# Table of Contents

## Keynote
Remote Entertainment Performances and Social Feedbacks  
*Hiroyuki Tarami* .................................................................................................................. 1

Toward Connected Personal Healthcare  
*Yeong-Taeh Song* .............................................................................................................. 3

Static Approaches for Concept Location During Software Evolution  
*Simon Xu* .......................................................................................................................... 5

## Communication Systems & Networks

A Software-based Fault Detection Scheme for Wireless Sensor Networks  
*Hsung-Pin Chang, Tsung-Yu Yeh* .......................................................................................... 7

Trust Model Based on Changeable Sampling Frequency for Wireless Sensor Network  
*Na Wang, Dong-Qian Liu* ................................................................................................... 13

A Low Complexity ZF-Based Lattice Reduction Detection Using Curtailment Parameter in MIMO Systems  
*Daisuke Mitsunaga, Thae Thae Yu Khine, Hua-An Zhao* .................................................... 17

A Nearest Neighbor Search Algorithm for LR-LD on High SNR  
*Thae Thae Yu Khine, Koji Araki, Daisuke Mitsunaga, Hua-An Zhao* ................................. 23

Optimization of Systemic Stability of Directed Network Using Genetic Algorithm  
*Patrick Wan-hin Luk, Ga Ching Lui, Kwok Yip Szeto* ........................................................ 29

Slot Assignment for TDMA MAC in Industrial Wireless Sensor Network  
*Ching-Lung Chang, Kuan-Yi Ho* ......................................................................................... 35

Cost-Effective Index Poisoning Scheme for P2P File Sharing Systems  
*Yuusuke Ookita, Satoshi Fujita* .......................................................................................... 41

New Fault Tolerant Strategy of Wireless Sensor Network  
*Aref Ghabri, Leila Horchani, Monia Bellalouna* .................................................................. 47

SEP Performance of Triangular QAM with SC and GSC Spatial Diversity over Rayleigh Channels  
*Furqan Haider Qureshi, Qasim Umar Khan, Shahzad Amin Sheikh* .................................. 53

## Control Systems, Intelligent Systems

Smart Time-Division-Multiplexing Control Strategy for Voltage Multiplier Rectifier  
*Bin-Han Liu, Jen-Hao Teng, Yi-Cheng Lin* ......................................................................... 59

Analysis and Control for Discrete-Time Singular Systems with Interval Time-Varying Delay  
*Ching-Min Lee* ................................................................................................................... 65

Modeling of Integrated Processes for Coking Flue Gas Desulfurization and Denitrification  
*Yaning Li, Xuelei Wang, Jie Tan* .......................................................................................... 71

The Select and Test Algorithm for Inference in Medical Diagnostic Reasoning: Implementation and Evaluation in Clinical Psychiatry  
*D. A. Irosh P. Fernando, Frans P. Henskens* ....................................................................... 77

## Computer Architecture and VLSI

Proof of Violation for Availability in Cloud Systems  
*Gwan-Hwan Hwang, Shang-Yu Yeh* .................................................................................... 87

Vigorous Algorithms to Control Urban Vehicle Traffic  
*Abdul Mateen, Adia Khalid, Lal Khan, Sehrish Majeed, Tooba Akhtar* .............................. 95
A Strategic Decision Value Model for Cloud Computing in Saudi Arabia’s Public Sector
Mohammed Mreea, Kumuda Munasinghe, Dharmendra Sharma ................................................................. 101

FPGA-Based Deep-Pipelined Architecture for FDTD Acceleration Using OpenCL
Hasitha Muthumala Waidyasooriya, Masanori Hariyama .......................................................... 109

Architecture of an FPGA Accelerator for Molecular Dynamics Simulation Using OpenCL
Hasitha Muthumala Waidyasooriya, Masanori Hariyama, Kota Kasahara ...................................................... 115

A Cache Memory with Unit Tile and Line Accessibility
Baokang Wang, Yuki Fukazawa, Toshio Kondo, Takahiro Sasaki .......................................................... 121

Data Mining, Data Warehousing & Database

VOSync: An Implementation of Synchronization System for The Virtual Orchestra
Chung-Ping Young, Yen-Bor Lin, Ting-Ying Wei .................................................................................. 127

Systematic Approaches to Embed Cycles in Balanced Hypercubes
Hsuan-Han Chang, Kuan-Ting Chen, Pao-Lien Lai .............................................................................. 133

Analyzing Civic Complaints for Proactive Maintenance in Smart City
Preeti Bansal, Durga Toshniwal .............................................................................................................. 139

Method for Classifying Usability Qualities and Problems for Action Games from User Reviews Using Text Mining
Artinar Wattanaburanon, Nakornthip Prompoon .............................................................................. 145

AKIHelper: Acute Kidney Injury Diagnostic Tool Using KDIGO Guideline Approach
Issariya Uboltham, Nakornthip Prompoon, Wirichada Pan-Ngum ..................................................... 151

