

# **2016 12th International Conference on Natural Computation, Fuzzy Systems and Knowledge Discovery (ICNC-FSKD 2016)**

**Changsha, China  
13-15 August 2016**

**Pages 1-756**



**IEEE Catalog Number: CFP16FSK-POD  
ISBN: 978-1-5090-4094-0**

**Copyright © 2016 by the Institute of Electrical and Electronics Engineers, Inc  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\*This publication is a representation of what appears in the IEEE Digital Libraries. Some format issues inherent in the e-media version may also appear in this print version.***

|                         |                   |
|-------------------------|-------------------|
| IEEE Catalog Number:    | CFP16FSK-POD      |
| ISBN (Print-On-Demand): | 978-1-5090-4094-0 |
| ISBN (Online):          | 978-1-5090-4093-3 |

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# Table of Content

## *Natural Computation: Theory and Algorithms*

### **Feedforward Neural Networks**

|   |    |
|---|----|
| A Hybrid ANN-GA Method for Analysis of Geotechnical Parameters<br><i>Shike Zhang, Shunde Yin</i> .....  | 1  |
| Cascading Model based Back Propagation Neural Network in Enabling Precise Classification<br><i>Yang Liu, Weizhe Jing, Lixiong Xu</i> .....                | 7  |
| Emergency Evacuation Capability Assessment of Subway Operation Based on Artificial Neural Network<br><i>Qiquan Wang</i> .....                             | 12 |
| Fruit Recognition Based On Convolution Neural Network<br><i>Lei Hou, Qingxiang Wu, Qiyun Sun, Heng Yang, Pengfei Li</i> .....                             | 18 |
| Population Projection of the Indian Subcontinent Using TP-Aided WASD Neuronet<br><i>Yunong Zhang, Wan Li, Liangyu He, Junqiao Qiu, Hongzhou Tan</i> ..... | 23 |

### **Support Vector Machines and Statistical Neural Network Models**

|  |    |
|--|----|
| A Novel Photovoltaic Power Output Forecasting Method Based on Weather Type Clustering and Wavelet Support Vector Machines Regression<br><i>Yuxi Liu, Jiakui Zhao, Mingyang Zhang, Fang Liu, Hong Ouyang, Hongwang Fang, Qingli Hao, Yaozong Lu</i> ..... | 29 |
| Context-Sensitive Similarity based Supervised Image Change Detection<br><i>Leifu Gao, Chao Li</i> .....  | 35 |
| Negative Selection in Negative Correlation Learning<br><i>Yong Liu</i> .....   | 41 |
| Performance assessment of fault classifier of chemical plant based on support vector machine<br><i>Zhang Xin, Hu Jinqiu, Zhang Laibin</i> .....  | 46 |

### **Principal and Independent Component Analysis**

|   |    |
|---|----|
| Extracting Feature Signal from The Gravity Earth Tide Based on Improved ICA<br><i>Aiyi Zhang, Haiyan Quan</i> ..... | 52 |
|---|----|

|   |    |
|---|----|
| Generating Face Images Based on 3D Morphable Model<br><i>Dominik Sopiak, Milos Oravec, Jarmila Pavlovicova, Zuzana Bukovcikova, Monika Dittingerova</i> ..... | 58 |
|---|----|

## Self-Organizing Maps

### Neurodynamics and Neuro-Biological Systems

|  |    |
|--|----|
| Estimation of Valence of Emotion from Musically Stimulated EEG Using Frontal Theta Asymmetry<br><i>Tandle Avinash, Jog Nandini, Dharmadhikari Ambrish, Jaiswal Suyog</i> ..... | 63 |
|--|----|

### Other Theoretical Topics in Neural Computation

|   |    |
|---|----|
| Evolving Deep Neural Networks : A New Prospect<br><i>Sreenivas Sremath Tirumala, Ajit Narayanan, C Phani Ramesh</i> ..... | 69 |
| Nearest Neighbor-based Instance Selection for Classification<br><i>Guanghua Yu, Jin Tian, Minqiang Li</i> .....           | 75 |

### Genetic and Evolutionary Algorithms

|  |     |
|--|-----|
| A Failure Remember-driven Differential Evolution<br><i>Xinchao Zhao, Dongyue Liu, Huiping Liu, Weibo Ai</i> .....                                      | 81  |
| Adaptive Hybrid Differential Evolution with Circular Sliding Window for Large Scale Optimization<br><i>Hongwei Ge, Liang Sun, Xin Yang</i> .....       | 87  |
| Cooperative Co-evolution with Graph-based Differential Grouping for Large Scale Global Optimization<br><i>Yingbiao Ling, Haijian Li, Bin Cao</i> ..... | 95  |
| Genetic Algorithms Based on Clustering for Traveling Salesman Problems<br><i>Lizhuang Tan, Yanyan Tan, Guoxiao Yun, Yanna Wu</i> .....                 | 103 |
| Optimization of Fuzzy C-Means based on OBL-Genetic Algorithm<br><i>Xiao Pan, Pei-yu Liu, Min Ren, Lin Lv</i> .....                                     | 109 |
| Optimizing Application Layer Multicast Routing via Artificial Fish Swarm Algorithm<br><i>Xuan Ma, Rongjun Tang, Jingyan Kang, Qing Liu</i> .....       | 115 |

|   |     |
|---|-----|
| Optimizing Self-Adaptive Gender Ratio of Elephant Search Algorithm by Min-Max Strategy<br><i>Zhonghuan Tian, Simon Fong, Raymond Wong, Richard Millham</i> .....  | 121 |
| Population Migration Algorithm for Eigenvalue of Matrix<br><i>Yanbin Liu, Liqiong Li, Xuyu Peng</i> .....   | 127 |
| Quantitative Structure-Retention Relationship (QSRR) Study of Oxygen-containing Organic Compounds Based on Gene Expression Programming (GEP)<br><i>Xiaotong Zhang, Lihua Shi, Ling Ding, Zhaolin Sun, Ting Sun, Lijuan Song</i> ..... | 132 |
| Relationship Between Success Ratios of Hybrid Algorithms and Those of Basic Algorithms on Bimodal MaxSAT Problems<br><i>Xinsheng Lai, Hong Hu, Qing Yan, Yulin Zhou</i> .....   | 139 |
| Robot path planning based on an improved genetic algorithm with variable length chromosome<br><i>Jianjun Ni, Kang Wang, Haohao Huang, Liuying Wu, Chengming Luo</i> .....   | 145 |
| <b>Particle Swarm Optimization and Ant Colony Optimization</b>  |     |
| A Distribution-guided Bare-bones Particle Swarm Optimization<br><i>Chuanhua Zeng, Yuanxia Shen, Jian Chen</i> .....   | 150 |
| A Novel Electron Drifting Algorithm for Non-linear Optimization Problems<br><i>Jian-tang Liao, Hong-tzer Yang</i> .....   | 155 |
| An Efficient Hybrid Algorithm Based on Harmony Search and Invasive Weed Optimization<br><i>Aijia Ouyang, Zhiguo Yang</i> .....  | 161 |
| An Enhanced Bacterial Foraging Optimization With Adaptive Elimination-dispersal Probability and PSO Strategy<br><i>Xiongfai Mai, Ling Li</i> .....  | 167 |
| Astronomical Image Superposition Using an New Improved Particle Swarm Optimization<br><i>Maokai Hu, Lei Hu, Lifan Wang</i> .....  | 173 |
| Hybrid Immune PSO Algorithm for Engineering Optimization Problems<br><i>Lilue Fan, Aijia Ouyang</i> .....   | 179 |
| Chaotic Particle Swarm Optimization for Numeric Integral<br><i>Ye Tang, Xuyu Peng</i> .....   | 186 |
| Fractional-Order Cat Swarm Optimization   |     |

|   |     |
|---|-----|
| <i>Yan Zhang</i> .....  | 191 |
| Gaussian Kernel Particle Swarm Optimization Clustering Algorithm<br><i>Shengyu Pei, Lang Tong</i> .....   | 198 |
| Chaotic Glowworm Swarm Optimization Algorithm Based on Gauss Mutation<br><i>Guo Pan, Yuming Xu</i> .....  | 205 |
| Particle Swarm Optimization for Nonlinear Spectral Unmixing: A Case Study of Generalized Bilinear Model<br><i>Liang Zhong, Wenfei Luo, Lianru Gao</i> .....                   | 211 |
| Reserch on The parameters of Weibull Distribution Model Estimation using Ant Colony Algorithm<br><i>Xiu Ji, Jian Liu, Xu-ting Yan, Liang Zhao</i> .....                       | 218 |
| Similarity between Existing Position Updating Formulas and a Unified and Simplified Formula in Particle Swarm Optimization<br><i>Jian Hu, Feng Yin</i> .....                  | 223 |
| Traffic Signal Networks Control Optimize with PSO Algorithm<br><i>Bing Wu, Dong Wang</i> .....  | 230 |
| <b>Multi-Objective Optimization</b>   |     |
| A Dynamic Evolutionary Multi-objective Optimization Algorithm Based on Decomposition and Adaptive Diversity Introduction<br><i>Min Liu, Yuzhen Liu</i> .....                  | 235 |
| A Multi-objective Evolutionary Algorithm Based on Mixed Game Strategy<br><i>Yuandan Li, Shiwen Zhang, Zhiyong Li</i> .....  | 241 |
| A Multi-Objective Implementation in Swarm Intelligence and its Applications in Designs of Computer Experiments<br><i>Frederick Kin Hing Phoa, Livia Lin Hsuan Chang</i> ..... | 253 |
| A Research of Multi-objective Service Selection Problem Based on MOACS Algorithm<br><i>Liping Huang, Bin Zhang, Xun Yuan, Changsheng Zhang, Anxiang Ma</i> .....              | 259 |
| An Improved Multi-Objective Artificial Bee Colony Algorithm for Pattern Synthesis of Conformal Arrays<br><i>Chao Liu, Fang Zheng, Caihong Kai</i> .....                       | 265 |
| Multi-Objective 4PL Routing Problem on Time Varying Networks  |     |

