Preface

This book and its companion volume, LNCS vols. 7928 and 7929, constitute the proceedings of the 4th International Conference on Swarm Intelligence (ICSI 2013) held during June 12–15, 2013, in Harbin, China. ICSI 2013 was the fourth international gathering in the world for researchers working on all aspects of swarm intelligence, following the successful and fruitful Shenzhen (ICSI 2012), Chongqing (ICSI 2011), and Beijing events (ICSI 2010), which provided a high-level academic forum for the participants to disseminate their new research findings and discuss emerging areas of research. It also created a stimulating environment for the participants to interact and exchange information on future challenges and opportunities in the field of swarm intelligence research.

ICSI 2013 received 268 submissions from about 613 authors in 35 countries and regions (Algeria, Australia, Austria, Bangladesh, Bonaire Saint Eustatius and Saba, Brazil, Canada, Chile, China, Czech Republic, France, Germany, Hong Kong, India, Islamic Republic of Iran, Italy, Japan, Republic of Korea, Malaysia, Mexico, Pakistan, Palestine, Romania, Russian Federation, Saudi Arabia, Singapore, South Africa, Spain, Sweden, Switzerland, Chinese Taiwan, Thailand, Tunisia, Turkey, UK, USA) across six continents (Asia, Europe, North America, South America, Africa, and Oceania). Each submission was reviewed by at least two reviewers, and on average 2.5 reviewers. Based on rigorous reviews by the Program Committee members and reviewers, 129 high-quality papers were selected for publication in this proceedings volume with an acceptance rate of 48.13%. The papers are organized in 22 cohesive sections covering all major topics of swarm intelligence research and development.

As organizers of ICSI 2013, we would like to express sincere thanks to Harbin Engineering University, Peking University, and Xian Jiaotong-Liverpool University for their sponsorship, as well as to the IEEE Computational Intelligence Society, World Federation on Soft Computing, and International Neural Network Society for their technical co-sponsorship. We appreciate the Natural Science Foundation of China for its financial and logistic support. We would also like to thank the members of the Advisory Committee for their guidance, the members of the International Program Committee and additional reviewers for reviewing the papers, and the members of the Publications Committee for checking the accepted papers in a short period of time. Particularly, we are grateful to the Springer for publishing the proceedings in the prestigious series of Lecture Notes in Computer Science. Moreover, we wish to express our heartfelt appreciation to
the plenary speakers, session chairs, and student helpers. In addition, there are still many more colleagues, associates, friends, and supporters who helped us in immeasurable ways; we express our sincere gratitude to them all. Last but not the least, we would like to thank all the speakers, authors, and participants for their great contributions that made ICSI 2013 successful and all the hard work worthwhile.

April 2013

Ying Tan
Yuhui Shi
Hongwei Mo
Organization

General Chairs
Russell C. Eberhart
Indiana University-Purdue University, USA
Guihua Xia
Harbin Engineering University, China
Ying Tan
Peking University, China

Program Committee Chair
Yuhui Shi
Xi’an Jiaotong-Liverpool University, China

Advisory Committee Chairs
Gary G. Yen
Oklahoma State University, USA
Xingui He
Peking University, China

Organizing Committee Chair
Hongwei Mo
Harbin Engineering University, China

Technical Committee Chairs
Carlos A. Coello Coello
CINVESTAV-IPN, Mexico
Xiaodong Li
RMIT University, Australia
Andries Engelbrecht
University of Pretoria, South Africa
Ram Akella
University of California, USA
M. Middendorf
University of Leipzig, Germany
Lin Zhao
Harbin Engineering University, China

Special Sessions Chairs
Fernando Buarque
University of Pernambuco, Brazil
Benlian Xu
Changsu Institute of Technology, China

Publications Chair
Radu-Emil Precup
Politehnica University of Timisoara, Romania
VIII Organization

