# Table of Contents

- Preface ......................................................................................................................................................... xi
- Conference Organization ........................................................................................................................... xii
- Program Committee .................................................................................................................................. xiii
- Reviewers ................................................................................................................................................... xv
- Keynotes ................................................................................................................................................... xvii

## Evolutionary & Swarm Computation

Enhancing Particle Swarm Algorithm for Multimodal Optimization Problems ............................................. 1  
*Jin Wang*

An Novel Metaheuristic for the Order Scheduling with Ready Times ................................................................. 7  
*Win-Chin Lin, Tzu-Hsuan Yang, and Chin-Chia Wu*

A Bi-criterion Simulated Annealing Method to Solve Four-Stage Multiprocessor Open Shops with Dynamic Job Release Time ........................................................................................................ 13  
*Yachih Tsai (Huimei Wang) and Fuh Der Chou*

Distributed Parellel MOEA/D on Spark ........................................................................................................... 18  
*Weiqin Ying, Shiyun Chen, Bin Wu, Yuehong Xie, and Yu Wu*

Distributed Resource Scheduling Algorithm Based on Hybrid Genetic Algorithm ............................................. 24  
*Sen Pan, Junfeng Qiao, Jing Jiang, Jin Huang, and Liping Zhang*

A Combination Forecasting Model of Extreme Learning Machine Based on Genetic Algorithm Optimization ........................................................................................................... 29  
*Zhiheng Yu and Chengli Zhao*

Alarm Targets Selection Algorithm Based on Dynamic AHP Method .............................................................. 33  
*Xi Chen and Zhi-Ting Lin*

Dynamic Community Detection Using Nonnegative Matrix Factorization ..................................................... 39  
*Feng Gao, Limengzi Yuan, Wenjun Wang, and Huandong Chang*
# Neural & Learning Systems

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synthetic Data and DAG-SVM Classifier for Segmentation-Free Manchu Word Recognition</td>
<td>46</td>
</tr>
<tr>
<td>Di Huang, Min Li, Ruirui Zheng, Shuang Xu, and Jiajing Bi</td>
<td></td>
</tr>
<tr>
<td>Forecasting the Stock Price Volatilities by Integrating the Support Vector Regression and the Krill Herd Algorithm</td>
<td>51</td>
</tr>
<tr>
<td>Chihming Hsu</td>
<td></td>
</tr>
<tr>
<td>Combined Forecasting Model of Traffic Flow Based on DGM(1,1) and GRNN</td>
<td>58</td>
</tr>
<tr>
<td>Zhiheng Yu, Kecheng Liu, Chengli Zhao, and Ying Liu</td>
<td></td>
</tr>
<tr>
<td>Network Traffic Anomaly Detection Based on Dynamic Programming</td>
<td>62</td>
</tr>
<tr>
<td>Qing Yu and Xiaowei Gu</td>
<td></td>
</tr>
<tr>
<td>Application of Phase Space Reconstruction in a Few-Channel EEG-NIRS</td>
<td>66</td>
</tr>
<tr>
<td>Bimodal Brain-Computer Interface System</td>
<td></td>
</tr>
<tr>
<td>Yuchen Xie, Qing Yang, Pan Lin, Yue Leng, Yuankui Yang, Haixian Wang, and Sheng Ge</td>
<td></td>
</tr>
<tr>
<td>Content-Based Image Retrieval Based on Multi-feature Fusion Optimized by Brain Storm Optimization</td>
<td>72</td>
</tr>
<tr>
<td>Hengjun Zhou and Mingyan Jiang</td>
<td></td>
</tr>
<tr>
<td>The Prediction Aggregating Procedure for Multi-models In Small Dataset Learning</td>
<td>79</td>
</tr>
<tr>
<td>Yaosan Lin, Liangsian Lin, Derchiang Li, and Hung Yu Chen</td>
<td></td>
</tr>
<tr>
<td>Non-orthogonal Pulse Shape Modulation for Wireless Relay D2D</td>
<td>86</td>
</tr>
<tr>
<td>Jie Shen, Ou Wang, and Jianguo Yu</td>
<td></td>
</tr>
<tr>
<td>Causally and Noncausally Information Bound in Discrete Memoryless Multicast Relay Network</td>
<td>93</td>
</tr>
<tr>
<td>Ou Wang, Dajin Wang, Jie Shen, and Jianguo Yu</td>
<td></td>
</tr>
<tr>
<td>An Auditory-Based Monaural Feature for Noisy and Reverberant Speech Enhancement</td>
<td>100</td>
</tr>
<tr>
<td>Yi Jiang, Runsheng Liu, and Yang Bai</td>
<td></td>
</tr>
<tr>
<td>The Research on Forecasting Model Based on Support Vector Machine and Discrete Grey System</td>
<td>104</td>
</tr>
<tr>
<td>Chengli Zhao and Zhiheng Yu</td>
<td></td>
</tr>
<tr>
<td>Robust Adaptive Optimization Algorithm for Stability Control of Electric Patrol Survey UAV</td>
<td>108</td>
</tr>
<tr>
<td>Zhifang Wang, Jie Shen, Xingjian Fu, and Boyuan Chen</td>
<td></td>
</tr>
<tr>
<td>Research on Application of Artificial Intelligence Algorithm in Directed Graph</td>
<td>116</td>
</tr>
<tr>
<td>Yuanbo Zhou and Fangqin Xu</td>
<td></td>
</tr>
</tbody>
</table>
Sensing-Throughput Tradeoff in Cognitive Radio Network Based on High Activity of Primary User .................................................................121
    Hang Cao and Shouyi Yang