|   |     |
|---|-----|
| <i>Yan Cui, Min Huang, Jin Liu</i> .....  | 271 |
| Preference-based Multiobjective Optimization Using Truncated Expected Hypervolume Improvement<br><i>Kaifeng Yang, Longmei Li, Andre Deutz, Thomas Baeck, Michael Emmerich</i> .....               | 276 |
| SMS-EMOA with Multiple Dynamic Reference Points<br><i>Zhiwei Yang, Hao Wang, Kaifeng Yang, Thomas Baeck, Michael Emmerich</i> .....   | 282 |
| Solving Bi-Objective Unconstrained Binary Quadratic Programming Problem with Multi-Objective Path Relinking Algorithm<br><i>Lei Song, Rongqiang Zeng, Yang Wang, Mingsheng Shang</i> .....        | 289 |
| <b>Artificial Life and Artificial Immune Systems</b>  |     |
| Affective Computing for Intelligent Virtual Character<br><i>Lin Shi, Yucheng Guo, Xuejing Gu, Yang Zhao</i> .....   | 294 |
| <b>Nonlinear Phenomena, Chaos, Complex Networks and Systems</b>   |     |
| An Exploration on the Word Co-occurrence Network of Chinese Popular Song Titles<br><i>Baorong He, Dekuan Xu</i> .....   | 299 |
| Characterization of Bipolar Information Aggregation and Decomposition<br><i>Xuegang Chen, Jieren Cheng, Jianping Yin, Xianyan Tang, Jialu Zhang</i> .....   | 305 |
| Effects of mass medias on the dynamics of social contagions<br><i>Wei Wang, Lei Gao, Yu-xiao Zhu, Hui Gao</i> .....   | 311 |
| Impact of Network Overlapping on Dynamical Interplay Between Information and Epidemics<br><i>Hui Yang</i> .....   | 316 |
| LMI-based Criteria for Cohen-Grossberg BAM Neutral Neural Networks with Continuously Distributed Delays<br><i>Guoquan Liu, Zhicheng Wang, Chaomin Luo, Xianxi Luo</i> .....                       | 321 |
| Simple Effective Zhang-Dynamics Stabilization Control of the 4th-Order Hyper-Chaotic Lu System With One Input<br><i>Yunong Zhang, Tianjian Qiao, Deyang Zhang, Hongzhou Tan, Dong Liang</i> ..... | 325 |

## **Intelligent Agents**

A Reactively Learning Neural Network that Decides Behaviours for an Artificial Life System with Homogeneous Agents

*Sam Slade*.....331

Modeling and Optimization Oriented to the Micro-Grid-EV Joint System

*Yan Li, Peng Han, Jinkuan Wang, Xin Song*.....336

Multi-Agent based Dynamic Mission Planning for Satellite Data Transmission

*Wei Jiang, Xiuli Pang*.....342

## **Molecular and DNA Computing**

On the Massive String Matching Problem in DNA Databases

*Yangjun Chen, Yujia Wu*.....350

## **Bio-Inspired Circuits and Systems, Silicon Cochlear, Retina and**

### **Neural**

Stability Analysis and Artificial Regulation Design of Genetic Regulatory Networks With Multiple Time-Varying Delays

*Yan Wang, Lei Guo*.....356

## **Other Topics in Natural Computation Theory and Algorithms**

A Flight Slot Allocation Model Based on Game Theory

*Zhiwei Xing, Yunxiao Tang, Qian Luo*.....364

A New Path Optimization Method in Dynamic Adverse Weathers

*Mingkong Zhang, Xiaobing Hu, Jianqin Liao*.....370

A Ripple-Spreading Algorithm to calculate the k Shortest Paths in a Network with Time-Windows

*Xiao-bing Hu, Mingkong Zhang, Jianqin Liao, Hanlin Zhang*.....376

A Supervised Class-preserving Laplacian Eigenmaps for Dimensionality Reduction

*Tingquan Deng, Ning Wang, Jinyan Liu*.....383

A Travel Route Recommendation Algorithm with Personal Preference

*Ying Xu, Tao Hu, Ying Li*.....390

An Assessment Method of Vulnerabilities in Electric CPS Cyber Space



|  |            |
|--|------------|
| <i>Guotai Yang, Yufei Wang, June Li, Jian Liu, Yeqi Ru, Kai Yuan, Yibei Wu, Kaipei Liu.....</i>  | <i>397</i> |
| An Automatic Interpretation Of Potential-field Data To Quantitatively Inverse The Depth And Structural Index<br><i>Xu Zhang, Daixin Kou, Tiqiang Zhang, Nan Ning.....</i>    | <i>403</i> |
| An Exponential Threshold Function Wavelet Denoising Method Based on Gaussian Distribution<br><i>Guoquan Xing, Yuxia Zhang, Yu Yan, Ruolin Ruan.....</i>                      | <i>408</i> |
| An Image Mosaic Method Based on Improving Seam Line<br><i>Qingpeng Liu, Hua Cai, Guangqiu Chen, Shuang Dou, Yong Yang.....</i>   | <i>414</i> |
| An Under-sampling Imbalanced Learning of Data Gravitation Based Classification<br><i>Lizhi Peng, Bo Yang, Yuehui Chen, Xiaoqing Zhou.....</i>                                | <i>419</i> |
| Evaluation of K-SVD with Different Embedded Sparse Representation Algorithms<br><i>Jingjing Liu, Wanquan Liu, Qilin Li, Shiwei Ma, Guanghua Chen.....</i>                    | <i>426</i> |
| Knowledge Map Application of business-oriented problem solving<br><i>Yinan Wu, Hongfei Zhan, Junhe Yu.....</i>   | <i>433</i> |
| Locally Linear Embedding Preserving Local Neighborhood<br><i>Tingquan Deng, Jinyan Liu, Ning Wang.....</i>   | <i>438</i> |
| Modeling Closed-loop Supply Chain with a Dominant Retailer Considering Fairness Concern<br><i>Fengmin Yao, Shan Liu.....</i>   | <i>445</i> |
| MPPT control strategy for photovoltaic cells based on fuzzy control<br><i>Hong Zhang, Shengzhu Li, Xiaonan Zhang, Yilan Xia.....</i>   | <i>450</i> |
| PLC-RED-based AQM Algorithm in Terminal Communication Access Network<br><i>Haiqing Ou, Zhe Zhang, Wanqi Wang, Bing Liu, Yu Tian, Zhao Liu, Yaomu Tan, Liangrui Tang.....</i> | <i>455</i> |
| Research of Key Technology about Column Store to Row Store in Multi-Source Heterogeneous Database<br><i>Xu Aiping, Wu Di, Xu Wuping.....</i>                                 | <i>460</i> |
| Risk Assessment of Cyber Attacks in ECPS Based on Attack Tree and AHP<br><i>Yeqi Ru, Yufei Wang, June Li, Jian Liu, Guotai Yang, Kai Yuan, Kaipei Liu.....</i>               | <i>465</i> |

|  |     |
|--|-----|
| Solving the shortest-path problem in logistics distribution for vehicle-routing optimization<br><i>Baoxian Jia, Yong Wang, Jinhai Yuan, Junqing Li</i> ..... | 471 |
|--|-----|

## ***Natural Computation Applications***

### **Natural Computation in Pattern Recognition and Diagnostics**

|  |     |
|--|-----|
| A Hybrid Genetic Algorithm to Solve 3-SAT Problem<br><i>Bingfen Li, Yu-an Zhang</i> .....  | 476 |
| A Malware Variants Detection Methodology with An Opcode Based Feature Method and A Fast Density Based Clustering Algorithm<br><i>Cheng Wang, Zheng Qin, Jixin Zhang, Hui Yin</i> ..... | 481 |
| A Method of Off-line Signature Verification for Digital Forensics<br><i>Weiwei Pan, Guolong Chen</i> .....   | 488 |
| A Novel Object Tracking Algorithm based on Enhanced Perception Hash and Online Template Matching<br><i>Jin Yuan, Dong Xu, Heng-chang Xiong, Zhi-yong Li</i> .....                      | 494 |
| Aircraft Recognition in Remote Sensing Images based on Saliency and Invariant Moments<br><i>Jun Fu, Zhiguo Yang, Lilue Fan</i> .....   | 500 |
| Choosing Unlabeled Examples for SemiBoost Using Modified Cuckoo Search Algorithms<br><i>Trunghai Nguyen, Thanh-binh Le, Sang-woon Kim</i> .....  | 506 |
| Content-based Image Retrieval Based on Cauchy Density Function Histogram<br><i>Guang-hai Liu</i> .....   | 514 |
| Feature Selection for Facial Emotion Recognition based on Genetic Algorithm<br><i>Hadjer Boubenna, Dohoon Lee</i> .....  | 519 |
| Housing Price Prediction Using Neural Networks<br><i>Wan Teng Lim, Lipo Wang, Yaoli Wang, Qing Chang</i> .....   | 526 |
| Hypernasality Detection in Cleft Palate Speech based on Natural Computation<br><i>Yin Liu, Xiyue Wang, Yipeng Huang, Ling He, Heng Yin, Chuxian Liu</i> .....                          | 531 |
| Identification of Low Resistivity Oil and Gas Reservoirs with Multiple Linear Regression Model   |     |

|   |     |
|---|-----|
| <i>Zhen Peng, Huajie Yang, Heping Pan, Yang Ji</i> .....  | 537 |
| Recognition of Incomplete and Overlapped Weed Seeds Based on Self-organization Delayed NeuraNetwork   |     |
| <i>Changjiang Shi, Qian Wang, Wencang Zhao</i> .....  | 542 |
| Region-based Convolutional Neural Networks for Object Detection in Very High Resolution Remote Sensing Images   |     |
| <i>Yushe Cao, Xin Niu, Yong Dou</i> .....   | 548 |
| Road Surface Traffic Sign Detection with Hybrid Region Proposal and Fast R-CNN  |     |
| <i>Rongqiang Qian, Qianyu Liu, Yong Yue, Frans Coenen, Bailing Zhang</i> .....  | 555 |
| Robust Object Tracking via Weight-based Local Sparse Appearance Model   |     |
| <i>Zhiyong Li, Dongming Wang, Ke Nai, Tong Shen, Ying Zeng</i> .....  | 560 |
| Speaker Identification using wavelet Shannon Entropy and Probabilistic Neural Network   |     |
| <i>Lei Lei, Kun She</i> .....   | 566 |
| The classification prognosis models of hepatitis b virus reactivation based on Bayes and support vector machine after feature extraction of genetic algorithm |     |
| <i>Guanpeng Wu, Yihui Liu, Shuai Wang, Wei Huang, Tonghai Liu, Yong Yin</i> .....   | 572 |
| Traffic Sign Recognition with Convolutional Neural Network Based on Max Pooling Positions   |     |
| <i>Rongqiang Qian, Yong Yue, Frans Coenen, Bailing Zhang</i> .....  | 578 |
| Trend Prediction of Internet Public Opinion based on Collaborative Filtering  |     |
| <i>Xuegang Chen, Mingna Xia, Jieren Cheng, Xianyan Tang, Jialu Zhang</i> .....  | 583 |