Publicity Chairs

Hideyuki Takagi
Kyushu University, Japan
Shan He
University of Birmingham, UK
Yew-Soon Ong
Nanyang Technological University, Singapore
Juan Luis Fernandez Martinez
University of Oviedo, Spain
Jose Alfredo F. Costa
Federal University, Brazil
Kejun Wang
Harbin Engineering University, China

Finance and Registration Chairs

Chao Deng
Peking University, China
Andreas Janecek
University of Vienna, Austria

Local Arrangements Chairs

Lifang Xu
Harbin Engineering University, China
Mo Tang
Harbin Engineering University, China

Program Committee

Payman Arabshahi
University of Washington, USA
Sabri Arik
Istanbul University, Turkey
Carmelo J. A. Bastos Filho
University of Pernambuco, Brazil
Walter Chen
National Taipei University of Technology, Chinese Taipei
Manuel Chica
European Centre for Soft Computing, Spain
Jose Alfredo Ferreira Costa
UFRN Universidade Federal do Rio Grande do Norte, Brazil
Arindam K. Das
University of Washington, USA
Prithviraj Dasgupta
University of Nebraska, USA
Mingcong Deng
Tokyo University of Agriculture and Technology, Japan
Yongsheng Ding
Donghua University, China
Haibin Duan
Beijing University of Aeronautics and Astronautics, China
Mark Embrechts
Rensselaer Institute, USA
Juan Luis Fernández Martínez
University of Oviedo, Spain
Wai-Keung Fung
University of Manitoba, Canada
Luca Gambardella
Istituto Dalle Molle di Studi sull’Intelligenza Artificiale, Switzerland
Dunwei Gong  
China University of Mining and Technology, China

Maoguo Gong  
Xidian University, China

Ping Guo  
Beijing Normal University, China

Haibo He  
University of Rhode Island, USA

Ran He  
National Laboratory of Pattern Recognition, China

Shan He  
University of Birmingham, UK

Lu Hongtao  
Shanghai Jiao Tong University, China

Mo Hongwei  
Harbin Engineering University, China

Jun Hu  
Chinese Academy of Sciences, China

Guangbin Huang  
Nanyang Technological University, Singapore

Yuancheng Huang  
Wuhan University, China

Andreas Janecek  
University of Vienna, Austria

Alan Jennings  
University of Dayton, USA

Zhen Ji  
Shenzhen University, China

Changan Jiang  
RIKEN-TRI Collaboration Center for Human-Interactive Robot Research, Japan

Licheng Jiao  
Xidian University, China

Colin Johnson  
University of Kent, USA

Farrukh Khan  
FAST-NUCES Islamabad, Pakistan

Thanatchai  
Suananaree University of Technology, Thailand

Germano Lambert-Torres  
Itajuba Federal University, Brazil

Xia Li  
Shenzhen University, China

Xuelong Li  
University of London, UK

Andrei Lihu  
Politehnica University of Timisoara, Romania

Fernando B. De Lima Neto  
University of Pernambuco, Brazil

Guoping Liu  
University of Glamorgan, UK

Jiahua Liu  
Fujian University of Technology, China

Ju Liu  
Shandong University, China

Wenlian Lu  
Fudan University, China

Bernd Meyer  
Monash University, Australia

Martin Middendorf  
University of Leipzig, Germany

Bijaya Ketan Panigrahi  
Indian Institute of Technology, Delhi, India

Thomas Potok  
ORNL, USA

Radu-Emil Precup  
Politehnica University of Timisoara, Romania

Yuhui Shi  
Xi’an Jiaotong-Liverpool University, China

Zhongzhi Shi  
Institute of Computing Technology, Chinese Academy of Sciences, China