A Lattice-Based Public Encryption with Key Search Scheme for Wireless Sensor Networks .................................................................126
    Fugeng Zeng

The Measurement and Modeling Analysis for Internet Users Behavior Properties .................................................................130
    Yijing Ren, Ren R, and Wang Wr

Fuzzy & Stochastic Modeling
Optimality Conditions for Discrete Variational Problems .................................................................134
    Fang-Di Kong

Evaluation Method of the Damage Effect Produced by Naval Gun Armor-Piercing Blast Shell to Vessel Cabin .................................................................137
    Dongyan Sun

Study on the Robustness Based on PID Fuzzy Controller .................................................................142
    Qiang Song and Yaochun Wu

Template Based Attribute Value Words Acquisition in Entity Attribute Knowledge Base Construction .................................................................146
    Honglin Wu, Ruoyi Zhou, and Ke Wang

An Improved Track-before-Detection Algorithm Based on Dynamic Neighborhood Search .................................................................150
    Rui Ni, Chongyi Fan, Xiaotao Huang, and Hanhua Zhang

Non-redundant Distributed Database Allocation Technology Research .................................................................155
    Qiao Sun, Buqiao Deng, Lanmei Fu, and Jiasong Sun

A Plane Extraction Method Based on the Randomized Hough Transform .................................................................160
    Xiaoqing Wang, Chenjing Ding, Yongping Wang, and Xingqun Zhao

Convergence and Performance Analysis
Robust Design of Digital Dynamic Systems by the Bayesian Point Estimation Method .................................................................164
    Fulchiang Wu

The Thermo Stability of Lipase: Salt Bridge and Salt Bridge Network Perspective Based on Long Time Molecular Dynamics Simulation .................................................................171
    Leiyu Zhang and Yanrui Ding

A Hybrid ACOR Algorithm for Pattern Classification Neural Network Training .................................................................177
    Zhangming Zhao, Jing Feng, Kunpeng Jing, and En Shi
Discretization of Continuous Variables in Bayesian Networks Based on Matrix Decomposition ................................................................. 184
   Haiteng Fang, Hongji Xu, Hui Yuan, and Yingming Zhou

Integrated Transfer Learning Algorithm Using Multi-source TrAdaBoost for Unbalanced Samples Classification .................................................. 188
   Zhixiang Yuan, Damang Bao, Zekai Chen, and Ming Liu

Effective Confidence Interval Estimation Based on Ohba's Software Reliability Growth Model ................................................................. 196
   Po-Chiang Tsai and Chih-Chiang Fang

Secure Cloud Storage and Quick Keyword Based Retrieval System ................................................................. 201
   Songfeng Lu and Abdulruhman I Ahmed Abomakhelb

**Information Systems and Application**

Study on Population Comprehensive Information Sharing Platform ................................................................. 208
   Jianhua Zeng and Xueping Liang

Research on the Course of Tourism Electronic Commerce Based on the Perspective of Enterprise Demand in Higher Vocational Institutes ................................................................. 211
   Hui Wang and Jie Kong