Shaping the Afghan Learning Settings and Power to the Learners through a High-Tech Library Management System
Mohammad Hanif Gharanai ................................................................................................................ 157

Using Genetic Algorithms for Measuring the Similarity Values between Users in Collaborative Filtering Recommender Systems
Bushra Alhijawi, Yousef Kilani .............................................................................................................. 163

An Elastic Group Recommendation System Designed for Multivariate Dynamic Attributes
Naveen Mysore ........................................................................................................................................ 169

Automatic Media Content Creation System According to an Impression by Recognition-Creation Operators
Takahumi Nakanishi, Ryotaro Okada, Takashi Kitagawa .................................................................. 175

Investment Pattern Clustering Based on Online P2P Lending Platform
Fan Shen, Nianlong Luo ........................................................................................................................ 181

Adaptive Food Suggestion Engine by Fuzzy Logic
Tousif Osman, Maisha Mahjabeen, Shahreen Shahjahan Psyche, Afsana Imam Urmii, J.M. Shaﬁ Ferdous, Rashedur M. Rahman .................................................................................................. 187

Risk Assessment of the Top Five Malignancies among Males and Females with Respect to Occupation, Educational Status and Smoking Habits

A Personalized Music Recommender Service Based on Fuzzy Inference System

Genk-e-MoTo: Generation of Intelligence to Envisage Modus Operandi of Terror Outﬁts
Sumit Singh, Durga Toshniwal, Akhil Gupta, Shreyas Verma .................................................................. 205

Analysis of Optimum Crop Cultivation Using Fuzzy System
Fahim Jawad, Tousif Ur Rahman Choudhury, S M Asif Sazed, Shamima Yasmin, Kanaz Ifmat Rishva, Fouzia Tamanna, Mohammad Rashedur Rahman .......................................................................................... 211

A Development of RDF Data Transfer and Query on Hadoop Framework
Jutamard Kawises, Wiwat Vatanawood .................................................................................................. 217
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>BordaRank: A Ranking Aggregation Based Approach to Collaborative Filtering</td>
<td>221</td>
</tr>
<tr>
<td>An Alternative Technique for Populating Thai Tourism Ontology from Texts Based on Machine Learning</td>
<td>227</td>
</tr>
<tr>
<td>Knowledge Discovery, Neural Networks and Genetic Algorithms</td>
<td>231</td>
</tr>
<tr>
<td>Corporate Risk Estimation by Combining Machine Learning Technique and Risk Measure</td>
<td>231</td>
</tr>
<tr>
<td>A New Efficient and Effective Golden-Ball-Based Technique for the Capacitated Vehicle Routing Problem</td>
<td>235</td>
</tr>
<tr>
<td>An Evolutionary Multi-layer Perceptron Neural Network for Solving Unconstrained Global Optimization Problems</td>
<td>241</td>
</tr>
<tr>
<td>Spatial Domain Decision Based Image Fusion Using Superimposition</td>
<td>247</td>
</tr>
<tr>
<td>A Simple Population Based Hybrid Harmonic Estimation Algorithm</td>
<td>253</td>
</tr>
<tr>
<td>A Li-ion Battery Charger Based on Remaining Capacity with Fuzzy Temperature Control</td>
<td>259</td>
</tr>
<tr>
<td>Grey Wolf Optimization Algorithm with Invasion-based Migration Operation</td>
<td>265</td>
</tr>
<tr>
<td>Intelligent Control Scheme for Output Efficiency Improvement of Parallel Inverters</td>
<td>271</td>
</tr>
<tr>
<td>Detection of Design Patterns from Class Diagram and Sequence Diagrams Using Ontology</td>
<td>277</td>
</tr>
<tr>
<td>An Improved Traffic Signs Recognition and Tracking Method for Driver Assistance System</td>
<td>283</td>
</tr>
<tr>
<td>3D Shape Recovery of Polyp using Two Light Sources Endoscope</td>
<td>289</td>
</tr>
<tr>
<td>Neural Network Data Modeling and Its Application on Effect Analysis of Head and Shoulder Acupoint Massage</td>
<td>295</td>
</tr>
<tr>
<td>Meridian ECG Information Transmission System Modeling Using NARX Neural Network</td>
<td>301</td>
</tr>
<tr>
<td>A Novel Evolutionary Algorithm for the Homogeneous Probabilistic Traveling Salesman Problem</td>
<td>307</td>
</tr>
<tr>
<td>A Neural Networks Based Approach for the Real-Time Scheduling of Reconfigurable Embedded Systems with Minimization of Power Consumption</td>
<td>313</td>
</tr>
<tr>
<td>Study on CNN in the Recognition of Emotion in Audio and Images</td>
<td>319</td>
</tr>
<tr>
<td>Emotional Element Detection and Tendency Judgment Based on Mixed Model with Deep Features</td>
<td>325</td>
</tr>
<tr>
<td>An Improvement of Partheno-Genetic Algorithm to Solve Multiple Travelling Salesmen Problem</td>
<td>331</td>
</tr>
<tr>
<td>Visualization of Hierarchical Transaction Network</td>
<td>337</td>
</tr>
<tr>
<td>A Fast Heuristic for the Minimum Weight Vertex Cover Problem</td>
<td>341</td>
</tr>
</tbody>
</table>
Video Annotation for Players’ Tactics in Sport Competition
Na Jia, Chi Xu, Huiqun Zhao .................................................................347
A New Proposal For a Multi-Objective Technique Using SMPSO and Tabu Search
Houda Abadlia, Nadia Smairi, Khaled Ghedira ........................................353