Mohammad Taherdangkoo  
Shiraz University, Iran

Hideyuki Takagi  
Kyushu University, Japan

Ying Tan  
Peking University, China

Ke Tang  
University of Science and Technology of China, China
Ba-Ngu Vo
Bing Wang
Jiahai Wang
Lei Wang
Ling Wang
Lipo Wang
Qi Wang
Shunren Xia
Benlian Xu
Yingjie Yang
Peng-Yeng Yin
Zhuhong You
Jie Zhang
Jun Zhang
Junqi Zhang
Lifeng Zhang
Qieshi Zhang
Qingfu Zhang
Dongbin Zhao
Zhi-Hua Zhou
Zexuan Zhu
Xingquan Zuo

Additional Reviewers

Ali, Aftab
Bo, Xing
Bova, Nicola
Dai, Wang-Zhou
Ding, Ke
Ding, Ming
Fang, Jianwu
Gambardella, Luca Maria
Hao, Pengyi
Ho, Tze-Yee
Jiesheng, Wang
Mi, Guyue
Pei, Yan
Pérez Pancho, David
Qian, Chao
Sun, Minghui
Tanoto, Andry
Wan, Wenbo
Wang, Jaidong
Wang, Li
Xing, Bo
Yeh, Ming-Feng
Yu, Chao
Yu, James
Yu, Jian
Zhang, Pengtao
Zheng, Shaoqiu
Zheng, Zhongyang
Zhou, Wei
Zhu, Guokang
Table of Contents – Part II

**Hybrid Algorithms**

Hybrid Gravitational Search and Clonal Selection Algorithm for Global Optimization .......................................................... 1  
Shangce Gao, Hongjian Chai, Beibei Chen, and Gang Yang

A Hybrid Genetic Programming with Particle Swarm Optimization . . . . 11  
Feng Qi, Yinghong Ma, Xiyu Liu, and Guangyong Ji

A *Physarum* Network Evolution Model Based on IBTM ................. 19  
Yuxin Liu, Zili Zhang, Chao Gao, Yuheng Wu, and Tao Qian

Cultural Algorithms for the Set Covering Problem ......................... 27  
Broderick Crawford, Ricardo Soto, and Eric Monfroy

Impulse Engine Ignition Algorithm Based on Genetic Particle Swarm Optimization .......................................................... 35  
Xiaolong Liang, Zhonghai Yin, Yali Wang, and Qiang Sun

**Swarm-Robot and Multi-agent Systems**

Learning by Imitation for the Improvement of the Individual and the Social Behaviors of Self-organized Autonomous Agents............... 44  
Abdelhak Chatty, Philippe Gaussier, Ilhem Kallel, Philippe Laroque, and Adel M. Alimi

An Indexed K-D Tree for Neighborhood Generation in Swarm Robotics Simulation .......................................................... 53  
Zhongyang Zheng and Ying Tan

Agent-Based Social Simulation and PSO ................................. 63  
Andreas Janecek, Tobias Jordan, and Fernando Buarque de Lima-Neto

Multi-agent Oriented Stable Payoff with Cooperative Game ............ 74  
Tianwen Li, Feng Ma, and Weiyi Liu

**Support Vector Machines**

Use the Core Clusters for the Initialization of the Clustering Based on One-Class Support Vector Machine ................................. 82  
Lei Gu
Terrain Image Classification with SVM ........................................... 89  
Mu-Song Chen, Chi-Pan Hwang, and Tze-Yee Ho

A Novel Algorithm for Kernel Optimization of Support Vector Machine .................................................. 98  
Lijie Li

Training Least-Square SVM by a Recurrent Neural Network Based on Fuzzy c-mean Approach .................................... 106  
Fengqiu Liu, Jianmin Wang, and Sitian Qin

Data Mining Methods

A Locality Sensitive K-Means Clustering Method Based on Genetic Algorithms .................................................. 114  
Lei Gu

Using Graph Clustering for Community Discovery in Web-Based Social Networks .............................................. 120  
Jackson Gomes Souza, Edeilson Milhomem Silva, Parcilene Fernandes Brito, José Alfredo F. Costa, Ana Carolina Salgado, and Silvio R.L. Meira