## **Natural Computation in Robotics and Control**

|   |     |
|---|-----|
| Evaluation of Deterministic and Probablistic Diffusion Tensor Imaging Fiber Trackings Using Number of Diffusion Gradient Directions |     |
| <i>Xufeng Yao, Yamei Zhu, Tonggang Yu, Gang Huang, Songlin Zhuang</i> .....   | 589 |
| Optimal Parameter Value of Zhang Equivalence for MVN Redundancy Resolution at Velocity and Acceleration Levels                      |     |
| <i>Yunong Zhang, Xiaogang Yan, Yinyan Zhang, Dechao Chen, Hongzhou Tan</i> .....  | 593 |
| PSO-based Multi UCAVs Cooperative Attack Tasks Allocation and Its Simulation  |     |

*Xiaojun Xing, Dongsheng Fan, Yaqing Zhao, Longliang Huang.....598*

## **Natural Computation in Signal Processing and Multimedia**

3D Body Scans Retrieval Based on Intersection Views

*Kuansheng Zou, Jianhua Zhang, Zhaojun Zhang, Qian Zhang.....602*

A Fast Location and Pose Detection Method Based on Geometric Features of Inner and Outer Contours of Workpiece

*Jun Zhou, Xifeng Qu, Bo Liu.....607*

A Multi-focus Image Fusion Algorithm Using Modified Adaptive PCNN model

*Yongxing Jia, Chuanzhen Rong, Yuan Wang, Ying Zhu, Yu Yang.....612*

An Intelligent Learning System for Supporting Interactive Learning through Student Engagement Study

*Yuanyuan Liu, Zhong Xie, Jingying Chen.....618*

Capacity Maximization on Multi-Relay MIMO Cooperative System

*Ying Lin, Suoping Li, Haiyan Chen, Duo Peng.....624*

Detection of Driver's Visual Attention Using Smartphone

*Degui Xiao, Chao Feng.....630*

Driver Behavior Recognition Based on Deep Convolutional Neural Networks

*Shiyang Yan, Yuxuan Teng, Jeremy S.smith, Bailing Zhang.....636*

Fairness-aware resource allocation in OFDM-based cognitive radio networks for energy efficiency

*Fanzi Zeng, Jisheng Xu.....642*

Research of Canny Edge Detection Algorithm on Embedded CPU and GPU Heterogeneous Systems

*Yizhi Huang, Yang Bai, Renfa Li, Xin Huang.....647*

Research on A High Noise Immunity Transmission System and Its Performance in Short-range Wireless Communication Based on the MIMO-UWB Technology

*Chunliang Tian, Zhen Su.....652*

Sequential Channel Selection for Decentralized Cognitive Radio Sensor Network Based On Modified Q-Learning Algorithm

*Fanzi Zeng, Hanshan Liu, Jisheng Xu.....657*

The Application of Artificial Bee Colony (ABC) Algorithm in FIR Filter Design

|  |     |
|--|-----|
| <i>Dan Ji</i> .....  | 663 |
| Vehicle Logo Recognition and Attributes Prediction by Multi-task Learning with CNN<br><i>Yizhang Xia, Jing Feng, Bailing Zhang</i> ..... | 668 |

## **Other Natural Computation Applications**

|  |     |
|--|-----|
| A Bio-inspired Genetic Algorithm for Community Mining<br><i>Yitong Lu, Mingxin Liang, Chao Gao, Yuxin Liu, Xianghua Li</i> ..... | 673 |
|--|-----|

|   |     |
|---|-----|
| A channel assignment algorithm of CRSNs based on FOA<br><i>Xiaomu Huang, Jiayi Du, Shijie Kuang</i> ..... | 680 |
|---|-----|

|   |     |
|---|-----|
| A Fuzzy Integrated calculation policy for the energy consumption of Bluetooth mobile devices<br><i>Yi Pan, Hui Ye</i> ..... | 686 |
|---|-----|

|  |     |
|--|-----|
| A Multi-objective Hybrid Genetic Algorithm for Detecting Communities in Complex Networks<br><i>Xiaohong Zhang, Bin Zhang, Changsheng Zhang, Anxiang Ma</i> ..... | 691 |
|--|-----|

|   |     |
|---|-----|
| A Multi-Objective Optimization Method for Service Composition Problem with Sharing Property<br><i>Jiaxu Ning, Haitong Zhao, Changsheng Zhang, Bin Zhang</i> ..... | 696 |
|---|-----|

|  |     |
|--|-----|
| A Novel Source Locating Strategy without Consistent Assumptions<br><i>Xinyan She, Xianghua Li, Yuxin Liu, Chao Gao</i> ..... | 702 |
|--|-----|

|  |     |
|--|-----|
| A Routing Optimization Algorithm of Optical Network Based on Static Service<br><i>Liangrui Tang, Yao Wu, Haowei Xu</i> ..... | 709 |
|--|-----|

|   |     |
|---|-----|
| A Theoretical Line Losses Calculation Method of Distribution System Based on Boosting Algorithm<br><i>Yufei Wang, Chenlong Wang, Jing Wang, Luo Zuo, Yongyi Shi</i> ..... | 714 |
|---|-----|

|  |     |
|--|-----|
| An Energy-efficient Virtual Machine Placement Algorithm in Cloud Data Center<br><i>Dan Liu, Xin Sui, Li Li</i> ..... | 719 |
|--|-----|

|  |     |
|--|-----|
| An Improved Spherical Coordinate System Applied in Oculomotor System-the Possibility for Rapid Strabismus Diagnosis<br><i>Haipeng Liu, Defeng Wang, Ka Sing Wong, Yinglan Gong, Ling Xia</i> ..... | 724 |
|--|-----|

|  |  |
|--|--|
| An Optimized FPGA Implementation Based on Scale Invariant Feature Transform Feature Points Detection |  |
|--|--|

|  |     |
|--|-----|
| <i>Yue Gu, Xiujie Qu, Yue Sun, Liwen Gao, Shuang Yu</i> .....  | 729 |
| Application of Artificial Neural Network in Geology ----Porosity estimation and lithological facies classification<br><i>Suihong Song, Jiagen Hou, Yuming Liu, Sifan Cao, Chenbin Hu</i> ..... | 735 |
| Application of Artificial Neural Networks for Prediction of Learning Performances<br><i>Permphan Dharmasaroja, Nicha Kingkaew</i> .....  | 740 |
| Applying Back-propagation Neural Network to Predict Bus Traffic<br><i>Peng Wang, Gang Zhao, Xingren Yao</i> .....  | 747 |
| Applying non-radial DEA on undesirable outputs for sustainability<br><i>Yu-jie Wang, Tzeu-chen Han</i> .....   | 752 |
| Blog Summarization via Interaction between Bloggers<br><i>Wei Yang, Zhizhuo Yang</i> .....   | 757 |
| CAN Calibration System Design and Transfer Mechanism Optimization<br><i>Xinwei Chang, Feng Luo</i> .....   | 761 |
| Cloud Computing Credibility Evaluation Based on Grey Clustering and Entropy<br><i>Jing Zhang, Rong Jiang, Qiujun Liao, Jia Wang, Xiaoyun Yang</i> .....  | 767 |
| Composite Simpson Method Based On Differential Evolution Algorithm For Numerical Integral<br><i>Qian Li, Qinghua Su, Yongqiang Mou, Beiping Wu, Junxia Guan, Haiming Wu</i> .....              | 772 |
| Design of the redundant CAN Network based on CANopen<br><i>Chao Zhou, Feng Luo</i> .....   | 777 |
| Elephant Search Algorithm on Data Clustering<br><i>Zhonghuan Tian, Simon Fong, Raymond Wong, Richard Millham</i> .....   | 782 |
| Estimation of Adjacent Substitution Rate Based on Clustering Algorithm and Its Application<br><i>Yue Liu, Pengfei Ren, Tianlu Zhao, Zhengkai Yang, Junjun Gao</i> .....                        | 789 |
| Extraction of Biomedical Informtion Related to Breast Cancer Using Text Mining<br><i>Lejun Gong, Ronggen Yang, Quan Liu, Haoyu Yang, Gene Yang, Kaiyu Jiang</i> .....                          | 796 |
| Further Results on Exponential Stability of Delayed Neural Networks  |     |

