Table of Contents

KEYNOTE

MOOCs, MOOE and MOOR In China

Wenai Song.................................................................1

COMMUNICATION SYSTEMS & NETWORKS

SONET over RPR

Ammar Hamad, Michel Kadoch ...........................................3

Quantifying Security Risk by Measuring Network Risk Conditions

Candace Suh-Lee, Juyeon Jo..............................................9

Feasibility Analysis for Incorporating/Deploying SIEM for Forensics Evidence Collection in Cloud Environment

Muhammad Irfan, Haider Abbas, Waseem Iqbal.....................15

Mining Information Assurance Data with a Hybrid Intelligence/Multi-agent System

Charles Fowler, Robert, II Hammell ..................................23

Secure in-vehicle Systems against Trojan Attacks

Masaya Yoshikawa...........................................................29

Social Routing: A Novel Routing Protocol for Delay Tolerant Network based on Dynamic Connectivity

Viet Quoc Nguyen, Van Phuoc Pham, Quoc Son Trinh, Lung Vu Duc ....35

A Big Data Approach to Enhance the Integration of Access Control Policies for Web Services

Mohammed Alodih, Zaki Malik .........................................41


Saima Jamil, Saqib Jamil, Sheeraz Ahmed ............................47

Comparative Analysis on the Signature Algorithms to Validate AS Paths in BGPsec

Kyoungha Kim, Yanggon Kim ...........................................53

Opportunistic Wireless Network Coding Based On Small-time Scale Traffic Prediction

Rui Zhang, Jie Li, Quan Qian, Wei Feng ...............................59

Web-based Motion Detection System for Health Care

Ruiling Gao, Minghuan Zhao, Zhihui Qiu, Yingzhou Yu, C. Hwa Chang ........65

A Novel Contention Window Backoff Algorithm for IEEE 802.11 Wireless Networks

Ikram Syed, Byeong-Hee Roh ..........................................71

A Method for Secure RESTful Web Service

Sungchul Lee Lee, Ju-Yeon Jo, Yooohwan Kim .........................77

Deploying Agents in the Network to Detect Intrusions

Shankar Banik, Luis Pena ...............................................83

Empirical Evaluation of Designing Multicasting Network with Minimum Delay Variation

Nicklaus Rhodes, Shankar Banik .......................................89

An Autonomous Model to Enforce Security Policies Based on User’s Behavior

Kambiz Ghazinour, Mehdi Ghayoumi ................................95

CONTROL SYSTEMS, INTELLIGENT SYSTEMS

Utilizing NFC to Secure Identification

Robert Gripentog, Yoohwan Kim ........................................101

A Kernel based Atanassov’s Intuitionistic Fuzzy Clustering for Network Forensics and Intrusion Detection

Anupam Panwar...........................................................107

Regimroid: Framework for Customize Android Platform to act as a Brain for Telepresence Robot

Nouha Ghribi.................................................................113

Communication System Based on Chaotic Delayed Feedback Oscillator with Switched Delay

Mikhail Prokhorov, Danil Kulminskiy, Anatoly Karavaev, Anatoly Karavaev, Vladimir Ponomarenko ..................119

Effective Gaze Writing with Support of Text Copy and Paste

Reo Kishi, Takahiro Hayashi ...........................................125

A Review of Multimodal Biometric Systems: Fusion Methods and Their Applications

Mehdi Ghayoumi ..........................................................131

An Adaptive Fuzzy Multimodal Biometric System for Identification and Verification

Mehdi Ghayoumi, Kambiz Ghazinour ................................137

Evaluating a GA-based Approach to Dynamic Query Approximation on an Inference-enabled SPARQL Endpoint
A Pruning Algorithm for Reverse Nearest Neighbors in Directed Road Networks
   Rizwan Qamar, Muhammad Attique, Tae-Sun Chung .................................................. 279

A Semantic Approach for Transforming XML Data to RDF triples
   Mohamed Kharrat, Anis Jedidi, Faiez Gargouri .............................................................. 285

