storage Schemes	323
<i>Junho Park, Dongook Seong, and Jaesoo Yoo</i>	
A Delay Reduction Scheme Based on Network Coding for Voice Traffic in Large-Scale Wireless Sensor Networks	331
<i>Inwhee Joe and Kyunghwan Kim</i>	

Information Retrieval and Scheduling

A Vertical Search Engine for School Information Based on Heritrix and Lucene	344
<i>Hyo-Bong Lee, Franco Nazareno, Seung-Hyun Jung, and Wan-Sup Cho</i>	
An Improvement in Feature Feedback Using R-LDA with Application to Yale Database	352
<i>Lang Bach Truong, Sang-Il Choi, Gu-Min Jeong, and Jeong-Min Seo</i>	
Effective Ranking Techniques for Book Review Retrieval Based on the Structural Feature	360
<i>Heungmo Ryang and Unil Yun</i>	
Efficient Food Retrieval Techniques Considering Relative Frequencies of Food Related Words	368
<i>Gwangbum Pyun and Unil Yun</i>	
Serial Scheduling Algorithm of LDPC Decoding	376
<i>Dong-Ho Kim and Ye-Hoon Lee</i>	

Design and Implementation of a Locking-Aware Scheduler for Multiprocessor Environments	384
<i>Yongseob Lee, Wooseok Son, and Sungyong Park</i>	

Graph Metrics for Predicting Speedup in Static Multiprocessor Scheduling	391
<i>Alan Sheahan and Conor Ryan</i>	

Hardware and Software Engineering

Accuracy Analysis of Power Characterization and Modeling	399
<i>Xiaolan Bai, Hu Xu, and May Huang</i>	

Design and Implementation of Turbo Decoder for TETRA Release 2 - TEDS	407
<i>Ji-Hoon Kim</i>	

Performance Evaluation of 2x2 Space-Time Block Coded OFDM Systems under Time-Varying Fading Channels	415
<i>Jeongchang Kim</i>	

Energy Efficient File Transfer Mechanism Using Deduplication Scheme	421
<i>Ho Min Jung, Sung Woon Kang, Jin Kim, Wan Yeon Lee, Jeong Gun Lee, and Young Woong Ko</i>	

A Context-Driven Development Methodology for Context-Aware Systems	429
<i>Jongmyung Choi, Rosa I. Arriaga, Hyun-Joo Moon, and Eun-Ser Lee</i>	

Architecture of Software Engineering Guideline Execution	437
<i>Jeong Ah Kim, Seung-Yong Choi, and Sun-Myung Hwang</i>	

Security Systems

Specification-Based Intrusion Detection System for WiBro	445
<i>Yunho Lee, Sang-Guun Yoo, Juho Kim, and Soojin Lee</i>	

An Efficient Password Authentication Method Using CAPTCHA	456
<i>Beum-Su Park, Amlan Jyoti Choudhury, Young-Sil Lee, Tae-Yong Kim, and Hoon-Jae Lee</i>	

A Study on Wi-Fi Hacking Attack Using Web	464
<i>Jin-Young Song and Dea-Woo Park</i>	

Improved Security Proofs of Delerablée's Identity-Based Broadcast Encryption Scheme	472
<i>Sun-Mi Park and Seong-Oun Hwang</i>	

Cryptanalysis of Nonce-Based Mutual Authentication Scheme Using Smart Cards 482
Young-Hwa An and Youngdo Joo

An Attack on an RFID Authentication Protocol Conforming to EPC Class 1 Generation 2 Standard 488
Changbin Lee, Sunwoo Park, Kwangwoo Lee, and Dongho Won

Abnormal Traffic Detection System of VoIP Based on SIP 496
Kyu-won Lee, Jae-Won Ji, Seung-Jae You, and Geuk Lee

Robotics and RFID Systems

Emergency Response System Using a Surveillance Camera with Collaborative Multiple Robots 505
Yong-Ho Seo and Hyun S. Yang

Development of a PC-Based Network Performance Evaluation System for Intelligent Robots 512
Kyung-Jung Lee, Jae-Oh Kim, Jae-Han Park, Moon-Hong Baeg, and Hyun-Sik Ahn

Linear Velocity Based Predictive Control Design and Experiment for Pursuit-Evasion of a Multiple Small Scale Unmanned Helicopter 520
Vishnu Kumar Kaliappan, Hanmaro Yong, Agus Budiyo, and Dugki Min

Real-Time Map Generation Using Constraint Delaunay Triangulation 530
Peng Wang, Yi Liu, Taiheng Jin, and May Huang

Improving Position Estimation Accuracy of Mobile Robot by Using UHF Passive RFID Tags 538
Sangdo Park, Taeho Kim, and Hongchul Lee

A Centralized Arbitration Scheme for UHF Band RFID Readers 550
Sung Woo Bae, Jun-Seok Park, Ha-Ryoung Oh, and Yeong-Rak Seong