Application of Dynamic Rival Penalized Competitive Learning on the Clustering Analysis of Seismic Data ............................................................. 130  
Hui Wang, Yan Li, and Lei Li

An Online Trend Analysis Method for Measuring Data Based on Historical Data Clustering ........................................ 137  
Jianfeng Qu, Maoyun Guo, Yi Chai, Zhimin Yang, Tao Zou, Tian Lan, and Zhenglei Liu

Measuring Micro-blogging User Influence Based on User-Tweet Interaction Model ............................................. 146  
Dong Liu, Quanyuan Wu, and Weihong Han

Discover Community Leader in Social Network with PageRank ............................................................... 154  
Rui Wang, Weidai Zhang, Han Deng, Nanli Wang, Qing Miao, and Xinchao Zhao

Forecasting Chinese GDP with Mixed Frequency Data Set: A Generalized Lasso Granger Method ............................................. 163  
Zhe Gao, Jianjun Yang, and Shaohua Tan

Poison Identification Based on Bayesian Network: A Novel Improvement on K2 Algorithm via Markov Blanket ........................................ 173  
Jinke Jiang, Juyun Wang, Hua Yu, and Huijuan Xu
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A New Efficient Text Clustering Ensemble Algorithm Based on Semantic Sequences</td>
<td>183</td>
</tr>
<tr>
<td>Zhonghui Feng, Junpeng Bao, and Kaikai Liu</td>
<td></td>
</tr>
<tr>
<td>Credit Scoring Analysis Using B-Cell Algorithm and K-Nearest Neighbor Classifiers</td>
<td>191</td>
</tr>
<tr>
<td>Cheng-An Li</td>
<td></td>
</tr>
<tr>
<td>Text Categorization Based on Semantic Cluster-Hidden Markov Models</td>
<td>200</td>
</tr>
<tr>
<td>Fang Li and Tao Dong</td>
<td></td>
</tr>
<tr>
<td>System and Information Security</td>
<td></td>
</tr>
<tr>
<td>Reversible Data Embedment for Encrypted Cartoon Images Using Unbalanced Bit Flipping</td>
<td>208</td>
</tr>
<tr>
<td>Wien Hong, Tung-Shou Chen, Jeanne Chen, Yu-Hsin Kao, Han-Yan Wu, Mei-Chen Wu</td>
<td></td>
</tr>
<tr>
<td>A Robust Watermarking Algorithm for 2D CAD Engineering Graphics Based on DCT and Chaos System</td>
<td>215</td>
</tr>
<tr>
<td>Jingwen Wu, Quan Liu, Jiang Wang, and Lu Gao</td>
<td></td>
</tr>
<tr>
<td>Detection of Human Abnormal Behavior of the Ship’s Security</td>
<td>224</td>
</tr>
<tr>
<td>Fengru Guan, Xiaolong Liu, and Xiangyu Meng</td>
<td></td>
</tr>
<tr>
<td>HYBit: A Hybrid Taint Analyzing Framework for Binary Programs</td>
<td>232</td>
</tr>
<tr>
<td>Erzhou Zhu, Haibing Guan, Alei Liang, Rongbin Xu, Xuejian Li, and Feng Liu</td>
<td></td>
</tr>
<tr>
<td>The Application of the Pattern Recognition Algorithms in Security Assessment of Structural Health Monitoring for Bridges</td>
<td>240</td>
</tr>
<tr>
<td>Yilin Guo</td>
<td></td>
</tr>
<tr>
<td>Experimentation of Data Mining Technique for System’s Security: A Comparative Study</td>
<td>248</td>
</tr>
<tr>
<td>Ahmed Chaouki Lokbani, Ahmed Lehireche, and Reda Mohamed Hamou</td>
<td></td>
</tr>
<tr>
<td>Intelligent Control</td>
<td></td>
</tr>
<tr>
<td>Brownian Snake Measure-Valued Markov Decision Process</td>
<td>258</td>
</tr>
<tr>
<td>Zhenzhen Wang and Hancheng Xing</td>
<td></td>
</tr>
<tr>
<td>A Strategy to Regulate WSN Nodes’ Energy Consumption Based on Emission Rate</td>
<td>267</td>
</tr>
<tr>
<td>Bo Song, Yan Wang, and Hailong Zhang</td>
<td></td>
</tr>
</tbody>
</table>
Contact Network Model with Covert Infection ........................................ 275  
Xiaomei Yang, Jianchao Zeng, and Jiye Liang