Image Processing & Pattern Recognition 359
An Implementation of Spatial Algorithm to Estimate the Focus Map from a Single Image
Yen-Bor Lin, Chung-Ping Young ..............................................................359
Minority Costume Image Retrieval by Fusion of Color Histogram and Edge Orientation Histogram
Xu-Mei Shen, Ju-Xiang Zhou, Tian-Wei Xu .................................................365
Pedestrian Detection by Fusing 3D Points and Color Images
Ben-Zhong Lin, Chienchou Lin .................................................................373
An Automatic Vision-based Monitoring System for Accurate Vojta-Therapy
Muhammad Hassan Khan, Julien Helisper, Cong Yang, Marcin Grzegorzek ...............................................................379
A New Chaos-based Image Cipher Using a Hash Function
Chong Fu, Ou Bian, Hui-yan Jiang, Li-hui Ge, Hong-feng Ma .........................385
Tracking with Probabilistic Model by Density Forests
Daimu Oiwa, Shinji Fukui, Yajl Iwhani, Tsuyosi Nakamura, Manas Kamal Bhuyan ...............................................................391
Basic Construction of a Natural Finger Outline Extraction System with a Color Glove
Noriaki Fujishima, Tatsuhiko Ietsuka ..........................................................397
A Fast Image Matching Technique for the Panoramic-based Localization
Jiung-Yao Huang, Su-Hai Lee, Chung-Hsien Tsai........................................403
Head Pose Estimation and Movement Analysis for Speech Scene
Rinko Komiya, Takeshi Saitoh, Miharu Fuyuno, Yuko Yamashita, Yoshitaka Nakajima ...............................................................409
Improvement of Eye Detection Performance for Inside-Out Camera
Warapon Chinsatit, Takeshi Saitoh .............................................................415
RETOP: A Retinal Topography Keypoint Descriptor
Jiung-Yao Huang, Hung-Ya Tsai, Chung-Hsien Tsai........................................421
High Dynamic Range Image Composition Using a Linear Interpolation Approach
Yun-Te Lin, Ming-Long Huang, Chung-Ming Wang ........................................427
Solving Jigsaw Puzzle with Symbol Matrices
Dai Cao, Lifang Chen, Yuan Liu .................................................................433
Design and Application of Novel Morphological Filter used in Vehicle Detection
Munkhjargal Gochoo, Damdinsuren Bayanduuren, Uyangaa Khuchit, Galbadrakh Battur, Sy-Yen Kuo, Tan-Hsu Tan, Shih-Chia Huang.................................................................439
Optimizing Color Transfer Using Color Similarity Measurement
Wei-Sung Chen, Ming-Long Huang, Chung-Ming Wang ....................................445

Internet Technology and Applications, E-Commerce 451
Observing the Evolution of Social Network on Weibo by Sampled Data
Lu Ma, Gang Lu, Junxia Guo ........................................................................451
Falling in Love with Online Shopping Carnival on Singles’ Day in China: An Uses and Gratifications Perspective
Jen-Her Wu, Qi Li, Lifang Peng, Yi-Cheng Chen ...............................................457
Constructing Initial Design Patterns for Online Social Network-based Applications
Piyaphan Pongpradit, Nakornhip Prompoon ...................................................463
An Executable Model and Testing for Web Software based on Live Sequence Charts
Liping Li, Honghao Gao, Tang Shan ................................................................471
MANAGEMENT INFORMATION SYSTEMS

IT Management Status in Public Higher Education Institutions in Thailand
Srinual Nalintipwong, Kanokwan Atchariyachavanich

Factors affecting the adoption of ICT in Malnutrition Monitoring. Case Study: Western Uganda
Twheyo Pius Charles, Chika Yoshida

A Multi-facet Approach using Conceptualization, Application, and Usability Measurement to Developing Financial Learning System for Hospital
Witchayarot Jantana, Peraphon Sophatsahit, Achara Chandrachai

Enhancing Business Process Flexibility in an Emergency Care Process
Asma Mejri, Sonia Ayachi Ghannouch, Ricardo Martinho, Feteh Elhadj