|  |     |
|--|-----|
| <i>Xiaofan Liu, Xinge Liu, Meilan Tang</i> .....   | 801 |
| Identification of Joint Equivalent Parameters via Combining PSO with FE Model Updating<br><i>Wenfeng Luo, Ling Yu</i> .....  | 807 |
| Lexical-Index-based Japanese Syntax Matching<br><i>Wuying Liu, Lin Wang, Xing Zhang</i> .....  | 812 |
| Maximum Power Point Creator Collocating Solar Power Cells for Skewed Surface<br><i>Bayram Akdemir, Nurettin Cetinkay</i> .....   | 816 |
| Moving Force Identification based on Particle Swarm Optimization<br><i>Huanlin Liu, Ling Yu</i> .....  | 820 |
| Neologisms Detection In A Overlapping Topical Complex Network<br><i>Yin Lan, Fei Cheng</i> .....   | 825 |
| Parameter Analysis of Hybrid Intelligent Model for the Prediction of Rare Earth Stock Futures<br><i>Huijuan Zhang, Ruoying Sun</i> .....   | 830 |
| Research and Practice of Time-Sharing Device Sharing Mechanism in Remote Embedded Experiment Platform<br><i>Kaiwen Wu, Yanmei Jin</i> .....  | 835 |
| Robust Object Tracking Based on Timed Motion History Image With Multi-feature Adaptive Fusion<br><i>Zhiyong Li, Song Gao, Ke Nai, Ying Zeng</i> .....                                  | 840 |
| Simulation of CAN Physical Layer based on SystemVision<br><i>Hailun Shao, Feng Luo, Jinpeng Xu</i> .....   | 847 |
| Spectrum sensing algorithm based on improved MME-Cyclic stationary feature<br><i>Couping Yu, Pin Wan, Yonghua Wang, Ting Liang</i> .....   | 852 |
| Square and Boomerang Attacks Analysis of Diffusion Property of 3D-AES Block Cipher<br><i>Suriyani Ariffin, Nurul Aini Mohd Hisan, Shahrizal Arshad, Syed Helmy Yed Abu Bakar</i> ..... | 857 |
| Study on Split Delivery Open Vehicle Routing Problem within Two Splits<br><i>Ping Chen, Xingye Dong, Jianhua Xiao</i> .....  | 863 |
| The Service Oriented Architecture in Decision Support System   |     |

|   |     |
|---|-----|
| <i>Yen-ping Huang</i> .....   | 868 |
| The Using Spectrum Reconstruction to Identify and Judge the Spectral Distortion |     |
| <i>Anxin Zhao</i> .....   | 873 |

## ***Fuzzy Theory and Algorithms***

### **Fuzzy Theory and Models**

|   |     |
|---|-----|
| A new consensus algorithm in uncertain linguistic multiple attribute group decision                               |     |
| <i>Zhiying Lv, Liwei Zheng, Xianyong Zhang, Xinong Liang</i> .....  | 878 |
| Analysis of temperature and q-parameter dependencies of FCM with Tsallis entropy maximization                     |     |
| <i>Makoto Yasuda</i> .....  | 884 |
| Approximate Solution To Inconsistent System Of Max-Product Fuzzy Relation Inequalities                            |     |
| <i>Haitao Lin, Xiaobin Yang, Xiaopeng Yang</i> .....  | 889 |
| Fault Analysis and Prediction of Transmission Line Based on Fuzzy K-Nearest Neighbor Algorithm                    |     |
| <i>Yue Zhang, Jianxia Chen, Qin Fang, Zhiwei Ye</i> .....   | 894 |
| Fuzzy Measures Defined by Addition of Fuzzy Measures  |     |
| <i>Xiaoli Hu, Shunyang Wei, Mingjing Hou, Jun Li</i> .....  | 900 |
| Generalized Complex Fuzzy Set-valued Complex Fuzzy Integrals and Their Properties                                 |     |
| <i>Shengquan Ma, Dejun Peng, Zhiqing Zhao</i> .....   | 906 |
| Novel Weighted Fusion Operators and Unfusion Operators of Subjective Logic  |     |
| <i>Hongwei Zhou, Jinhui Yuan, Yawen He</i> .....  | 911 |
| Pseudo-Addition of Monotone Measures and Integrals  |     |
| <i>Xiaoli Hu, Mingjing Hou, Shunyang Wei, Jun Li</i> .....  | 917 |
| Some Induced Generalized Ordered Weighted Power Average Operators within Intuitionistic Trapezoidal Fuzzy Setting |     |
| <i>Xinye Zhao, Xiaowei Zhang, Wenming Zhang, Fan Yang</i> .....   | 923 |
| The Concept of Possibility Based on Human Cognition   |     |
| <i>Wei Mei</i> .....  | 929 |

### **Rough Set**



A Graded Rough Set with Variable Precision over Two Inconsistent and Related Universes

*Xi Yu, Can Wang*.....934

A New Fuzzy-rough Feature Selection Algorithm for Mammographic Risk Analysis

*Qian Guo, Yanpeng Qu, Ansheng Deng, Longzhi Yang*.....939

Minimum cost attribute reduction in incomplete system under decision-theoretic rough set model

*Yimeng Zhang, Xiuyi Jia, Zhenmin Tang*.....945

Smart Semihypergroups and Rough Sets based on General Binary Relations

*Xiaohong Zhang, Zhenyu Chen, Xiaolong Xin*.....950

Updating P-dominated and P-dominating Sets Based on a Classification Tree

*Zhiyong Hong*.....955

## **Soft Computing and Granular Computation**

Approximate Fuzzy Kernel Clustering with Random Feature Mapping and Dimension Reduction

*Lingning Kong, Long Chen*.....960

## ***Fuzzy Applications***

### **Fuzzy Pattern Recognition and Diagnostics**

A Signal Quality Assessment Method for Mobile ECG Using Multiple Features and Fuzzy Support Vector Machine

*Yatao Zhang, Shoushui Wei, Li Zhang, Chengyu Liu*.....966

Face Recognition Technology Research and Implementation based on Mobile Phone System

*Haifeng Li, Xiaowei Zhu*.....972

Grey Rough Influence Diagrams Method and its Medical Application

*Haiqing Hu, Bingqiang Liu, Tao Shen*.....977

Multi-scale Fuzzy Color Recognition and Segmentation of Color Image

*Cui Liu, Lianming Wang*.....984

### **Fuzzy Robotics and Control**

Application of Fuzzy Control Technology on a Designed Hydraulic DDV

*Ming-chang Shih, Tsung-yuan Chen, Chihhsiang Chen.....989*

## **Fuzzy Signal Processing and Multimedia**

Design and Pass Band Analysis of Automatic Gain Control Circuit Using Fuzzy Logic  
*Liang Zhang, Jong-won Kim.....995*

Online Visual Multi-object Tracking Based on Fuzzy Logic  
*Liang-qun Li, Sheng Luo, Jun Li.....1001*

Perception-based Fuzzy Detection: An exploratory study  
*Yanwei Xu, Shefeng Yan, Xiaochuan Ma, Chaohuan Hou.....1006*

## **Fuzzy Optimization, Design, and Modeling**

A Defect Forewarning Model for Electric Energy Data Acquisition Terminals  
*Jianwei Tian, Xi Li, Zhen Tian, Haiwei Xue.....1011*

A novel fuzzy random portfolio selection model with investors' subjective attitudes  
*Wei Sun, Weiguo Zhang, Wenjun Xu.....1016*

A Two-Phase Decision-Making Method for Handling The Personnel Selection Problem  
*Chen-tung Chen, Hui-ling Cheng, Wei-zhan Hung.....1021*

Fuzzy Optimization of Biochemical Systems  
*Gongxian Xu, Yezhen Liu.....1027*

Optimizing Digital Mammographic Image Quality via Taguchi-based Grey Analysis: An ACR Accreditation Phantom Study  
*Lung Kwang Pan, Da Ming Yeh.....1032*

Research on Uncertain and Nonlinear Dynamic Weapons Dispatching System Using Fuzzy Robust Control  
*Guoqing Xia, Tiantian Luan, Mingxiao Sun.....1038*

The Variation Step Adaptive Glowworm Swarm Optimization Algorithm in Optimum Log Interpretation for Reservoir with Complicated Lithology  
*Xiuwen Mo, Xiao Li, Qiang Zhang.....1044*

Two-sided Matching Based On Intuitionistic Fuzzy Sets and Matching Aspirations  
*Qi Yue, Qinxizi Huang, Yingli Qin, Quan Xiao, Yongshan Peng, Bingwen Yu.....1051*

## **Uncertainty Management**

|  |      |
|--|------|
| Evaluation for the Stability Variation of the Manufacturing Process Based on Fuzzy Norm Method<br><i>Xintao Xia, Wenhuan Zhu</i> ..... | 1057 |
|--|------|

## **Other Fuzzy Applications**

|   |      |
|---|------|
| A Fuzzy Approach to the Autonomous Recharging Problem for Mobile Robots<br><i>Fernando Deluccasiqueira, Patricia Dellameaplentz, Edson Robertodeperri</i> ..... | 1065 |
|---|------|

|  |      |
|--|------|
| A Multicriteria Group Decision Making Procedure for Selecting Cloud based ERP System Providers<br><i>Santoso Wibowo, Srimannarayana Grandhi, Marilyn Wells, Prasanna Balasooriya</i> ..... | 1071 |
|--|------|

|   |      |
|---|------|
| A New Mathematical Approach and Heuristic Methods for Load Forecasting in Smart Grid<br><i>Nurettin Cetinkaya</i> ..... | 1077 |
|---|------|

|  |      |
|--|------|
| Automatic Generation of Aesthetic Patterns with Cloud Model<br><i>Tao Wu, Limin Zhang, Junjie Yang</i> ..... | 1082 |
|--|------|

|  |      |
|--|------|
| Characterizations of coalgebras in terms of interval valued $(\alpha, \beta)$ fuzzy subcoalgebras<br><i>Wenjuan Chen</i> ..... | 1090 |
|--|------|

|  |      |
|--|------|
| Fast Kernel Fuzzy c-Means Algorithms Based on Difference of Convex Programming<br><i>Li Chen, Shuisheng Zhou, Xintao Gao</i> ..... | 1095 |
|--|------|

|  |      |
|--|------|
| Risk Assessment of Long-distance Water Transmission Pipeline Based on Fuzzy Similarity Evaluation Approach<br><i>Dan Li, Wenfeng Yao</i> ..... | 1101 |
|--|------|

|   |      |
|---|------|
| The Application of Fuzzy Theory in the Evaluation and Recruitment of University Interpretation Teachers<br><i>Baokun Pang, Yonghong Liu, Qing Lv, Bingyan Lin</i> ..... | 1108 |
|---|------|