SPEECH AND SIGNAL PROCESSING
   Syllable-based Myanmar Language Model for Speech Recognition
      Wunna Soe, Yadana Thein .............................................................................................. 291

   In-house Alert Sounds Detection and Direction of Arrival Estimation to Assist People with Hearing Difficulties
      Mohammad Daoud, Mahmoud Al-Ashi, Fares Abawi, Ala Khalifeh .................................. 297

   Nearest Multi-Prototype Based Music Mood Classification
      Babu Baniya, Joonwhoan Lee, Choong Seon Hong ......................................................... 303

IMAGE PROCESSING & PATTERN RECOGNITION
   Decomposition of Partly Occluded Objects Based on Evaluation of Figural Goodness
      Takahiro Hayashi, Tatsuya Ooi, Motoki Sasaki ................................................................. 307

   Using Ant’s Colony Algorithm for Improved Segmentation for Number Plate Recognition
      Shantanu Prakash, Sanchay Dewan, Shreyansh Bajaj ...................................................... 313

   FPGA Implementation of a Low Complexity Steganographic System for Digital Images
      Williams Antonio Pantoja Laces, Jose Juan Garcia-Hernandez ...................................... 319

   Recognition of Offline Handwritten Hindi Text Using Middle Zone of the Words
      Naresh Garg, Lakhwinder Kaur, Mansih Jindal ............................................................... 325

   Automatic Extraction of Text Regions from Document Images by Multilevel Thresholding and K-means Clustering
      Yu Hoai Nam, Tran Tuan Anh, Na In Seop, Kim Soo-Hyung ............................................. 329

   Automated Thresholding of Lung CT Scan for Artificial Neural Network based Classification of Nodules
      Sheeraz Akram, Muhammad Younus Javed ......................................................................... 335

INTELLIGENT AGENT TECHNOLOGY, AGENT BASED SYSTEMS
   Single-Object Resource Allocation in Multiple Bid Declaration with Preferential Order
      Kengo Saito, Toshiharu Sugawara ..................................................................................... 341

   HMM-Based Vietnamese Speech Synthesis
      Son Trinh ............................................................................................................................. 349

   A Scoring Rule-based Truthful Demand Response Mechanism
      Keisuke Hara, Takayuki Ito .............................................................................................. 355

   Multiagent-based Distributed Backup System for Individuals
      Takahiro Uchiya, Motohiro Shibakawa, Tetsuo Kinoshita, Ichii Takumi ............................ 361

INTERNET TECHNOLOGY AND APPLICATIONS, E-COMMERCE
   eMedicalHelp: A Customized Medical Diagnostic Application: Is a single questionnaire enough to measure stress?
      Hedieh Ranjbarbatabar, Amir Maddah, Manolya Kavakli .................................................. 367

   Development of Mobile Voice Navigation System Using User-Based Mobile Maps Annotations
      Tomohiro Yanagi, Daisuke Yamamoto, Naohisa Takahashi .............................................. 373

   3D Web Applications in E-Commerce: A Secondary Study on the Impact of 3D Product Presentations Created with HTML5 and WebGL
      Jens Geelhaar, Gabriel Rausch ......................................................................................... 379

   SQUED: A Novel Crowd-sourced System for Detection and Localization of Unexpected Events from Smartphone-Sensor Data
      Taishi Yamamoto, Kenta Oki, Hung-Hsuan Huang, Kyoji Kawagoe .................................. 383

   Some Observations On Online Advertising: A New Advertising System
      Dapeng Liu, Simon Xu ......................................................................................................... 387

MANAGEMENT INFORMATION SYSTEMS
   Objective Framework for Early-Stage Comparison of Software Development Project Types
      Donghwoon Kwon, Robert Hammell .................................................................................. 393

MIDDLEWARE ARCHITECTURES & TECHNIQUES
   ............................................................................................................................................ 399
## MOBILE/WIRELESS COMPUTING

