
Shanghai, China
30 May – 1 June 2016
# Table of Contents

## KEYNOTE
Data Computations for Applied Informatics
Naohiro Ishii .................................................. 1
Social Service Innovations with Information Technologies
Tokuro Matsuo .................................................. 3

## ALGORITHMS
A Self-Organizing Algorithm for Community Structure Analysis in Complex Networks
Hanlin Sun, Wei Jie, Christian Sauer, Sugang Ma, Gang Han, Wei Xing ........................................ 5
Automatic Verification of Non-recursive Algorithm of Hanoi Tower by Using Isabelle Theorem Prover
Huazhen Xu, Zhen You, Jinyun Xue ............................. 13
An Efficient Uniform Integrated Advection Algorithm for Finite Time Lyapunov Exponent Field Computation On GPUand MIC
Wang Fang, Deng Liang, Zhao Dan, Li Sikun ................................. 19
An Improved Model for PM2.5 Inference Based on Support Vector Machine
Yuhan Dong, Hui Wang, Lin Zhang, Kai Zhang ................................. 27
Projection Search For Approximate Nearest Neighbor
Cheng Feng, Bo Yang .............................................. 33
Inferring Gene Regulatory Networks Based on Spline Regression and Bayesian Group Lasso
Yue Fan, Qinke Peng .............................................. 39
A Hybrid VNS Based Framework for Biomass Transportation
Hiba Tahyaoui, Abdelkader Dekdouk, Saoussen Krichen ................................. 43

## ARTIFICIAL INTELLIGENCE
Ultra High Frequency Polynomial and Cosine Artificial Higher Order Neural Networks
Ming Zhang, Cherui Hu .............................................. 49
Hierarchical Latent Semantic Mapping for Automated Topic Generation
Guorui Zhou, Guang Chen .............................................. 57
Document Representation Based on Semantic Smooth Topic Model
Ying Liu, Wei Song, Lizhen Liu, Hanshi Wang ................................. 65
A Novel Fuzzy Omni-directional Gait Planning Algorithm for Biped Robot
Haobin Shi, Xuesi Li, Weihao Liang, Ming’ai Dang, Huahui Chen, Shixiong Wang ................................. 71
The Optimization of Beer Recipe Based on nn Improved Ant Colony Optimization
Song Zheng, Xiaqing Zheng, Chunlin Wang ...................................... 77
Characteristics of Analysis Methods for the Impression Evaluation Method by Space
Shunsuke Akai, Teruhisa Hochin, Hiroki Nomiya ...................................... 81
Team Negotiation Based on Solidarity Behavior: A Concession Strategy in the Team
Jian Wang, Jingqiu Geng .............................................. 87
A Hybrid Method for Bilingual Text Sentiment Classification Based On Deep Learning
Guolong Liu, Xiaofei Xu, Bailong Deng, Siding Chen, Li Li ...................................... 93
Functional Classification Study for Mathematical Formulas Retrieval
Sai Hong, Wei Su, He Lin, Xianchao Lv ...................................... 99
Single-Trial ERP Detecting for Emotion Recognition
Jingfang Jiang, Ying Zeng, Li Tong, Chi Zhang, Bin Yan ...................................... 105
A Hybrid Model for Arabic Document Indexing
Souheila Ben Guirat, Ibrahim Bounhasi, Yahia Slimani ...................................... 109
Facial Expression Classification using Support Vector Machine Based on Bidirectional Local Binary Pattern Histogram Feature Descriptor
Kiran Talele, Kushal Tuckley ...................................... 115

## SOFTWARE ENGINEERING & SYSTEM DESIGN
An Empirical Study on Recovering Requirement-to-Code Links
Yuchen Zhang, Chengcheng Wan, Bo Jin ...................................... 121
Composite-based Conflict Resolution in Merging Versions of UML Models
Hao Chong, Renwei Zhang, Zheng Qin
A Fuzzy-logic System for the User Interface Usability Measurement

Marwa Hentati, Lasaad Benammar, Abdelwahab Trabelsi, Adel Mahfouhdi
A Formal Model for Safety Evaluation of Platooning System

Mohamed Garoui

COMMUNICATION SYSTEMS AND NETWORKS
Position Orientating PathReverse Ray Tracing Algorithm Based on Cluster Analysis
Fanzeng Kong, Nae Zheng, Guangyi Liu, Xiukun Ren

CRYPTOGRAPHY AND NETWORK SECURITY
Network Intrusion Detection System Model Based on Data Mining
Yanjie Zhao
Request Distribution with Pre-Learning for Distributed SSL Reverse Proxies
Haitao Dong, Yiqiang Sheng, Jun Yang
Self-Adaptive Access Control & Delegation in Cloud Computing
Ali Ahmad Malik, Hirra Anwar, Muhammad Awais Shibli