## ***Knowledge Discovery Foundations***

### **Association Rules**

|   |  |
|---|--|
| Application Of Data Mining Technology In Selecting Key Parameters Of Chemical Processes |  |
|---|--|

Jinjiu Hu, Fang Guo.....1114

## Classification

A Coal Mine Safety Evaluation Method Based on Concept Drifting Data Stream Classification

Gang Sun, Zhongxin Wang, Jia Zhao, Hao Wang, Huaping Zhou, Kelei Sun.....1119

A Fast Outlier Detection for Categorical Datasets

Fangjun Luan, Jikun Lv, Keyan Cao.....1124

An Attribute Selection Based Classifier to Predict Financial Distress

Chiapang Chan, Chingsue Cheng.....1130

An Improved Image Classification Method Based on Clustering Improvement and Codebook Optimization

Kegang Wang, Guohua Geng, Liying Qi.....1136

Classification Methods based on Bayes and Neural Networks for Human Activity Recognition

Leopoldo Marchiorodrigues, Mario Mestria.....1141

Enhancing Text Classification with the Universum

Chien-liang Liu, Ching-hsien Lee.....1147

$\bar{F}$ -recursive binary tree

Yuying Li, Tang Wen, Xiaoqing Jiang, Jintong Li.....1154

Hand Gesture Recognition via Bag of Visual Words

Guoming Chen, Qiang Chen, Yiqun Chen, Xiongyong Zhu.....1159

Learning classifier competence based on graph for dynamic classifier selection

Cuiqin Hou, Yingju Xia, Zhuoran Xu, Jun Sun.....1164

Mathematical Formula Similarity Comparing Based on Tree Structure

Hongying Chen.....1169

Multi-modal Learning for Social Image Classification

Chunyang Liu, Xu Zhang, Xiong Li, Rui Li, Xiaoming Zhang, Wenhan Chao.....1174

Research on the Attribute Classification of Sentiment Target based on the Stratified Sampling

|  |      |
|--|------|
| <i>Hanxiao Shi, Xiaojun Li, Hong Liu, Liuqing Zhu</i> .....        | 1180 |
| Structural Learning Framework for Binary Short Text Classification |      |
| <i>Wuying Liu, Lin Wang</i> .....                                  | 1188 |

## **Clustering**

|   |      |
|---|------|
| A Semi Supervised Clustering Method Using Relative Compactness                        |      |
| <i>Yong Yao, Huihui Liu</i> .....   | 1194 |
| An Improved Fuzzy C-means Clustering Algorithm  |      |
| <i>Lingzi Duan, Fusheng Yu, Li Zhan</i> .....   | 1199 |
| An Improved Mixed-type Data based Kernel Clustering Algorithm                         |      |
| <i>Min Ren, Peiyu Liu, Zhihao Wang, Xiao Pan</i> .....                                | 1205 |
| Clustering Very Large High-dimensional Datasets Based Entropy With MapReduce          |      |
| <i>Fangjun Luan, Jiadi Liu, Keyan Cao</i> .....                                       | 1210 |
| Multi-lingual Text Clustering Method Using Bilingual Semantic Correspondence Analysis |      |
| <i>Yuansheng Luo</i> .....  | 1216 |
| Optimization and Evaluation of a Random Walks-Based Community Detection Algorithm     |      |
| <i>Thomas Ekwelle Epalle, Huawen Liu</i> .....  | 1222 |
| Subtractive Clustering for Categorical Data   |      |
| <i>Lei Gu</i> .....   | 1229 |

## **Privacy Preserving Data Mining**

|   |      |
|---|------|
| Privacy Preserving Graph Publishing using Fuzzy Set   |      |
| <i>Saurabh Kumar, Pradeep Kumar, Bharat Bhasker</i> .....   | 1233 |
| Reputation and Attribute Based Dynamic Access Control Framework in Cloud Computing Environment For Privacy Protection |      |
| <i>Wu Liu, Donghong Sun, Ping Ren, Ke Liu</i> .....   | 1239 |

## **Statistical Methods for Data Mining**

|  |      |
|--|------|
| Biased-Sampling of Density-based Local Outlier Detection Algorithm |      |
| <i>Peiguo Fu, Xiaohui Hu</i> .....                                 | 1246 |

## **Parallel/Distributed Data Mining**

|  |      |
|--|------|
| Composite Similarity Measure Algorithm |      |
| <i>Yan Wang, Yunjie An</i> .....       | 1254 |

|   |      |
|---|------|
| Performance Optimization for CPU-GPU Heterogeneous Parallel System  |      |
| <i>Yanhua Wang, Jianzhong Qiao, Shukuan Lin, Tinglei Zhao</i> ..... | 1259 |

## **Knowledge Management**

|   |  |
|---|--|
| Modal linguistic summaries based on natural language equivalence with cognitive semantics |  |
|---|--|

|  |      |
|--|------|
| <i>Radoslaw Katarzyniak, Wojciech Lorkiewicz, Dominik Wiecek</i> ..... | 1267 |
|--|------|

|   |      |
|---|------|
| Personalized Scientific Literature Recommendation Based on User's Research Interest |      |
| <i>Peng Guan, Yuefen Wang</i> .....   | 1273 |

|   |      |
|---|------|
| Spatiotemporal Operations on Spatiotemporal XML Data Using XQuery |      |
| <i>Luyi Bai, Zhuo Lin, Changming Xu</i> .....                     | 1278 |

|  |      |
|--|------|
| Study on the Next Generation Library Integrated System |      |
| <i>Jianwei Li</i> .....                                | 1283 |

## **Machine Learning and Artificial Intelligence**

|   |  |
|---|--|
| A Sparsity Constrained Low-Rank Matrix Completion Approach for Image Tag Refinement |  |
|---|--|

|  |      |
|--|------|
| <i>Mengdi Liu, Lei Chen, Wencai Ye, Mengqiang Xu</i> ..... | 1288 |
|--|------|

|   |  |
|---|--|
| An Incremental Algorithm for Rapidly Computing Tolerance Class of Incomplete Information System |  |
|---|--|

|  |      |
|--|------|
| <i>Mianwei Ding, Tengfei Zhang, Fumin Ma, Dong Yue</i> ..... | 1296 |
|--|------|

|  |  |
|--|--|
| Hyperspectral Remote Sensing Image Terrain Classification Based on M-ary Discriminant Analysis |  |
|--|--|

|                               |      |
|-------------------------------|------|
| <i>Jing Liu, Yi Liu</i> ..... | 1301 |
|-------------------------------|------|

|  |  |
|--|--|
| Investigating Combinations of Machine Learning and Classification Techniques in a Game Environment |  |
|--|--|

|  |      |
|--|------|
| <i>Ruth Edmundson, Richard James Danby, Kris Brotherton, Emma Livingston, Lee Allock</i> ..... | 1306 |
|--|------|

|  |      |
|--|------|
| Mining Frequent k-edge-Connected Subgraphs |      |
| <i>Jingdong Tan, Rujing Wang</i> .....     | 1312 |

|   |  |
|---|--|
| Research on Algorithm of Attribute Reduction Based on Concept With Introducer |  |
|---|--|

|  |      |
|--|------|
| <i>Can Wang, Dandan He, Lijuan Wang, Hongfeng Hou, Ruijie Liu</i> .....                    | 1318 |
| Towards Communicative Agents with Cognitive Semantics of Modal Class-Membership Statements |      |
| <i>Radoslaw Katarzyniak, Grzegorz Popek, Mariusz Mulka, Marcin Zurawski</i> .....          | 1324 |

## **Other Topics in Knowledge Discovery Foundations**

### ***Knowledge Discovery in Specific Domains***

#### **High-Dimensional Data Mining**

|  |      |
|--|------|
| Building Vietnamese Dependency Treebank Based on Chinese-Vietnamese Bilingual Word Alignment |      |
| <i>Ying Li, Jianyi Guo, Zhengtao Yu, Hongbin Wang, Yonghua Wen</i> .....                     | 1330 |

#### **Temporal Data Mining**

|  |      |
|--|------|
| Forecasting Network Traffic at Large Time Scale by Using Dual-related Method                                 |      |
| <i>Liangrui Tang, Shimo Du, Shiyu Ji</i> .....   | 1336 |
| On-line Monitoring Induction Motors By Fuzzy Logic   |      |
| <i>Rafael Pereira, Joao Daniel Nolasco, Vinicius Augusto Silva, Paulo Cesar Filho, Jorge Nei Brito</i> ..... | 1341 |
| Sensitivity Analysis for Time Domain Response of Transmission Lines Based on the Precise Integration Method  |      |
| <i>Xiaoke Chen, Jie Zeng, Hao Zhou, Jinquan Zhao, Xuemin Wang</i> .....                                      | 1347 |

## **Bioinformatics and Bio-Medical Informatics, Genomics,**

### **Proteomics**

|   |      |
|---|------|
| A Hybrid Projection Decomposition Algorithm for Dual-Energy Computed Tomography                     |      |
| <i>Lei Li, Linyuan Wang, Xiaoqi Xi, Bin Yan, Yanmin Sun</i> .....                                   | 1352 |
| An Efficient Algorithm for Molecular Dynamics Simulation under Hybrid CPU-GPU Computing Environment |      |
| <i>Dapu Li, Wei Ai, Yu Ye, Jie Liang</i> .....  | 1357 |

|  |  |
|--|--|
| Biological Functional Analysis of Chinese Herbal Medicines Against wind-cold-dampness Syndrome |  |
|--|--|

*Guang Zheng, Yanjing Zhang, He Zhang, Miaofei Li, Xuwen He, Yutao Qi, Junping Zhan, Hongtao Guo*.....1364

Biomedical Network Regulated by Acanthopanax Cortex (Wu-Jia-Pi) for Ossification  
*Junping Zhan, Hongtao Guo, Yun Yang, Yutao Qi, Miaofeng Li, Xuwen He, Guang Zheng*.....1369

Chaos and Wavelet Based Colonic Motility Analysis for Subjects with Constipation  
*Chao Zhou, Fei Xu, Chunjie Qiao, Weihua Dai*.....1374