Genetic Evolution of Control Systems .................................................. 284  
Mu-Song Chen, Tze-Yee Ho, and Chi-Pan Hwang

An Intelligent Fusion Algorithm for Uncertain Information  
Processing ........................................................... 293  
Peiyi Zhu, Benlian Xu, and Mingli Lu

A New Target Tracking Algorithm Based on Online Adaboost .............. 301  
Zhuowen Lv, Kejun Wang, and Tao Yan

**Wireless Sensor Network**

False Data Attacks Judgment Based on Consistency Loop Model in Wireless Sensor Networks .................................................. 308  
Ping Li, Limin Sun, Wu Yang, Qing Fang, Jinyang Xie, and Kui Ma

Multi-cell Interaction Tracking Algorithm for Colliding and Dividing Cell Dynamic Analysis ................................................. 316  
Mingli Lu, Benlian Xu, Andong Sheng, and Peiyi Zhu

An Study of Indoor Localization Algorithm Based on Imperfect Signal Coverage in Wireless Networks ........................................... 325  
Ping Li, Limin Sun, Qing Fang, Jinyang Xie, Wu Yang, and Kui Ma

Group-Based Overhead Limiting for Stability Routing in Ad Hoc Networks .......................................................... 334  
Xi Hu, Cong Wang, Siwei Zhao, and Xin Wang

**Scheduling and Path Planning**

Path Planning in RoboCup Soccer Simulation 3D Using Evolutionary Artificial Neural Network ................................................. 342  
Saleha Raza and Sajjad Haider

Solving Hamilton Path Problem with P System .................................... 351  
Laisheng Xiang and Jie Xue

Dynamic Comprehensive Evaluation of Manufacturing Capability for a Job Shop .......................................................... 360  
Huachen Liu, Sijin Xin, Wenjun Xu, and Yuanyuan Zhao