Analysis of the Future Internet of Things Capabilities for Continuous Temperature Monitoring of Blood Bags in Terrestrial Logistic Systems 558
Miguel Castro, Antonio J. Jara, and Antonio F.G. Skarmeta

Pattern Recognition, Image Processing and Clustering

New Single Camera Vehicle Detection Based on Gabor Features for Real Time Operation	567
<i>Mirza Waqar Baig, Syed Jahanzeb Hussian Pirzada, Ehsan ul Haq, and Hyunchul Shin</i>	
Effect of Different Window and Wavelet Types on the Performance of a Novel Crackle Detection Algorithm	575
<i>Gorkem Serbes, C. Okan Sakar, Yasemin P. Kahya, and Nizamettin Aydin</i>	
Wavelets and Decision Trees for Target Detection over Sea Surface Using Cosmo-Skymed SAR Data	582
<i>Rafael L. Paes and Aylton Pagamisse</i>	
An Efficient Online Signature Verification Scheme Using Dynamic Programming of String Matching	590
<i>Ahmed Galib Reza, Hyotaek Lim, and Md Jahangir Alam</i>	
Topological Graph Matching Based Dot Pattern Recognition Scheme for Smart Book	598
<i>Jae Youn Shim and Seong-Whan Kim</i>	
Speaker Identification Using Ensembles of Feature Enhancement Methods	606
<i>IL-Ho Yang, Min-Seok Kim, Byung-Min So, Myung-Jae Kim, and Ha-Jin Yu</i>	
Estimating Principal Properties on Triangular Meshes	614
<i>Kyungha Min</i>	
Image Processing for Automated Analysis of the Fluorescence In-Situ Hybridization (FISH) Microscopic Images	622
<i>Jan Schier, Bohumil Kovář, Eduard Kočárek, and Michal Kuneš</i>	
An Efficient Edge Detection Using Raster CNN Simulator	634
<i>V. Murugesh and Kyung-Tae Kim</i>	
The Size and Position Detection of the Small Target in Infrared Image	643
<i>Gyoon-Jung Lee, Ji-Hwan Park, Jae-Heum Joo, and Ki-Gon Nam</i>	
Compressed Sensing Meets the Human Visual System	653
<i>Iulian B. Ciocoiu</i>	
Integer KLT Design Space Exploration for Hyperspectral Satellite Image Compression	661
<i>Nor Rizuan Mat Noor and Tanya Vladimirova</i>	

Model-Based Clustering Analysis of Student Data	669
<i>Mirwais Tanai, Jongwan Kim, and Joong Hyuk Chang</i>	

Numerical Evaluation of Clustering Methods with Kernel PCA	677
<i>Hiromi Miyajima, Noritaka Shigei, and Tomiyuki Shiiba</i>	

Data Mining

Improved Sampling for Triangle Counting with MapReduce	685
<i>Jin-Hyun Yoon and Sung-Ryul Kim</i>	

A Resource Discovery Scheme for Mobile Peer-to-Peer Networks with Data Dissemination	690
<i>Kyoung-Soo Bok, Dong-Won Kwak, and Jae-Soo Yoo</i>	

A Novel Outlier Detection Method for Spatio-Temporal Trajectory Data	698
<i>Yan Li, Weonil Chung, and Hae-Young Bae</i>	

Enumeration Tree Based Emerging Patterns Mining by Using Two Different Supports	708
<i>Minghao Piao, Jong Bum Lee, Ho Sun Shon, Unil Yun, and Keun Ho Ryu</i>	

Assessment Building a Method for Risk Model of Mountain Bike Accident Based on Classification Techniques	716
<i>Dong-Hyok Seo, Suk Ho Jung, Soo-Ho Park, Kwang-Sun Ryu, Hyeongsoo Kim, Dong Gyu Lee, and Keun Ho Ryu</i>	

Extracting and Ranking Relevant Terms of Personalized Search Query	724
<i>Jung-Hun Lee and Suh-Hyun Cheon</i>	

A Sentiment Analysis of Audiences on Twitter: Who Is the Positive or Negative Audience of Popular Twitterers?	732
<i>Younggwe Bae and Hongchul Lee</i>	

Human Computer Interaction

Reading Desk for Preschool Children and Older People with Emotional Speech Synthesis	740
<i>Ho-Joon Lee, Yong-Jae Lee, and Jong C. Park</i>	

Background Reflectance Modeling for Robust Finger Gesture Detection in Highly Dynamic Illumination	748
<i>Armin Mustafa and K.S. Venkatesh</i>	

A New Approach for Human-Robot Interaction Using Human Body Language	762
<i>Nhan Nguyen-Duc-Thanh, Daniel Stonier, SungYoung Lee, and Dong-Han Kim</i>	
An Improvement of Mobile Web Interface Design Optimized for Tablet PC Environment	770
<i>Hyoung-Yong Oh, Byung-Won Min, and Yong-Sun Oh</i>	
Text Input Tool for Immersive VR based on 3 x 3 Screen Cells	778
<i>Kyungha Min</i>	
Author Index	787