Demand Analysis and Business Modeling of Community Health Services Performance Management  
*Hongpu Hu, Xing Go, Yue Zhang, Xin Yan, Xu Na, Fan Yu*.....1381

Development of the Health Decision Support System (HDSS) in Canada and its Implications in China  
*Hongpu Hu, Tao Dai, Xing Gao, Quan Chen, Xingyun Lei*.....1391

Heterogeneous Network-based Propagation Algorithm for Discovering Bladder Cancer-related Genes  
*Chen Peng, Ao Li, Huanqing Feng, Minghui Wang*.....1396

Improved Abnormality Detection from Raw ECG Signals using Feature Enhancement  
*Diptangshu Pandit, Li Zhang, Nauman Aslam, Chengyu Liu, Samiran Chattopadhyay*.....1402

Inferring human miRNA functional similarity based on gene ontology annotations  
*Jiawei Luo, Di Dai, Buwen Cao, Ying Yin*.....1407

On the Functionalities of an Information-based Management System of Community Health Service in China  
*Hongpu Hu, Yue Zhang, Fan Yu, Yao He, Yanli Wan*.....1414

## **Big Data**

An Active Storage System with Dynamic Task Assignment Policy  
*Shuangquan Fan, Zaihong He, Huailiang Tan*.....1421

An Algorithm to Discover the Approximate Probabilistic Frequent Itemsets with Sampling Method  
*Haifeng Li*.....1428

Analysis of Customers' Electricity Consumption Behavior Based on Massive Data



*Jian Liu, Jiakui Zhao, Yan Chen, Hongfa Li, Qiucen Huang, Hong Ouyang, Qingli Hao, Yaozong Lu*.....1433

Characteristics and Classification of Big Data in Health Care Sector

*Kaiyu Wan, Vangalur Alagar*.....1439

Distributed XPath Query Processing over Large XML Data based on MapReduce framework

*Hongjie Fan, Dongsheng Wang, Junfei Liu*.....1447

Iterative Sparse Matrix-Vector Multiplication on In-Memory Cluster Computing Accelerated by GPUs for Big Data

*Jiwu Peng, Cen Chen, Zheng Xiao*.....1454

Parallelizing Hot Topic Detection of Microblogging On spark

*Wei Ai, Dapu Li*.....1461

Performance Comparison of Index Schemes for Range Query of Big Data

*Xiongpai Qin*.....1469

Short-term Load Forecasting Based on Parallel Frameworks

*Jian Liu, Jiakui Zhao, Yu Ouyang, Bingxin Wang, Yuxi Liu, Hong Ouyang, Qingli Hao, Yaozong Lu*.....1474

**Multimedia Mining**

A Comprehensive Data-Driven Approach to Evaluating Quality of Experience on Large-Scale Internet Video Service

*Ting Yue, Anming Wei, Hongbo Wang, Xiangdong Deng, Shiduan Cheng*.....1479

A Generalized Kernel Fisher Discriminant Framework Used for Feature Extraction and Face Recognition

*Yuexiang Shi, Xiaoxue Ren, Saizhou Yang, Ping Gong*.....1487

Fast Printing Defects Inspection based on Multi-template Matching

*Bing Luo, Guiping Guo*.....1492

Fisher Discrimination Sparse Learning Based On Graph Embedding for Image Classification

*Xiuhong Che, Jiaxue Gao*.....1497

Intelligent Video Analysis-based Forest Fires Smoke Detection Algorithms

*Min Cai, Xiaobo Lu, Xuehui Wu, Yifei Feng*.....1504

Multi-yard-crane Routing Optimization at Container Terminals Based on A Two-stage Programming

*Meilong Le, Leilei Chen, Youfang Huang*..... 1509

Saliency Detection Based on Markov Chain and Adaboost

*Yuke Zhao, Guanghua Tan, Lingyan Zhang*..... 1516

## **Web and Text Data Mining**

Automatic Rumors Identification on Sina Weibo

*Gang Liang, Jin Yang, Chun Xu*..... 1523

Clause Sentiment Identification Based on Convolutional Neural Network With Context Embedding

*Peng Chen, Bing Xu, Muyun Yang, Sheng Li*..... 1532

Competitive Recommendation Algorithm for E-Commerce

*Umutoni Nadine, Huiying Cao, Jiangzhou Deng*..... 1539

Domain Lexicon-based Query Expansion for Patent Retrieval

*Feng Wang, Lanfen Lin*..... 1543

Exploiting Wikipedia Priori Knowledge for Chinese Named Entity Recognition

*Jianfeng Li, Conghui Zhu, Sheng Li, Tiejun Zhao, Dequan Zheng*..... 1548

Keyword Extraction Method over Blog Community

*Wei Yang, Zhizhuo Yang*..... 1553

ReLDA For Micro-blog Topic Mining Based On Relationship Structure

*Lijun Cai, Wenjian Tao, Lei Chen, Tingqin He*..... 1557

Research on Semantic Relation Acquisition and Automatic Synthesis Based on Wikipedia

*Haibo Cai, Lei Liu, Xiaofei Chang*..... 1564

Semantic Computation in Geography Question Answering

*Shanshan Zhao, Yuqing Zheng, Conghui Zhu, Tiejun Zhao, Sheng Li*..... 1572

Sentiment Analysis Method Based on Context View

*Cheng-yun Liu, Lian-cheng Xu, Zhi-hao Wang, Ning-ning Wang*..... 1577

Text Feature Selection Approach by Means of Class Difference

*Zhilong Zhen, Haijuan Wang, Yan Xing, Lixin Han*..... 1582

## **Graphic Model Discovery**

- A Feature Dependency Graph Analysis Method Based on Object  
*Guanzhong Yang, Rong Zhou*.....1587
- Research on Collaboration Patterns of ICMSE Conference Coauthors Network  
*Xiuli Pang, Wei Jiang*.....1594
- Trajectory Similarity Metric Based on Vector Fields on Manifold and Multi-scale Space Partition  
*Heng Ma, Meng Wang*.....1600

## **Data Warehousing and OLAP**

### **Pattern Recognition and Diagnostics**

- A Robust Edge Indicator Employing Nonlocal Structure Tensor  
*Xianghua Tan, Tao Tang*.....1605
- Face Recognition Via Non-negative Sparse Low-Rank Representation Classification  
*Rong Wang, Caikou Chen, Jingshan Li, Tianchen Dai*.....1609
- Sparse Representation Based Facial Expression Classification for Pain Assessment in Neonates  
*Guanming Lu, Cheng Yang, Mengying Chen, Xiaonan Li*.....1615
- The Prediction of Eigenvalues of the Normalized Laplacian Matrix for Image Registration  
*Chengcai Leng, Haipeng Zhang*.....1620

## **Knowledge Discovery in Other Domains**

- A hybrid method based on MLFS approach to analyze students' academic achievement  
*Wei-xiang Liu, Ching-hsue Cheng*.....1625
- A Lighting Warning Algorithm Using Electric Filed Mills Network and Lightning Locating System  
*Junchi Zhou, Qingfeng Zeng, Ali Shah, Xue Jiao*.....1631
- An efficient and fast influence maximization algorithm based on community detection  
*Esmaeil Bagheri, Gholamhossein Dastghaibfard, Ali Hamzeh*.....1636
- Building Ontology-Based Bill of Material Design and Knowledge Management in Power Gird

|   |      |
|---|------|
| <i>Zongliang Yang, Jin Zhang, Shuguang Wang, Jun Wang, Xin Huang</i> .....  | 1642 |
| Calculating Theoretical Line Losses Based on Improved Minimum Enclosing Ball Vector Machine                               |      |
| <i>Yufei Wang, Chenlong Wang, Luo Zuo, Jing Wang</i> .....  | 1648 |
| Chinese Term Extraction From Web Pages Based On Expected Point-wise Mutual Information                                    |      |
| <i>Liping Du, Xiaoge Li, Dayi Lin</i> .....   | 1653 |
| Domain Adaptation for Statistical Machine Translation   |      |
| <i>Xiaoxue Wang, Conghui Zhu, Sheng Li, Tiejun Zhao, Dequan Zheng</i> .....   | 1658 |
| Node Ranking of Multiplex Network Based on Weighted Aggregation Using AHP Method  |      |
| <i>Juan Wang, Lei Shi, Ren-hong Diao, Zuli Wang</i> .....   | 1665 |
| Price Forecast for Power Device Using Principal Component Regression Combined with Grey Relational Analysis               |      |
| <i>Zhiheng Su, Mengyuan Zou, Jin Zhang, Jun Wang, Zhiming: Li</i> .....   | 1670 |
| Representation of Chinese Criminal Law in the Semantic Web  |      |
| <i>Xing Wang, Yixin Sun, Mengyang Ge, Ji Chen</i> .....   | 1676 |
| Research and Analysis on Rationality of Wang W.K.'s Pulse Wave Data of Healthy People Based on Logarithmic Transformation |      |
| <i>Yaoyao Guo, Zhaoxue Chen</i> .....   | 1681 |
| <b>Invited Session on Big Data Analytics in Cognitive Neuroscience(Organized by Maozhen Li)</b>                           |      |
| A Data Analysis System Processing Framework For Underwater Target Detection   |      |
| <i>Xiaoning Jin, Peiying Zhang</i> .....  | 1687 |
| A Novel Improved ViBe Algorithm to Accelerate the Ghost Suppression   |      |
| <i>Keyang Cheng, Kaifa Hui, Yongzhao Zhan, Man Qi</i> .....   | 1692 |
| A Prediction Based on Clustering and Personality Questionnaire Data for IGD Risk  |      |
| <i>Xiaoliang Gong, Kun Fang, Yichu Hou, Bozhong Long, Zonglin Di, Lei Cao</i> .....                                       | 1699 |
| Can Your Smartphone Detect Your Emotion   |      |
| <i>Daxiang Dai, Qun Liu, Hongying Meng</i> .....  | 1704 |