A Study of Aviation Swarm Convoy and Transportation Mission .......... 368  
Xiaolong Liang, Qiang Sun, Zhonghai Yin, and Yali Wang
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Multiple Interfaces and Multiple Services Residential Gateway</td>
<td>376</td>
</tr>
<tr>
<td>Wenyao Yan, Zhixiao Wang, Kewang Zhang, Junhuai Li, and Deyun Zhang</td>
<td></td>
</tr>
<tr>
<td>Particle Swarm Optimization Combined with Tabu Search in a Multi-agent Model for Flexible Job Shop Problem</td>
<td>385</td>
</tr>
<tr>
<td>Abir Henchiri and Meriem Ennigrou</td>
<td></td>
</tr>
<tr>
<td><strong>Image and Video Processing</strong></td>
<td></td>
</tr>
<tr>
<td>A Novel Preprocessing Method for Illumination-Variant Color Face</td>
<td>395</td>
</tr>
<tr>
<td>Wei Li, Qinghua Yang, and Wei Pan</td>
<td></td>
</tr>
<tr>
<td>Design of Face Detection System Based on FPGA</td>
<td>404</td>
</tr>
<tr>
<td>Yujie Zhang, Meihua Xu, and Huaming Shen</td>
<td></td>
</tr>
<tr>
<td>Remote Sensing Image Segmentation Based on Rough Entropy</td>
<td>411</td>
</tr>
<tr>
<td>Huijie Sun, Tingquan Deng, and Yingying Jiao</td>
<td></td>
</tr>
<tr>
<td>A Real-Time Noise Image Edge Detector Based on FPGA</td>
<td>420</td>
</tr>
<tr>
<td>Meihua Xu, Chenjun Xia, and Shuping Huang</td>
<td></td>
</tr>
<tr>
<td>Optimization Algorithm and Implementation of Pedestrian Detection ...</td>
<td>428</td>
</tr>
<tr>
<td>Meihua Xu, Huaimeng Zheng, and Tao Wang</td>
<td></td>
</tr>
<tr>
<td>Video Image Clarity Algorithm Research of USV Visual System under the Sea Fog</td>
<td>436</td>
</tr>
<tr>
<td>Zhongli Ma, Jie Wen, and Xiumei Liang</td>
<td></td>
</tr>
<tr>
<td>A Study of Vision-Based Lane Recognition Algorithm for Driver Assistance</td>
<td>445</td>
</tr>
<tr>
<td>Feng Ran, Zhoulong Jiang, Tao Wang, and Meihua Xu</td>
<td></td>
</tr>
<tr>
<td>New Approach to Image Retrieval Based on Color Histogram</td>
<td>453</td>
</tr>
<tr>
<td>Muhammad Imran, Rathiah Hashim, and Noor Eliza Abd Khalid</td>
<td></td>
</tr>
<tr>
<td>Comparison and Evaluation of Human Locomotion Traits with Different Prosthetic Feet Using Graphical Methods from Control Area</td>
<td>463</td>
</tr>
<tr>
<td>Lulu Gong, Qirong Tang, and Hongwei Mo</td>
<td></td>
</tr>
<tr>
<td><strong>Other Applications</strong></td>
<td></td>
</tr>
<tr>
<td>An Improved Intelligent Water Drop Algorithm for a Real-Life Waste Collection Problem</td>
<td>472</td>
</tr>
<tr>
<td>Mohammad Raihanul Islam and M. Sohel Rahman</td>
<td></td>
</tr>
</tbody>
</table>
The Extension of Linear Coding Method for Automated Analog Circuit Design

Zhi Li and Jingsong He

480

The Design and Implementation of Motor Drive for an Electric Bicycle

Tze-Yee Ho, Mu-Song Chen, Wei-Chieh Chen, and Chih-Hao Chiang

488

The UML Diagram to VHDL Code Transformation Based on MDA Methodology

Chi-Pan Hwang and Mu-Song Chen

496

Generating Mask from the Structural Layer of Micro Device

Zheng Liu

504

Parallel Process of Virtual Screening Result File Based on Hadoop

Ning Ma, Rongjing Hu, and Ruisheng Zhang

511

3D Modeling Environment Development for Micro Device Design

Zheng Liu

518

Data Reconciliation of Release Mechanism Research of LDH-Based Drug

Xiaoxia Liu

524

Author Index

531
Table of Contents – Part I

Analysis of Swarm Intelligence Based Algorithms

Interactive Robotic Fish for the Analysis of Swarm Behavior .......... 1
Tim Landgraf, Hai Nguyen, Stefan Forgo, Jan Schneider,
Joseph Schröer, Christoph Krüger, Henrik Matzke,
Romain O. Clément, Jens Krause, and Raúl Rojas

The Improvement on Controlling Exploration and Exploitation of
Firework Algorithm ........................................................................ 11
Jianhua Liu, Shaoqiu Zheng, and Ying Tan

Diversity Analysis of Population in Shuffled Frog Leaping Algorithm ... 24
Lianguo Wang and Yaxing Gong

An Artificial Chemistry System for Simulating Cell Chemistry:
The First Step .................................................................................. 32
Chien-Le Goh, Hong Tat Ewe, and Yong Kheng Goh

Particle Swarm Optimization

Maturity of the Particle Swarm as a Metric for Measuring the Collective
Intelligence of the Swarm ................................................................. 40
Zdenka Winklerová