DATA MINING AND MACHINE LEARNING
Optimal Placement of Charging Stations for Electric Taxis in Urban Area with Profit Maximization
Yuhan Dong, Siyuan Qian, Jinxing Liu, Lin Zhang, Kai Zhang

EMBEDDED SYSTEMS
An Efficient Page Replacement Algorithm for PCM-based Mobile Embedded Systems
Seunghoon Yoo, Hyokyung Bahn
Scheduling Overload for Real-Time Systems using SMT Solver
Zhuo Cheng, Haitao Zhang, Yasuo Tan, Yuto Lim

IMAGE, SPEECH, AND SIGNAL PROCESSING
Study of Occlusion Problem in Stereo Matching
Jianguo Liu, Xuesong Li, Qin Qin, Hao Zhang
Traffic Sign Detection Based on Cascaded Convolutional Neural Networks
Di Zang, Maomao Bao, Junji Zhang, Jiujun Cheng, Dongdong Zhang, Keshuang Tang
Sample Reconstruction and Secondary Feature Selection in Noisy Speech Emotion Recognition
Xiaoqing Jiang
Image Segmentation Based on Local Chan-Vese Model Optimized by Max-flow Algorithm
Li Zhongguo, Zeng Lei, Wang Ti, Chen Jian, Yan Bin
Improved Accuracy of Speaker Verification System in Noisy Environment
Nirmala Salam, Rekha Nair
A Fingertips Detection Method Based on the Combination of Centroid and Harris Corner Algorithm
Jiajun Chen, Mengmeng Han, Shu Yang, Yuchun Chang
Bilateral Histogram Equalization with Pre-processing for Contrast Enhancement
Feroz Mahmud, Md. Mostafijur Rahman, Shanto Rahman, Emon Kumar Dey, Mohammad Shoyaib
A Layered Tone-Mapping Operator Based on Contrast Enhanced Adaptive Histogram Equalization
Shaojun Zhang, Sheng Zhang, Jianhua Pang, Hailong Chen

INTERNET TECHNOLOGY AND APPLICATIONS
A Location Based Data Product
Xianming Liu, Li Pan, Hong Zheng, Jingzhao Yuan
Ranking Web Service for High Quality by Applying Improved Entropy-TOPSIS Method
Ruonan Sun, Bin Zhang, Tingting Liu
Intelligent Mailbox With Centralized Parallel
Nabeel Ur Rehman, Adeel Muhammad

MOBILE/WIRELESS/AD-HOC NETWORKS
Joint Multi-channel Assignment and Routing in Wireless Mesh Network
Tingting Ma, Hongwei Zeng, Xiaolin Wang ................................................................. 419

WEB-BASED APPLICATIONS 425
Operational Pattern Based Code Generation For Management Information System: An Industrial Case Study
Fagui Mao, Xuyang Cai, Beijun Shen, Yong Xia, Bo Jin ........................................... 425
Service Matchmaking with Closed World Reasoning
Wenli Qi, Fangfang Liu .............................................................................................. 431

COMPUTER ARCHITECTURE 437
Mechanistic Relationship between Instruction Fetch Width and Basic Block Size to Architectural Vulnerability Factor
Liu Tang, Zhangqin Huang ........................................................................................ 437
A Method for Issue Queue Soft Error Vulnerability Mitigation
Liu Tang, Zhangqin Huang ......................................................................................... 443

NATURAL LANGUAGE PROCESSING 451
Toward Hybrid Method for Parsing Modern Standard Arabic
Nabil Khoufi, Chafik Aloulou, Lamia Hadrich Belguith ............................................ 451

SPATIAL DATA WAREHOUSE 457
Enhancing Spatial Data warehouse Exploitation: A SOLAP Recommendation Approach
Saida Aissi, Mohamed Salah Gouider, Tarek Shboui, Lamjed Ben Said ....................... 457

7TH INTERNATIONAL WORKSHOP ON INTELLIGENT COMPUTATIONAL SCIENCE (ICS-2016) 465
An Improved Image Matching Method Based on ORB
Letian Li, Lin Wu, Yongcun Gao ................................................................................. 465
Visual Abstraction Improvement of Interactive Dot Map
Di Zhang, Ligu Zhu, Zida Xiao, Lei Zhang .................................................................. 469
Design, Modeling and Tuning of Modified PID Controller for Autopilot in MAVs
Xu-hui Chen, Ejaz Ul Haq, Jiawei Lin ........................................................................ 475
The Research of The Brain Default Network Using Cascading Algorithm
Ming Ke, Zhao Cao, Zhiqiang Li, Xiaoping Yang ....................................................... 481
Adaptive Fuzzy PID Speed Control of DC Belt Conveyor System
Xu-hui Chen, Md Lutfar Rahman, Yin Zhang ............................................................ 487
Genetic Algorithm Optimization Research Based On Simulated Annealing
Shunan Lan, Weiguo Lin ............................................................................................ 491
Development of Puzzle Game about Children’s Etiquette Based On Unity3D
Jiyuan Li, Wenfeng Hu ............................................................................................... 495
Research and Implementation of Media Asset Management Mode
Wang Bo, Zhangmin ..................................................................................................... 501
A Novel Multidimensional professionalism evaluation model
Zhengzhong Li, Wenqian Shang, Yuqi Wang .............................................................. 507
SLACM: Heterogeneous Multilevel Service Aggregation Access Control Model based Situation Logic
Min Wang, Yongbin Wang .......................................................................................... 511
Network Security Risk Assessment Method Based on HMM and Attack Graph Model
Si-chao Liu, Yuan Liu ................................................................................................ 517
Development of Electrostatic Decay Time Intelligent Test Instrument and Software Design
Hui Li, Xiaohua Shi, Kejun Lin, Hongyu Yu ................................................................. 523
A Comparative Study on Black-Box Testing with Open Source Applications
Shaochun Xu, Lichao Chen, Chunming Wang, Oleksandr Rud ..................................... 527