|  |      |
|--|------|
| Continuous Pain Related Behavior Recognition from Muscle Activity and Body Movements<br><i>Rui Qin, Hongying Meng, Maozhen Li</i> .....                        | 1710 |
| Data Security of Android Applications<br><i>Jesse Obiri-yeboah, Man Qi</i> .....   | 1716 |
| Emotion Detection from EEG Recordings<br><i>Jingxin Liu, Hongying Meng, Asoke Nandi, Maozhen Li</i> .....  | 1722 |
| Emotion Extraction and Recognition from Music<br><i>Fan Zhang, Hongying Meng, Maozhen Li</i> .....   | 1728 |
| Improved Hybrid Semantic Similarity Algorithm for Terminology Application<br><i>Tong Wei, Yangli Jia, Zhenling Zhang, Julien Roche, Christophe Roche</i> ..... | 1734 |
| Network Community Degree Based Fast Community Detection Algorithm for fMRI Data<br><i>Chao Liu, Rui Fa, Maozhen Li, Asoke Nandi</i> .....                      | 1739 |
| Preserving Discriminant Manifold Subspace Learning for Plant Leaf Recognition<br><i>Qicong Wang, Jinhao Zhao, Maozhen Li, Changrong Cao, Yunqi Lei</i> .....   | 1744 |
| Real Time Facial Expression Recognition App Development on Mobile Phones<br><i>Humaid Alshamsi, Hongying Meng, Maozhen Li</i> .....                            | 1750 |
| Research and Application of Random Forest Model in Mining Automobile Insurance Fraud<br><i>Yaqi Li, Chun Yan, Wei Liu, Maozhen Li</i> .....                    | 1756 |
| RNTP-Based Coordinated Resource Allocation in 3D Emergency Networks<br><i>Weidong Zhang, Mingyue Xu, Zhou Lu, Zhichao Qin</i> .....                            | 1762 |
| Visual Attributes Based Sparse Multitask Action Recognition<br><i>Qicong Wang, Jinhao Zhao, Yehu Shen, Maozhen Li, Yuxiang Wu, Yunqi Lei</i> .....             | 1767 |

## **Invited Session on Human Friendly Computing and Systems**

### **(Organized by Duanning Zhou)**

|   |      |
|---|------|
| A Training Algorithm for Spike Sequence in Spiking Neural Networks<br><i>Takuya Toyota, Haruhiko Takase, Hiroharu Kawanaka, Shinji Tsuruoka</i> ..... | 1773 |
|---|------|

|   |      |
|---|------|
| A training method for SpikeProp without redundant spikes -Removing unnecessary sub-connections during training- |      |
| <i>Takutoshi Nakayama, Takashi Matsumoto, Haruhiko Takase, Hiroharu Kawanaka, Shinji Tsuruoka</i> .....         | 1778 |
| Analysis of computer event logs to assess student engagement in classroom: a case study in the United States    |      |
| <i>Koji Yamada, Atushi Inoue, Shinji Tsuruoka, Hiroharu Kawanaka, Haruhiko Takase</i> .....                     | 1783 |
| Apparel Online Shop Reflecting Customer Perception  |      |
| <i>Pakizar Shamoii, Atsushi Inoue, Hiroharu Kawanaka</i> .....  | 1787 |
| Extraction of Frequent Sub-sequences from Sequential Input Using Spiking Neuron                                 |      |
| <i>Kenta Morita, Haruhiko Takase, Naoki Morita</i> .....  | 1793 |
| Smartphone Cases and Human Friendliness in Information Technologies   |      |
| <i>Kazuyoshi Takahashi, Hiroharu Kawanaka, Koji Yamamoto, Keita Tanaka, Takuma Ayabe</i> .....                  | 1798 |
| Support teachers for quiz in large class -Analysis of typing processes for descriptive answers-                 |      |
| <i>Satoru Kimura, Kenji Hayakawa, Haruhiko Takase, Hiroharu Kawanaka, Shinji Tsuruoka</i> .....                 | 1803 |

## ***Information Technology for Knowledge Discovery***

### **Data Engineering**

|   |      |
|---|------|
| A Semantic Preserving CEP Based Approach for Business Data Processing                     |      |
| <i>Ting Ding, Yantai Gao, Yinglong Ma</i> .....   | 1808 |
| Design and Implementation of an Improved Cloud Storage System                             |      |
| <i>Hong Jiang, Qingsong Yu, Kai Huang</i> .....   | 1816 |
| Identifying Most Preferential Skyline Product Combinations under Price Promotion          |      |
| <i>Zhibang Yang, Xu Zhou, Yifu Zeng, Fei Zeng, Yantao Zhou</i> .....                      | 1824 |
| Research on Mechanisms of Emotional Transmission among University Students in Emergencies |      |
| <i>Xin Wang, Wen Li, Zhijie Song</i> .....  | 1829 |

### **Signal Processing and Multimedia**

|   |      |
|---|------|
| A High-precision Registration Algorithm for Heterologous Image Based on Effective Sub-graph Extraction and Feature Points Bidirectional Matching<br><i>Xiujie Qu, Yue Sun, Yue Gu, Shuang Yu, Liwen Gao</i> ..... | 1835 |
| A Retrieval Algorithm for Encrypted Speech based on Perceptual Hashing<br><i>Huan Zhao, Shaofang He</i> .....   | 1840 |
| Adaptive Light Paths Generation Through Full Lens Model<br><i>Quan Zheng, Changwen Zheng</i> .....  | 1846 |
| An Adaptive threshold Shot Detection Algorithm Based on Improved Block Color Features<br><i>Huayong Liu, Tao Li</i> .....   | 1852 |
| An MR Image Segmentation Algorithm Based on Bias Field Correction<br><i>Yu Miao, Jiahai Dai, Yanfang Li, Wei He, Weili Shi</i> .....  | 1858 |
| Analysis of Measurement Biases Introduced by Adaptive Antenna Arrays for GNSS Receivers<br><i>Long Cao', Xinping An, Guan Hong, Bowen Guo</i> .....   | 1863 |
| Artifact Reduction Based on Mutual Information Measures<br><i>Ming-te Wu</i> .....  | 1868 |
| Brightness Preserving and Non-parametric Modified Bi-histogram Equalization for Image Enhancement<br><i>Zhijun Yao, Zhongyuan Lai, Chun Wang</i> .....  | 1872 |
| Crowd Counting Using Accumulated HOG<br><i>Tianchun Xu, Xiaohui Chen, Guo Wei, Weidong Wang</i> .....   | 1877 |
| Design and Implementation of Bus Real-time Human Traffic Statistics System<br><i>Chengguo Jia, Quanhu Li, Nan Li</i> .....  | 1882 |
| Effective Quality Improvement of Upscaled Images by Differential Image Scheme<br><i>Jauji Shen, Chunhsiu Yeh, Jinn-ke Jan</i> .....   | 1887 |
| Inter-individual differences of spectral cues in the median plane<br><i>Congcong Peng, Xiaoli Zhong</i> .....   | 1893 |
| Least-Squares Estimation for Linear Models with Certain Ranges<br><i>Chao Zhou, Yueke Wang, Chunjie Qiao, Weihua Dai</i> .....  | 1898 |
| Multi-Target Direction Finding in MIMO Radar Exploiting Nested Array  |      |

|   |      |
|---|------|
| <i>Han Qi, Hong Jiang, Erning Zhou</i> .....  | 1904 |
| Pedestrian Detection Based on Multi-vision Features Fusion  |      |
| <i>Degui Xiao, Yong Chen</i> .....  | 1910 |
| Perception Auditory Factor For Speaker Recognition In Noisy Environment   |      |
| <i>Di Wu, Heming Zhao, Zhe Feng, Liyuan Chen, Zhongzhe Xiao, Xiaojun Zhang, Zhi Tao</i> .....                               | 1916 |
| Performance Analysis and Simulation of 3D Information Deriving from InSAR with Different Baselines                          |      |
| <i>Hongmin Zhang, Guowang Jin, Qing Xu, Yage Zhang</i> .....  | 1921 |
| Real-time 3D Hand Posture Reconstruction using Stereo Vision  |      |
| <i>Ali Can Mogol, Reza Hassanpour, Kasim Oztoprak</i> .....   | 1926 |
| Reduction of Mosquito Noise Based on the Adaptive Bilateral-Filter  |      |
| <i>Bing Xiao, Lu Liu, Li Guo, Junliang Ma</i> .....   | 1933 |
| Research on the Solder Joint Image Segmentation Based on the Improved Spatial Fuzzy C Means Algorithm                       |      |
| <i>Mengxiao Li, Yongjing Wan</i> .....  | 1940 |
| The application of an extended Kalman filter in the Dynamic Positioning system  |      |
| <i>Guoqing Xia, Jiaojiao Li</i> .....   | 1945 |
| The Optimized Fractional Anisotropy and Apparent Diffusion Coefficient Threshold in Fiber Tracking of Pelvic Floor Muscles  |      |
| <i>Yongchao Men, Chengfeng Sun, Yu Han, Xizhen Wang, Guanhui Chang, Guihua Zhang, Bing Wang</i> .....                       | 1950 |
| The Separation of Remote Sensing Images Obtained by "The first satellite of high resolution" Based on Sparse Representation |      |
| <i>Hong Wang</i> .....  | 1955 |