Unsupervised Change Detection of Remote Sensing Images Based on SURF and SVM ................................................................. 214
   Lin Wu, Bowen Liu, and Baishun Zhao

Software Reliability Model Considering Fault Severity and Correction Time for HTR-PM Reactor Protection System ................................................................. 219
   Chao Gao, Duo Li, and Chao Guo

Fast Pedestrian Detection with Multi-scale Classifiers ................................................................. 225
   Baoyin Yu, Yingdong Ma, and Jun Li

Workflow Execution Plan Generation in the Cloud Computing Environment Based on an Improved List Scheduling Algorithm ................................................................. 231
   Xiaoying Wang, Chengshui Niu, Yu-An Zhang, and Lei Zhang

QoS-based Trust Computing Scheme for SLA Guarantee in Cloud Computing System ................................................................. 236
   Lihong Bao

Customizable Modeling Method of Workflow Engine Used in Information System ................................................................. 241
   Qing Yu and Xiaowei Gu

A MRF-based Multi-agent System for Remote Sensing Image Segmentation ................................................................. 246
   Huifang Bao, Linli Zhou, Lei Liu, and Yue Wu
Solving the Stock Preparing Problem in Return Materials Authorization Process in TFT-LCD Industry with MTD-based Grey Model .................................................................250
   ChunWu Yeh, Tungi Tsai, Chejung Chang, and Ihsiang Wen

A Real-Time Similarity Measure Model for Multi-source Trajectories .........................................................257
   Lu Sun, Wei Zhou, Baichen Jiang, and Jian Guan

MCIR: A Multi-modal Image Registration Algorithm Based on Membrane Computing ..............................................................263
   Zhilv Gao and Chengfang Zhang

A Fast Image Encryption Scheme Based on Public Image and Chaos .................................................................270
   Yong Zhang, Qiong Zhang, Hancheng Liao, Wenhua Wu, Xueqian Li, and Huimin Niu

Research and Implementation Based on Three-Dimensional Model Watermarking Algorithm .................................................................277
   Aoshuang Dong and Rui Zeng

Multi-scale Politics Analysis on Urban Function Area Human Mobility .................................................................283
   Yiding Feng, Pengfei Jiao, Wenjun Wang, and Shuyu Shi

Mathematical Modeling of Pursuit-Evasion System for Video Surveillance Network .................................................................289
   Wenjun Wang and Fanliang Bu

Watermarking Algorithm for Bas-Relief Based on Depth Grayscale Image .................................................................294
   Shiru Zhang, Ye Wu, Yu Bao, and Jun Bai

Background Suppression Based on Improved Top-Hat and Saliency Map Filtering for Infrared Ship Detection .................................................................298
   Baorong Xie, Lingna Hu, and Wentao Mu

Research on Bid Evaluation Model in the Bidding Management for Power Grid Corporations .................................................................302
   Xiaojing Wei and Caiyun Guo

The Best Performance Evaluation of Encryption Algorithms to Reduce Power Consumption in WSN .................................................................308
   Mustafa A. Al Sibahee, Songfeng Lu, Zaid Alaa Hussien, Mohammed Abdulridha Hussain, Keyan Abdul-Aziz Mutlaq, and Zaid Ameen Abduljabbar

A Formation-Constrained Cooperative Path Planning Method for Multi-autonomous Underwater Vehicles .................................................................313
   Shuangshuang Du, Chao Cai, Houjun Wang, and Dongwu Li

Software Reliability Optimization for Automatic Train Operating System .................................................................320
   Zengkun Li and Xibin Zhao

Fine-Grained Product Feature Extraction in Chinese Reviews .................................................................327
   Hanqian Wu, Tao Liu, and Jue Xie
Infrared Image Change Detection of Substation Equipment in Power System
Using Markov Random Field ................................................................................................................332
    Jipu Gao, Changbao Xu, Li Zhang, Shuaiwei Liu, Weigang Feng,
    Shaohua Xiong, and Shan Tan

Design and Development of Management Information System for Research
Project Process Based on Front-End and Back-End Separation ..........................................................338
    Kun Liu, Jinmin Jiang, Xiaohan Ding, and Hui Sun

Studies on the Constrained Group-Wise K-Means Algorithm ..............................................................343
    Hu Yang and Xian-Yu Chang

Author Index ............................................................................................................................................349