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>An Energy-saving Task Scheduler for Mobile Devices</td>
<td>Hao Qian</td>
<td>423</td>
</tr>
<tr>
<td>Challenges and Implementation of ad-hoc Water Gauge System for the Grasp of Internal Water Damage</td>
<td>Takanobu Otsuka, Yoshitaka Torii, Takayuki Ito</td>
<td>431</td>
</tr>
<tr>
<td>Energy-Efficient Distributed Computing Solutions for Internet of Things with ZigBee Devices</td>
<td>Grzegorz Chmaj, Henry Selvaraj</td>
<td>437</td>
</tr>
</tbody>
</table>

## PARALLEL AND DISTRIBUTED COMPUTING & SYSTEMS

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emerald: Enhance Scientific Workflow Performance with Computation Offloading to the Cloud</td>
<td>Hao Qian, Daniel Andresen</td>
<td>443</td>
</tr>
</tbody>
</table>

## PROGRAMMING LANGUAGES, COMPILERS, & OPERATING SYSTEMS

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accelerating Storage Access by Combining Block Storage with Memory Storage</td>
<td>Shuichi Oikawa</td>
<td>449</td>
</tr>
</tbody>
</table>

## SOFTWARE SPECIFICATION TECHNIQUES

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal Specification and Reasoning for Situated Multi-agent System</td>
<td>Zhuang Li, Huakou Miao</td>
<td>455</td>
</tr>
</tbody>
</table>

## WEB ENGINEERING & APPLICATIONS

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic Generation of Programming Exercises for Learning Programming Language</td>
<td>Akiyoshi Wakatani, Toshiyuki Maeda</td>
<td>461</td>
</tr>
</tbody>
</table>

## SPECIAL SESSION 1

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robust Location Tracking Method for Mixed Reality Robots using a Rotation Search Method</td>
<td>Masahiro Yamamoto, Kazuhiro Suzuki, Ryosuke Ogawa, Nobuhiro Ito, Yoshinobu Kawabe</td>
<td>467</td>
</tr>
<tr>
<td>Verifying Ignition Timing of Gasoline Direct Injection Engine’s PCM</td>
<td>Masato Yamauchi, Nobuhiro Ito, Yoshinobu Kawabe</td>
<td>473</td>
</tr>
<tr>
<td>Analysis of Driving Behaviors based on GMM by using Driving Simulator with Navigation Plugin</td>
<td>Naoto Mukai</td>
<td>479</td>
</tr>
<tr>
<td>Analyzing Relationship between the Number of Errors in Review Processes for Embedded Software Development Projects</td>
<td>Toyoshiro Nakashima, Kazunori Iwata, Yoshiyuki Anani, Naohiro Ishii</td>
<td>485</td>
</tr>
<tr>
<td>Classification on Nonlinear Mapping of Reducts Based on Nearest Neighbor Relation</td>
<td>Naohiro Ishii, Ippei Torii, Naoto Mukai, Kazunori Iwata, Toyoshiro Nakashima</td>
<td>491</td>
</tr>
</tbody>
</table>

## WORKSHOP I

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposal of Programming Creation Application Using Road Signs by Smartphones</td>
<td>Reiko Kuwabara, Eigo Ito, Takayuki Fujimoto</td>
<td>497</td>
</tr>
<tr>
<td>Proposal of Multiple Travel Scheduling System based on Inverse Operation Method</td>
<td>Murata Kazuya, Takayuki Fujimoto</td>
<td>503</td>
</tr>
<tr>
<td>A proposal of Programming Education System using Mechanical Calculator Mechanism</td>
<td>Eigo Ito, Takayuki Fujimoto</td>
<td>509</td>
</tr>
<tr>
<td>SDSS: Proposal on Feeding Support Application Software which Enables the User to Create a State of “Mental Alertness”</td>
<td>Motoichi Adachi, Takayuki Fujimoto</td>
<td>513</td>
</tr>
</tbody>
</table>
A Proposal of the System to Stop a Decline of the Interest of Great East Japan Earthquake
Koji Fujita, Takayuki Fujimoto ................................................................. 519