MOBILE/WIRELESS COMPUTING

Wireless Extension Mechanism and Logic Design for FPGA-based Ethernet Powerlink Node
Kailong Zhang, Liang Hu, Panfei Zuo, Xiao Wu, Kejian Miao

The Adoption Intentions of Mobile Applications
Min-Jhieh Cheng, Her-Her Tsai, Shiu-Wan Hung, Ping-Wen Cheng

PARALLEL AND DISTRIBUTED COMPUTING & SYSTEMS

Parallel Online Exact Sum for Java8
Naoshi Sakamoto

ACRO: Assignment of Channels in Reverse Order to Make Arbitrary Routing Deadlock-free
Ryuta Kawano, Hiroshi Nakahara, Seiichi Tade, Ikki Fujiwara, Hiroki Matsutani, Michihiro Koibuchi, Hideharu Amano

Implement of Massive Data Processing Architecture for Electric Enterprise Groups
Lin-Li Wu, Zhangyi Shen, Xiang Feng

A Deadline-constrained Scheduling for Dynamic Multi-instances Parameter Sweep Workflow
Kachana Viriyapant, Sucha Smachrat

Redistribution Mechanism for Associative Distributed Collections of Objects
Daisuke Fujishima, Tomio Kamada

SMT-based Scheduling for Multiprocessor Real-Time Systems
Zhao Cheng, Haitao Zhang, Yasuo Tan, Yuto Lim
Programming Languages, Compilers & Operating Systems

Translating OpenACC to LLVM IR with SPIR Kernels
Hao-Wei Peng, Jean Jyh-Juin Shann.................................................................597

Generating of Business Rules for Coloured Petri Nets
Jatuporn Deesukying, Wiwat Vatanawood..................................................603

AspectAda: an Aspect Oriented Extension of Ada for Real-Time Systems
Wafa Gabsi, Bechir Zalila, Mohamed Jmaiel.................................................609

Software Specification Techniques

Verifying OSEK/VDX Applications: An Optimized SMT-based Bounded Model Checking Approach
Haitao Zhang, Zhuo Cheng, Cong Tien, Yonggang Lu, Guoqiang Li ..................615

Comments Recovery Approach for Java Decompiler
Siwadol Sateanpattanakul.............................................................................621

Practices for Software Integration Success Factors in GSD Environment
Muhammad Ilyas, Sifiat Ullah Khan..............................................................627

Business Process Ontology for Defining User Story
Chaleerat Thamrongchote, Wiwat Vatanawood..........................................633

Formal Verification of Security Protocols using Spin
Shengbo Chen, Hao Fu, Huaiouk Miao..............................................................637

Operator-Data Type Pair Based Execution Environments Independent Worst-case Execution Time Measuring Method
Yongjin Seo, Hyeon Soo Kim..........................................................................643

Techniques to Generate UTP-based Test Cases from Sequence Diagrams Using M2M (Model-to-Model) Transformation
Yongjin Seo, Eun Young Cheon, Jin-A Kim, Hyeon Soo Kim .........................649

Supplementing Object-Oriented Change Impact Analysis with Fault-proneness Prediction
Bassey Isong, Ohaeri Ifeoma, Muniene Mbolila............................................655

Web Engineering & Applications

A Unified Approach to Automate Geospatial Data Retrieval Using Semantic Web Technologies
Ying Zhang, Chaopeng Li, Shaowen Liu, Feng Wen, Liming Du, Hui He ....................663

An Implementation to Reduce Internal/External Interruptions in Agile Software Development Using Pomodoro Technique
Mintra Ruensuk...............................................................................................669

Digital Scrum Board using Leap Motion
Patsakorn Rititum, Wiwat Vatanawood, Arthit Thongtak.................................673

Usage Pattern Based Survivability Prediction of Web System
Xun Lee, Jiaan Zhou, Hao Fu.............................................................................677

A Model-Driven Development of Web Applications Using AngularJS Framework
Wuttichai Chansuwath, Twittie Senivongse.....................................................683

Constructing Patterns Verification Criteria based on Quality Attributes: Web Security Context Patterns Case Study
Pattariya Singpant, Nakornthip Prompoon......................................................689

Special Session 1: On-chip Parallel and Network-Based Systems in the Big Data Era

Performance Improvement of Multi-Dimensional Indexing System for Big Data Analysis
Kazuto Nakanishi, Teruhisa Hochin, Hiroki Nomiya........................................697