Particle Swarm Optimization in Regression Analysis: A Case Study .... 55
Shi Cheng, Chun Zhao, Jingjin Wu, and Yuhui Shi

Mechanical PSO Aided by Extremum Seeking for Swarm Robots
Cooperative Search ........................................................................... 64
Qirong Tang and Peter Eberhard

Multi-swarm Particle Swarm Optimization with a Center Learning
Strategy .......................................................................................... 72
Ben Niu, Huali Huang, Lijing Tan, and Jane Jing Liang

Opposition-Based Learning Fully Informed Particle Swarm Optimizer
without Velocity .............................................................................. 79
Ying Gao, Lingzi Peng, Fufang Li, Miao Liu, and Waixi Liu

GSO: An Improved PSO Based on Geese Flight Theory ................. 87
Shengkui Dai, Peixian Zhuang, and Wenjie Xiang

Improved Algorithms Based on the Simple Particle Swarm
Optimization ....................................................................................... 96
Lei Liu, Xiaomeng Zhang, Zhiguo Shi, and Tianyu Zhang
A Test of Position Determination with PSO ........................................ 104
  Walter W. Chen, Jian-An Wang, and Zhe-Ping Shen

Initial Particles Position for PSO, in Bound Constrained Optimization ......................................................... 112
  Emilio Fortunato Campana, Matteo Diez, Giovanni Fasano, and Daniele Peri

Visualizing the Impact of Probability Distributions on Particle Swarm Optimization .................................................. 120
  Tjorben Bogon, Fabian Lorig, and Ingo J. Timm

Local and Global Search Based PSO Algorithm ............................................. 129
  Yanxia Sun, Zenghui Wang, and Barend Jacobus van Wyk

Cask Theory Based Parameter Optimization for Particle Swarm Optimization ......................................................... 137
  Zenghui Wang and Yanxia Sun

Applications of PSO Algorithms

A Piecewise Linearization Method of Significant Wave Height Based on Particle Swarm Optimization ........................................ 144
  Liqiang Liu, Zhichao Fan, and Xiangguo Wang

Design Fuzzy Logic Controller by Particle Swarm Optimization for Wind Turbine ......................................................... 152
  Nasseer K. Bachache and Jinyu Wen

Parameter Identification of RVM Runoff Forecasting Model Based on Improved Particle Swarm Optimization ........................................ 160
  Yuzhi Shi, Haijiao Liu, Mingyuan Fan, and Jiwen Huang

An Approach Based on Evaluation Particle Swarm Optimization Algorithm for 2D Irregular Cutting Stock Problem ........................................ 168
  Yanxin Xu, Genke Yang, and Changchun Pan

Optimization Analysis of Controlling Arrivals in the Queueing System with Single Working Vacation Using Particle Swarm Optimization ........................................ 176
  Cheng-Dar Liou

Anomaly Detection in Hyperspectral Imagery Based on PSO Clustering ................................................................. 184
  Baozhi Cheng and Zongguang Guo