SPECIAL SESSION 1: SOFTWARE QUALITY AND TESTING 533
Complexity Analysis and Comparison of Test Paths Based on DSE
Jiawen Lu, Lizhi Cai, Yang Zhang, Keyi Hong ......................................................... 533
Evaluating Accuracy and Performance of GPU-Accelerated Random Walk Computation on Heterogeneous Networks
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluating Quality-in-Use of FLOSS through Analyzing User Reviews</td>
<td>541</td>
</tr>
<tr>
<td>Research and Practice on the whole Life Cycle Test Process Model</td>
<td>547</td>
</tr>
<tr>
<td>Software Test Cases Recommendation System Research based on Collaborative Filtering</td>
<td>553</td>
</tr>
<tr>
<td>Research on Non-Authorized Privilege Escalation Detection of Android Applications</td>
<td>557</td>
</tr>
<tr>
<td>An Approach to Improving the Performance of CUDA in Virtual Environments</td>
<td>563</td>
</tr>
<tr>
<td>Fuzzy Set based Data Publishing For Privacy Preservation</td>
<td>569</td>
</tr>
<tr>
<td>P-CP-ABE: Parallelizing Cipher-text-Policy Attribute-Based Encryption for Clouds</td>
<td>569</td>
</tr>
<tr>
<td>Parallel Image Dehaze Algorithm Based on GPU Using Fuzzy System and Hybrid Evolution Algorithm</td>
<td>575</td>
</tr>
<tr>
<td>An Approach to Improving the Performance of CUDA in Virtual Environments</td>
<td>581</td>
</tr>
<tr>
<td>Profiling and Analysis of Object Lazy Allocation in Java Programs</td>
<td>591</td>
</tr>
<tr>
<td>Similarity Model Based on CBR and FCA</td>
<td>597</td>
</tr>
<tr>
<td>Study on the Evolution Process of Nuclear Accident Consequence Assessment</td>
<td>605</td>
</tr>
<tr>
<td>Computing Uncertain Skyline of Web Services via Interval Number</td>
<td>613</td>
</tr>
<tr>
<td>An Accelerating Approach for Simulating Texture Sharp Transition Mechanism of Pyrocarbon on Hexagonal-Mesh Surface</td>
<td>613</td>
</tr>
<tr>
<td>The Modularity-based Hierarchical Tree Algorithm for Multi-class Classification</td>
<td>619</td>
</tr>
<tr>
<td>Steganalysis of JPEG Image-Based steganography with Support Vector Machine</td>
<td>631</td>
</tr>
<tr>
<td>High Resolution Feature Extraction from Optical Coherence Tomography Acquired Internal Fingerprint</td>
<td>637</td>
</tr>
<tr>
<td>A Novel and Fast Connected Component Count Algorithm Based on Graph Theory</td>
<td>643</td>
</tr>
<tr>
<td>Motion Estimation Method Based on Efficient Memory Bandwidth for HEVC Real-Time Encoding</td>
<td>649</td>
</tr>
<tr>
<td>STNoSQL: Creating NoSQL Database on the SensibleThings Platform</td>
<td>663</td>
</tr>
</tbody>
</table>
On Higher-order Communication of Erlang
Nannan Liu, Xian Xu .......................................................... 675
A Novel Approach for Efficient Accessing of Small Files in HDFS: TLB-MapFile
Bing Meng, Wei-bin Guo, Gui-sheng Fan, Neng-wu Qian .............................. 681
Ensuring Replication-based Data Integrity and Availability in Multicloud Storage
Xin Pei, Jiuchuan Lin, Bo Jin, Yongjian Wang ........................................ 687
Attack-Defense Trees based Cyber Security Analysis for CPSs
Xiang Ji, Hui-Qun Yu, Gui-Sheng Fan, Wen-Hao Fu .................................. 693

Author Index ................................................................. 699