Performance Evaluation of Routing Algorithms for Distributed Key-Value Store Based on Order Preserving Linear Hashing and Skip Graph
Ken Higuchi, Makoto Yoshida, Naoyuki Miyamoto, Kento Takehara, Tatsuo Tsuji ........................................................................703
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Real-time GPU-based Coupled Fluid-Structure Simulation with Haptic Interaction</td>
<td>709</td>
</tr>
<tr>
<td>Speculative Memory: An Architectural Support for Explicit Speculations in Multithreaded Programming</td>
<td>715</td>
</tr>
<tr>
<td>An Interval Control Method for Status Propagation in an Autonomous Distributed Storage System</td>
<td>723</td>
</tr>
<tr>
<td><strong>Special Session 2: Analysis, Evaluation, and Usage of Web Information, System Behaviors, and Human Actions</strong></td>
<td>729</td>
</tr>
<tr>
<td>TweeVist: A Geo-Tweet Visualization System for Web based on Spatio-Temporal Events</td>
<td>729</td>
</tr>
<tr>
<td>Similarity Retrieval Method of Plasma Emission Videos</td>
<td>735</td>
</tr>
<tr>
<td>Estimation of Factor Scores from Feature Values of English Question and Answer Statements</td>
<td>741</td>
</tr>
<tr>
<td>Consideration of Validity of Concurrency Control Program Generated in Genetic Programming</td>
<td>747</td>
</tr>
<tr>
<td>Using Geofencing for a Disaster Information System</td>
<td>753</td>
</tr>
<tr>
<td>Extracting Representative Phrases from Wikipedia Article Sections</td>
<td>759</td>
</tr>
<tr>
<td>Utilizing Texts of Picture Book Reviews for Extracting Children’s Behavioral Characteristics in Language Acquisition</td>
<td>765</td>
</tr>
<tr>
<td>Evaluating Semantic Relatedness through Categorical and Contextual Information for Entity Disambiguation</td>
<td>771</td>
</tr>
<tr>
<td>Music Similarity Retrieval Method Considering Music Arrangement</td>
<td>777</td>
</tr>
<tr>
<td><strong>Special Session 3: Advanced Information Management for Affective and Human-centered Information Systems</strong></td>
<td>783</td>
</tr>
<tr>
<td>Colors Suitable to Presentation Slides</td>
<td>783</td>
</tr>
<tr>
<td>Method of Similarity Retrieval of Color Videos Based on Impressions</td>
<td>789</td>
</tr>
<tr>
<td>Searching Optimal Movements in Multi-Player Games with Imperfect Information</td>
<td>795</td>
</tr>
<tr>
<td>Generating a Werewolf Game Log Digest of Inferring Each Player’s Role</td>
<td>807</td>
</tr>
<tr>
<td>A Collective Approach to Ranking Entities for Mentions</td>
<td>813</td>
</tr>
<tr>
<td>Speeds of Videos Considering Speeds of Objects and Background</td>
<td>819</td>
</tr>
<tr>
<td>Recognition and Intensity Estimation of Facial Expression Using Ensemble Classifiers</td>
<td>825</td>
</tr>
<tr>
<td>Parallel Distributed Interactive Genetic Algorithm for Composing Music Melody Suited to Multiple Users’ Feelings</td>
<td>831</td>
</tr>
</tbody>
</table>
**Special Session 4: Experiences of Software Engineering 1**

Analysis of Information System Operation Cost Based on Working Time and Unit Cost  
*Masateru Tsunoda, Akito Monden, Kenichi Matsumoto, Saweako Ohiwa, Tomoki Oshino* ............................................837

A Hosting Service of Multi-Language Historage Repositories  
*Kyoei Uemura, Yusuke Siatto, Shin Fujiwara, Daiki Tanaka, Kenji Fujiwara, Hajimu Iida, Kenichi Matsumoto* ............843

Influence of Outliers on Analogy Based Software Development Effort Estimation  
*Kenichi Ono, Masateru Tsunoda, Akito Monden, Kenichi Matsumoto* .................................................................849

A Case Study of the Misclassification of Performance Reports in an Issue Tracking System  
*Masao Ohira, Hayato Yoshiyuki, Yusuke Yamatani* .................................................................855

Identifying Recurring Association Rules in Software Defect Prediction  
*Takashi Watanabe, Akito Monden, Yasutaka Kamei, Shuji Morisaki* .................................................................861

**Special Session 5: Experiences of Software Engineering 2**

A Fuzzy Hashing Technique for Large Software Birthmarks  
*Takehiro Tsuzaki, Teruaki Yamamoto, Haruaki Tamada, Akito Monden* .................................................................867

Identifying the Applied Obfuscation Method towards De-obfuscation  
*Hayato Sagisaka, Haruaki Tamada* ..................................................................................................................873

Model-Driven Approach for Self-Aware Pervasive Systems  
*Eva Gerbert-Gaillard, Stéphanie Chollet, Philippe Lalanda* ...............................................................................879

Indoor Environment Sensing Service in Smart City Using Autonomous Sensor Box  
*Seiji Sakakibara, Sachio Saiki, Masahide Nakamura, Shinsuke Matsumoto* ....................................................885

Implementation and Evaluation of BLE Proximity Detection Mechanism for Pass-by Framework  
*Ryoma Tabata, Arisa Hayashi, Seiki Tokunaga, Sachio Saiki, Masahide Nakamura, Shinsuke Matsumoto* ...........891