WORKSHOP II
525
Singing Voice Detection of Popular Music Using Beat Tracking and SVM
Fengyan Wu, Shutao Sun, Jianglong Zhang, Yongbin Wang .......................... 525
Solving the Supermarket Shopping Route Planning Problem Based on Genetic Algorithm
Xiajia Chen, Ying Li, Tao Hu ........................................................................ 529
Online Advertising Demand-side Platform Business System Design Exploration
Tao Lei, Junpeng Gong, Yujun Wen ................................................................ 535
A Feature Selection Algorithm of Music Genre Classification Based on ReliefF and SFS
Meimei Wu, Yongbin Wang ......................................................................... 539
Research and Implementation of Four-prime RSA Digital Signature Algorithm
Zhenjiu Xiao, Yongbin Wang, Zhengtao Jiang .............................................. 545
The Design and Implementation of Personalized News Recommendation System
Xuejiao Han, Wenqian Shang, Shuchao Feng ................................................. 551
A Logic Model of Interest in Information Network
Shiping Zhou, Wei Zhang, Xiangrong Tong .................................................. 555
Research on Public Opinion Based on Big Data
Songtao Shang, Minyong Shi, Wenqian Shang, Zhiguo Hong ....................... 559
An Automatic Semantic Web Service Composition Method Based on Ontology
Ying Li, Yulong Li, Tao Hu, Zhisheng Lv ........................................................ 563
The Maximal Operator Classifier
Yuqi Wang, Wenqian Shang, Shuchao Feng .................................................... 567
Visualization in Media Big Data Analysis
Yingjian Qi, Xinyan Yu, Guoliang Shi, Ying Li ................................................. 571
Personalized two party key exchange protocol
Tong Yi, Minyong Shi, Wenqian Shang ............................................................ 575
Personalized News Recommendation Based on Links of Web
Zhenzhong Li, Wenqian Shang ..................................................................... 581
Interactive Virtual Theater Display System
Min Feng, Huaichang Du .............................................................................. 585
An Improved Algorithm for Active Contour Extraction Based on Greedy Snake
Hui Ren, Zhibin Su, Chaohui Lv, Fangjv Zou ................................................ 589
Spread Influence Algorithm Of News Website Based on PageRank
GuoWei Chen, Fei Xie, Tao Lei, Yu Su .......................................................... 593

SERA 2015
597
Petri Nets-based Design of Real-Time Reconfigurable Networks on Chips
Hela Ben Salah, Adel Benzina, Mohamed Khalgui ....................................... 597
Real-Time Reconfigurable Scheduling of Multiprocessor Embedded Systems Using Hybrid Genetic Based Approach
Hamza Gharsellaoui, Ismail Ktata, Naoufel Kharroubi, Mohamed Khalgui .................. 605
New Adaptive Middleware for Real-Time Embedded Operating Systems
Fethi Jarray, Hamza Chniter, Mohamed Khalgui .......................................... 610
SABPEL: Creating Self-Adaptive Business Processes
Sihem Cherif, Raoudha Ben Djemaa, Ikram Amous ...................................... 619
A Learning Semantic Web Service for Generating Learning Paths
Chaker Ben Mahmoud, Ikbel Azaz, Fatthia Bettahar, Marie-Hélène Abel, Faïez Gargouri 627
2LPA-RTDW: A Two-Level Data Partitioning Approach for Real-time Data Warehouse
Issam Hamdi, Emma Bouazizi, Salih Alshomrani, Jamel Feki ......................... 632
Opus Framework: A Proof-of-Concept Implementation
Nahla Haddar, Mohamed Tmar, Faïez Gargouri ............................................ 639
A Service-Oriented Architecture (SOA) Framework for Choreography Verification
Sirine Rebai, Hatem Hadj Kacem, Mohamed Karaa, Saul E. Pomares, Ahmed Hadj Kacem.............642
Adaptive Security for Cloud Data Warehouse as a Service
Emna Guermazi, Mounir Ben Ayed, Hanène Ben-Abdallah......................................................647
Enriching User Model Ontology for Handicraft domain by FOAF
Maha Maalej, Achraf Mtibaa, Faïez Gargouri.................................................................651
Integrating semantics and structural information for BPMN model refactoring
Wiem Khlif, Hanène Ben-Abdallah.................................................................656

Author Index ................................. 661