## **Communications and Networking**

|  |      |
|--|------|
| A Heterogeneous Wireless Network Selection Algorithm for Smart Distribution Grid |      |
| <i>Jiangyu Yan, Xiaoyan Wang, Shuxian Li, Liangrui Tang</i> .....                | 1959 |
| A Novel Proxy Blind Signcryption Scheme Based on Hyper Elliptic Curve            |      |
| <i>Sultan Ullah, Muhammad Junaid, Farwa Habib, Insaf Ullah</i> .....             | 1964 |
| A Novel Trust Model for P2P Networks   |      |



|  |      |
|--|------|
| <i>Yi Ma, Dongqi Wang</i> .....  | 1969 |
| A Queue Scheduling Approach to QoS Support in Terminal Communication Access Network                            |      |
| <i>Xin Li, Junhai Lu, Wenjing Li, Huadong Yu, Zhenwei Li, Shimo Du, Zhao Liu, Liangrui Tang</i> .....          | 1974 |
| An effective blind image watermarking based on inter-blocks estimation and quantization index modulation       |      |
| <i>Ling-yuan Hsu, Hwai-tsu Hu, Hsienhsin Chou</i> .....  | 1980 |
| An Energy Correction Wavelet Model for Traffic in Terminal Communication Access Network                        |      |
| <i>Shen Li, Yinming Zhang, Jingzhao Luan, Lingkang Zeng, Liu Zhu</i> .....                                     | 1986 |
| An Optimal Bandwidth Resource Utilization Scheme in IEEE 802.16m Communication Networks                        |      |
| <i>Hanwu Wang, Liang An, Beibei Yang, Tao Yu</i> .....   | 1991 |
| Collision Avoidance Anti-Collision Algorithm Based on Subset Partition   |      |
| <i>An Jiang</i> .....  | 1996 |
| Differentiated Traffic Grooming Algorithm Based on Multi-Objective Optimization                                |      |
| <i>Bing Fan, Qiang Liu, Mengxi Zhang, Liangrui Tang</i> .....  | 2004 |
| Electrical Optical Network RWA Algorithm Based on Prediction and Layered Graph Model                           |      |
| <i>Liangrui Tang, Lou Jia, Yuan He</i> .....   | 2009 |
| Energy Efficiency Maximization Based Joint Power and Bandwidth Allocation for Heterogeneous Network            |      |
| <i>Shiyu Ji, Liangrui Tang, Shimo Du, Shuxian Li</i> .....   | 2014 |
| Evaluations of Network Coding-Based Scheduling Approach for Wireless Data Disseminations with Time Constraints |      |
| <i>Chunting Yan, Shujuan Wang</i> .....  | 2019 |
| From Multi-RAT Cooperation Energy-saving System to Big Data  |      |
| <i>Xidong Wang, Jinwei He, Sen Bian, Chih_lin I</i> .....  | 2024 |
| Green Relay Station Assisted Cell Zooming Scheme for Cellular Networks   |      |
| <i>Zujie Hu, Yifei Wei, Mei Song, Xiaojuan Wang</i> .....  | 2030 |

High Efficient Link Schedule with Spatial Reuse in IEEE 802.16 Relay Enabled Networks

*Hanwu Wang, Lian Pan, Liang An, Mingming Lv.....2036*

Improved AODVjr Routing Algorithm Based on Node Depth in ZigBee Network

*Leqiang Bai, Yi Liu, Shiguang Qian, Shihong Zhang.....2042*

Load Balancing Algorithm in Heterogeneous Wireless Networks Oriented to Smart Distribution Grid

*Zhongmiao Kang, Xiaoyan Wang, Meili Wang, Liangrui Tang.....2048*

mCSDN: A Software Defined Network Based Content Delivery System with D2D Contribution

*Kasim Oztoprak.....2053*

Path Hopping Based SDN Network Defense Technology

*Liancheng Zhang, Qiang Wei, Kejun Gu, Huiqiang Yuwen.....2058*

Random Selection False Source-Based Algorithm for Protecting Source-Location Privacy in WSNs

*Leqiang Bai, Ling Li, Shiguang Qian, Shihong Zhang.....2064*

Research on the Transitivity Closure of Trust Network

*Xiangrong Tong, Wei Zhang, Yingjie Wang.....2070*

Service Discovery Middleware Based on QoS in VANET

*Juan Luo, Tao Zhong, Xin Jin.....2075*

Stackelberg Model under Hard-block Mode in A Codeshare Problem

*Xiuyuan Guo, Hongzhi He.....2081*

## **Software Engineering**

An Approach for Modeling and Analyzing Dynamic Software Architectures

*Junhua Ding.....2086*

An Approach to Representing Spatio-temporal Ontology in the Geospatial Semantic Web

*Jianhua Ren, Xing Wang, Xuxin Lu, Weidong Song.....2093*

Integration and Optimization of Android Applications Based on Service-Oriented Architecture

*Hao Hu, Jiran Song.....2098*

Sample-System-Based Domain Feature Model validation

*Guanzhong Yang, Ting Deng*.....2104

## **Automation, Robotics, and Control**

An Improved ICP Algorithm For Kinect Point Cloud Registration

*Qin Ye, Yahui Yao, Popo Gui, Yi Lin*.....2109

Boosting Trajectory Planning for Hypersonic Vehicle

*Wenhong Zhou, Liang Pan, Jing Chen, Yu Xie, Fengtao Xiang*.....2115

Jerk-Level Solutions to Manipulator Inverse Kinematics with Mathematical Equivalence of Operations Discovered

*Yunong Zhang, Min Yang, Binbin Qiu, Jiawei Luo, Hongzhou Tan*.....2121

Link from ZD Control to Pascal's Triangle Illustrated via Multiple-Integrator Systems

*Yunong Zhang, Huinan Xiao, Dechao Chen, Sitong Ding, Pei Chen*.....2127

The Warning System of Vehicles' Driving Safety based on Network

*Qingling Lu, Zihui Wang, Wei Zhang, Yanbin Zhao*.....2132

## **Distributed Systems and Computer Hardware**

A Scheduling Algorithm in the Randomly Heterogeneous Multi-Core Processor

*Yan Liu, Yongwei Li, Yihong Zhao, Xiaoming Chen*.....2140

A Sort Method to Enhance Significant Spectral Components of Test Set

*Yingbo Zhou, Jishun Kuang*.....2147

Distributed Virtual Machine Placement based on Dependability in Data Centers

*Luxiu Yin, Wenfeng He, Juan Luo*.....2152

Hybrid computing document similarity in large-scale environment

*Sonia Alouane-ksouri, Minyar Sassihidri, Kamel Barkaoui*.....2159

Optimization of Parallel Algorithm for Kalman Filter on CPU-GPU Heterogeneous System

*Dandan Xu, Zheng Xiao, Dapu Li, Fan Wu*.....2165

Transient Analysis of Nonuniform Transmission Lines with Composite Simpson's Rule

*Jinquan Zhao, Lina Fan, Yan Gao, Hao Zhou, Xingxin Guo*.....2173

## **Computer Applications**

|   |      |
|---|------|
| A Novel Public Security Cases Knowledge Navigation System Based Topic Maps<br><i>Jianxia Chen, Qin Fang, Yu Cheng, Pulin Gong, Fang Hao, Ji Ma, Jinyang You, Baoshui Liu.....</i> | 2178 |
| A Spatiotemporal Data Model and Marking Dictionaries for Sea Surface Meteorological Data in XML<br><i>Luyi Bai, Jiemin Liu, Changyong Yu.....</i>                                 | 2184 |
| Adaptive Rendering Using Markov Model<br><i>Yu Liu, Changwen Zheng.....</i>   | 2189 |
| An Approach to Evaluation Index and Model of Undergraduates' Spoken English Pronunciation<br><i>Xinguang Li, Jiahua Chen, Zhen Chen, Yingni Chen.....</i>                         | 2195 |
| An Intelligent Decision Support System for Skin Cancer Detection from Dermoscopic Images<br><i>Teckyan Tan, Li Zhang, Ming Jiang.....</i>   | 2200 |
| Cloud Computing based High-performance Platform in Enabling Scalable Services in Power System<br><i>Chuang Deng, Junyong Liu, Yang Liu, Zhen Yu.....</i>                          | 2206 |
| Research on Automation Integration Technology of Application Systems Based on Web Services<br><i>Aiping Xu, Guangming Ling, Wuping Xu, Xu Zhang.....</i>                          | 2210 |
| Simulation Analysis of Borehole Induced Polarization Method for Symmetric Direction Configuration<br><i>Qingxin Meng, Long Di.....</i>  | 2216 |
| Software Development of Parameterization Design for Cap of Pile Foundation<br><i>Ling Yuan, Wei Wang, Bo Huang.....</i>   | 2221 |
| Solving Odd Even Sudoku Puzzles by Binary Integer Linear Programming<br><i>Hui Yu, Yuchao Tang, Chunxiang Zong.....</i>   | 2226 |
| The Game Mechanics for Skill Summarizing in Educational Games<br><i>Yue Zhang.....</i>  | 2231 |

## **Other Topics in Information Technology for Knowledge Discovery**

|   |      |
|---|------|
| A Fast Automatic Interpretation Of 3D Potential-field Image<br><i>Jian-zhong Tang, Jia-jun Li, Xu Zhang, Yun Bu.....</i>  | 2236 |
| An Online Measuring Method of Impedance Parameters of Asymmetric Transmission Lines<br><i>Jianhua Yin, Jinquan Zhao, Xuemin Wang, Huanrui Liu, Yan Gao.....</i> | 2241 |
| Construction of Khmer Entity Annotation Corpus Based on Constrained Conditional Random Fields<br><i>Shuhui Huang, Xin Yan, Zhengtao Yu, Qingling Lei.....</i>   | 2246 |
| Correlation and aggregation integrated MCDM with interval-valued intuitionistic fuzzy numbers<br><i>Shihu Liu.....</i>  | 2252 |
| Developing Creativity as a Scientific Literacy in Software Engineering Education towards Sustainability<br><i>Chunfang Zhou.....</i>                            | 2257 |
| Evolving Distortion Function By Exploiting The Differences Among Comparable Adaptive Steganography<br><i>Wenbo Zhou, Weiming Zhang, Nenghai Yu.....</i>         | 2262 |
| Intelligent Adaptive Object Recognition<br><i>Safa Almazmome, Li Zhang.....</i>   | 2272 |
| Non-commutative Hyper Residuated Lattices and Hyper Pseudo-BCK algebras<br><i>Xiaohong Zhang, Qiuyan Zhan, Xueping Wang.....</i>                                | 2277 |
| Positioning Algorithm for Vehicular Ad Hoc Networks<br><i>Xin Peng, Qiaoqiao Sheng, Wen Li, Jingcheng Ouyang.....</i>   | 2283 |
| Research on Incentive Mechanism in Network Education Platform<br><i>Min Hou, Jun Han, Jiasha Zhang, Jing Liu.....</i>   | 2288 |