Deploying Service Integration Agent for Personalized Smart Elderly Care  
*Seiki Tokunaga, Hiroyasu Horiuchi, Kazunari Tamamizu, Sachio Saiki, Masahide Nakamura, Kiyoshi Yasuda* ....897

A Formal Approach for Guiding Architectural Design with Data Constraints  
*Naoya Nitta* ..................................................................................................................................................903

Evaluation of Diagnosis Support Methods in Program Debugging by Trace Analysis: An Exploratory Study  
*Izuru Kume, Masahide Nakamura, Yasuyuki Tanaka, Etsuya Shibayama* ..........................................................909

**Special Session 6: Learning methods for applications to intelligent data sensing**

Text Analysis of Academic Papers Archived in Institutional Repositories  
*Kazushi Okamoto* ..................................................................................................................................................915

Learning Pedestrian Dynamics with Kriging  
*Kazuhiro Kawamoto, Yoshiyuki Tomura, Kazushi Okamoto* ..............................................................................921

Decoding of Emotional Visual Stimuli Using fMRI Brain Signal  
*Shinichi Yoshida* ..............................................................................................................................................925

Baseline Estimation for Serum Creatinine for Definition of Acute Kidney Injury  
*Yutaka Hatakayama, Hiromi Kataoka, Noriaki Nakajima, Teruaki Watabe, Yoshiyasa Okuhara* .....................929

Image Generation Using Generative Adversarial Networks and Attention Mechanism  
*Nuusuke Kataoka, Takaaki Matsubara, Kuniaki Uehara* ......................................................................................933

Semi-Supervised Learning Using Adversarial Networks  
*Ryoosuke Tachibana, Takaaki Matsubara, Kuniaki Uehara* .................................................................................939

Deep Learning for Stock Prediction Using Numerical and Textual Information  
*Ryo Akita, Akira Yoshihara, Takaaki Matsubara, Kuniaki Uehara* ......................................................................941

Cross-lingual Link Prediction Using Multimodal Relational Topic Models  
*Yosuke Sakata, Koji Eguchi* .........................................................................................................................951
Special Session 7: Theories of Systematic Software Testing 959
Extended Mutation Score Based on Weighted Place/Transition Nets to Evaluate Test Suites
Tomohiko Takagi, Tatsuki Teramoto ................................................................. 959
Extended Differential Control Flow Graphs for the Selection of Test Cases in Regression Testing
Shun Akimoto, Shunta Nakanishi, Rihito Yaegashi, Tomohiko Takagi ................................................................. 963
Partially Developed Coverability Graphs for Modeling Test Case Execution Histories
Tomohiko Takagi, Keisuke Noda ........................................................................ 965
ICT Operational Models to View the Actual Usage of Teachers’ Desk Systems
Liang Xu, Ryosuke Takata, Hiroshi Ohta, Tomohiko Takagi, Norifumi Suehiro, Naka Gotoda, Toshihiro Hayashi, Rihito Yaegashi ................................................................. 967

Special Session 8: Machine learning for speech and language processing 971
Lip Reading Using a Dynamic Feature of Lip Images and Convolutional Neural Networks
Yiting Li, Yuki Takashima, Tetsuya Takiguchi, Yasuo Ariki ................................................................. 971
Emotional Voice Conversion Using Deep Neural Networks with MCC and F0 Features
Zhaojie Luo, Tetsuya Takiguchi, Yasuo Ariki ................................................................. 977
Selection of an Optimum Random Matrix Using a Genetic Algorithm for Acoustic Feature Extraction
Yuichiro Kataoka, Toru Nakashika, Ryo Aihara, Tetsuya Takiguchi, Yasuo Ariki ................................................................. 983

Special Session 9: Marketing & Management Science with Computational Intelligence 989
Risk Assessment Quantification of Social-media Utilization in an Enterprise
Shigeaki Tanimoto, Motoi Iwashita, Yoshiaki Seki, Hiroyuki Sato, Atsushi Kanai ................................................................. 989
Behavior Analysis on Mobile-Carrier Choice Considering Mobile Virtual Network Operators
Akiya Inoue, Kenichi Kitahara, Motoi Iwashita ................................................................. 995
Changes in Key Performance Indicators by Phase Transition in Internet of Things
Arata Koike, Yoshiko Sueda ........................................................................ 1001
Local Revitalization Model Based on Soft Systems Methodology
Motoi Iwashita, Shinichi Kato ........................................................................ 1007

Special Session 10: Internet of Things for Smart Society 1013
A Diversity Sensor Connection Capability WSN for Disaster Information Gathering System
Yoshitaka Torii, Takanobu Otsuka, Takayuki Ito ................................................................. 1013
Development of River Information Management System According to the Participatory Sensing
Tomomichi Hayakawa, Ryo Suzuki, Takayuki Ito ................................................................. 1019
Towards Detecting and Predicting Fall Events in Elderly Care Using Bidirectional Electromyographic Sensor Network
Hao Han, Xiaojun Ma, Keizo Oyama ........................................................................ 1025

Special Session 12: Theory and Applications of Advanced and Intelligent Software 1031
A Mathematical Formulation of the “Shicho” in the Game of Go
Masaumi Sato, Koichi Anada, Masayoshi Tsutsumi ................................................................. 1031
A Multi-Layer Rectangular Dissections and the List Structures for the 16-ary Grid Graph
Koichi Anada, Koushi Anzai, Ken Yokota, Takeo Yaku ................................................................. 1037
Rational Number Reconstruction Using Chinese Remainder Theorem on GPU
Toru Fukaya, Tomoyuki Idogawa ........................................................................ 1043

Special Session 13: Affective computing and related machine learning methods 1049
Detect the Emotions of the Public Based on Cascade Neural Network Model
Xiao Sun, Xiaoqi Peng, Fuji Ren ........................................................................ 1049
A Database for Emotional Interactions of the Elderly
Kunxia Wang, Zongbao Zhu, Shidong Wang, Xiao Sun, Lian Li .......................................................... 1055

Chinese Micro-blog Sentiment Analysis based on Semantic Features and PAD Model
Fei Gao, Xiaosun, Kunxia Wang, Fuji Ren .............................................................................................. 1061

Special Session 14: Media Communication and Machine Learning Applications 1067
Network Music Terminal System Design and Implementation Based on IPTV Set-Top Box
Zhen Gao, Ying Li, Weihua Xie, Tao Hu .................................................................................................. 1067

The Improvement of Page Sorting Algorithm for Music Users in Nutch
Ying Li, Fei Sha, Shujuan Wang, Tao Hu .................................................................................................. 1071

Parallelization of a Series of Extreme Learning Machine Algorithms Based on Spark
Tiantian Liu, Zhiyi Fang, Chen Zhao, Yingmin Zhou ............................................................................ 1075

A Home-school Interaction Education Platform Based On Heterogeneous Data Exchanging
Liyun Xiang, Zhiyi Fang ......................................................................................................................... 1081

Clinical Text Analysis Using Machine Learning Methods
Krishna Prasad Choday, Gongzhu Hu ..................................................................................................... 1087

Refinement from Service Economics Planning to Ubiquitous Services Implementation
Yucong Duan, Qiang Duan, Gongzhu Hu, Xiaobing Sun ..................................................................... 1093

ICS16: The 7th International Workshop on Intelligent Computational Science 1099
The Discovery and Identification of Video Page Based on Topic Web Crawler
Xiaojun Ren, Sijun Qin, Peng Zhang ...................................................................................................... 1099

The Research on Event Extraction of Chinese News Based on Subject Elements
Chi Zhang, Songhong Hong, Pengzhou Zhang .................................................................................. 1103

A Biogeography-based Optimization Algorithm with Multiple Migrations
Weichao Chai, Hongbin Dong, Jun He, Wenchuan Shang ................................................................ 1109

Effective Algorithms for Video Shot and Scene Boundaries Detection
Yi Hao, Yanfeng Wang, Haihe Hu ........................................................................................................... 1117

Chinese Text Categorization Based on Deep Belief Networks
Jia Song, Sijun Qin, Pengzhou Zhang ................................................................................................... 1123

The Edge-fault Tolerant Hamiltonian of the Balanced Hypercube
Jianxiang Cao, Wenchuan Shang, Minyong Shi ................................................................................ 1129

Research on the Performance of Segmentation of Text Classification Based on CNICC
Junpeng Gong, Jia Song ......................................................................................................................... 1135

A Hybrid News Recommendation Algorithm based on User’s Browsing Path
Chen Li, Zhengtao Jiang ........................................................................................................................ 1139

A Mosaic Style Rendering Method Based on Fuzzy Color Modeling
Man-di Xu, Yuan Liu, Rui-min Lv ........................................................................................................ 1143

Automatic Extraction of Popular Music Ringtones Based on Music Structure Analysis
Fengyan Wu, Shutao Sun, Weiyao Xue ................................................................................................. 1149

A Bi-directional Sampling based on K-Means Method for Imbalance Text Classification
Jia Song, Xianglin Huang, Sijun Qin, Qing Song .............................................................................. 1155

A Novel Parallel FDTD Algorithm on Non-Uniform Memory Access Multiprocessors
Xiaomei Guo ........................................................................................................................................... 1161

Gaits Classification of Normal vs. Patients by Wireless Gaits Sensor and Support Vector Machine (SVM) Classifier
Taro Nakano, B.T. Nukala, Steven Zupancic, Amanda Rodriguez, D.Y.C Lie, J. Lopez, Tam Q. Nguyen 1165
A TV Program Recommendation System Based on Big Data
Mengyi Zhang, Minyong Shi, Zhiguo Hong, Songtao Shang, Menghan Yan .................................................. 1171
Research on Software Reliability Evaluation Technology Based on BP Neural Network
Lu Liu, Zhengtao Jiang .......................................................................................................................... 1177
Speech Enhancement Using Magnitude and Phase Spectrum Compensation
Zhen Li, Wenjin Wu, Qin Zhang, Hui Ren, Shilei Bai ........................................................................... 1181
Image Retrieval System Based on Bag of View Words Model
Cheng Feng, Xiaohong Wang .................................................................................................................. 1185
The Application of Factorization Machines in User Behavior Prediction
Yuqi Wang, Wenqian Shang, Zhenzhong Li .......................................................................................... 1189
Text Similarity Algorithm Based on Semantic Vector Space Model
Lihong Xu, Shatuo Sun, Qi Wang .......................................................................................................... 1193
News Text Classification Model Based on Topic Model
Zhenzhong Li, Wenqian Shang, Menghan Yan ...................................................................................... 1197
Application of SVD Technology in Video Recommendation System
Menhan Yan, Wenqian Shang, Zhenzhong Li ....................................................................................... 1203
The Analysis of Coordinate-recorded Merge-Sort based on the Divide-and-Conquer Method
Menhan Yan, Wenqian Shang, Mengyi Zhang ...................................................................................... 1209
A Micro-video Recommendation System Based on Big Data
Songtao Shang, Minyong Shi, Wenqian Shang, Zhiguo Hong ............................................................. 1213
Domain Ontology Concept Extraction Method Based on Text
Yuefeng Liu, Minyong Shi, Chunfang Li ............................................................................................... 1219
Research and Application of Path-finding Algorithm Based on Unity 3D
Zhang He, Minyong Shi, Chunfang Li ..................................................................................................... 1225
OPNET-based Analysis of MTU Impact on Application Performance
Yilin Guo, Yun Pan, Lei Cai ................................................................................................................. 1229
Research on the Effects of Transport Protocols on the Application Performance Based on OPNET
Lei Cai, Yun Pan, Yilin Guo ............................................................................................................... 1235
Exposing Library Data with Big Data Technology: A Review
Chunning Wang, Shaochun Xu, Lichao Chen, Xuhui Chen ................................................................. 1241
Research and Implementation of Knowledge Base System for Stage Art Design
Wenlong Fu, Yaguang Wang, Aina Sui, Mengyi Wu ........................................................................... 1247
The Research of Retrieval Keyword Analysis on Stage’s Design Knowledge Base
Wenlong Fu, Lianjing Jin, Wei Gong, Kemin Wang ............................................................................. 1253
Frequency-specific Alterations of Functional Hub in Generalized Tonic-clonic Seizure
Zhe ZHANG, Hui-yan CHENG, Xu-hui CHEN, Chao-lin MA ................................................................ 1257
A Diversity Reserved Quantum Particle Swarm Optimization Algorithm for MMKP
Hongbin Dong, Xue Yang, Xuyang Teng, Yuhai Sha .......................................................................... 1263
Link Prediction Using Matrix Factorization with Bagging
Zhifeng Wu, Yixin Chen ........................................................................................................................ 1271
A Simulated Login-based SINA Microblog Data Collection Method and its Data Analysis
Songsong Zhang, Jing Zhou, Minyong Shi, Chunfang Li ....................................................................... 1277
SWTUS: A Web Tag Utility and Stability Metering Method
Min Wang, Yongbin Wang .................................................................................................................... 1281
Research on Survivability Strategic of Operating System
Tong Wang, Liang Wang ....................................................................................................................... 1287
<table>
<thead>
<tr>
<th>Title</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Analysis System for Online Short Video Comments</td>
<td>1293</td>
</tr>
<tr>
<td>The Study of APT Attack Stage Model</td>
<td>1299</td>
</tr>
<tr>
<td>Design and Implementation of ATM Alarm Data Analysis System</td>
<td>1305</td>
</tr>
<tr>
<td>Items Analysis of Postal Supervision</td>
<td>1309</td>
</tr>
<tr>
<td>Visualization Research and Implementation Based on ATM Alarm Data</td>
<td>1313</td>
</tr>
<tr>
<td>Study of the Individual English Learning and Memory based on Visualization Analysis</td>
<td>1317</td>
</tr>
<tr>
<td>Performance Analysis of HTTP and FTP Based on OPNET</td>
<td>1323</td>
</tr>
<tr>
<td>The Research of Applying Multi-Scale Calculation to Simulate Concentration Difference Polarization Appeared During MBR Membrane Separation Process</td>
<td>1327</td>
</tr>
<tr>
<td>A HDRI Display Algorithm Based on Image Color Appearance Model</td>
<td>1333</td>
</tr>
<tr>
<td>An Improved Method for LSB Based Color Image Steganography Combined with Cryptography</td>
<td>1339</td>
</tr>
</tbody>
</table>

**Author Index**