Transcribing Bach Chorales Using Particle Swarm Optimisations ........................................... 192
  Somnuk Phon-Amnuaisuk
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deadline Constrained Task Scheduling Based on Standard-PSO in a Hybrid Cloud</td>
<td>200</td>
</tr>
<tr>
<td>Guoxiang Zhang and Xingquan Zuo</td>
<td></td>
</tr>
<tr>
<td>An Enhanced Node Repeatable Virtual Network Embedding Algorithm Based PSO Solution</td>
<td>210</td>
</tr>
<tr>
<td>Cong Wang, Ying Yuan, Ying Yang, and Xi Hu</td>
<td></td>
</tr>
<tr>
<td>The Application of Particle Swarm Optimization Arithmetic in Propeller Design</td>
<td>218</td>
</tr>
<tr>
<td>Chao Wang, Guoliang Wang, Wanlong Ren, Chunyu Guo, and Bin Zhou</td>
<td></td>
</tr>
<tr>
<td>Application of an Improved Particle Swarm Optimization Algorithm in Hydrodynamic Design</td>
<td>225</td>
</tr>
<tr>
<td>Sheng Huang, Wanlong Ren, Chao Wang, and Chunyu Guo</td>
<td></td>
</tr>
<tr>
<td>Modeling of Manufacturing N-phase Multiphase Motor Using Orthogonal Particle Swarm Optimization</td>
<td>232</td>
</tr>
<tr>
<td>Jian-Long Kuo</td>
<td></td>
</tr>
<tr>
<td>An Effective Transactional Service Selection Approach with Global Optimization Based on Skyline and Particle Swarm Optimization</td>
<td>241</td>
</tr>
<tr>
<td>Wanchun Yang and Chenxi Zhang</td>
<td></td>
</tr>
<tr>
<td>Discrete Particle Swarm Optimization Algorithm for Virtual Network Reconfiguration</td>
<td>250</td>
</tr>
<tr>
<td>Ying Yuan, Cuirong Wang, Cong Wang, Shiming Zhu, and Siwei Zhao</td>
<td></td>
</tr>
<tr>
<td>Power Distribution Network Planning Application Based on Multi-Objective Binary Particle Swarm Optimization Algorithm</td>
<td>258</td>
</tr>
<tr>
<td>José Roberto Bezerra, Giovanni Cordeiro Barroso,</td>
<td></td>
</tr>
<tr>
<td>Ruth Pastôra Saraiva Leão, Raimundo Furtado, and Eudes Barbosa de Medeiros</td>
<td></td>
</tr>
<tr>
<td>Ant Colony Optimization Algorithms</td>
<td></td>
</tr>
<tr>
<td>Improving Chaotic Ant Swarm Performance with Three Strategies</td>
<td>268</td>
</tr>
<tr>
<td>Yuying Li, Lixiang Li, and Haipeng Peng</td>
<td></td>
</tr>
<tr>
<td>Improved Ant Colony Classification Algorithm Applied to Membership Classification</td>
<td>278</td>
</tr>
<tr>
<td>Hongxing Wu and Kai Sun</td>
<td></td>
</tr>
<tr>
<td>Two Ant Decision Levels and Its Application to Multi-Cell Tracking</td>
<td>288</td>
</tr>
<tr>
<td>Benlian Xu, Qinglan Chen, Mingli Lu, and Peiyi Zhu</td>
<td></td>
</tr>
</tbody>
</table>
## Table of Contents – Part I

An Ant Colony System Based on the *Physarum* Network .......................... 297
   Tao Qian, Zili Zhang, Chao Gao, Yuheng Wu, and Yuxin Liu

Solving the Minimum Common String Partition Problem with the Help of Ants .......................................................... 306
   S.M. Ferdous and M. Sohel Rahman

Ant Colony Optimization for Channel Assignment Problem in a Clustered Mobile Ad Hoc Network ................................. 314
   Mahboobeh Parsapoor and Urban Bilstrup

### Biogeography-Based Optimization Algorithms

Constrained Multi-objective Biogeography Optimization Algorithm for Robot Path Planning .............................................. 323
   Hongwei Mo, Zhidan Xu, and Qirong Tang

A Simplified Biogeography-Based Optimization Using a Ring Topology .......................................................... 330
   Yujun Zheng, Xiaobei Wu, Haifeng Ling, and Shengyong Chen

### Novel Swarm-Based Search Methods

Optimal Power Flow Solution Using Self–Evolving Brain–Storming Inclusive Teaching–Learning–Based Algorithm ................................. 338
   K.R. Krishnanand, Syed Muhammad Farzan Hasani, Bijaya Ketan Panigrahi, and Sanjib Kumar Panda

Global Optimization Inspired by Quantum Physics ............................. 346
   Xiaofei Huang

Structural Test Data Generation Based on Harmony Search .................. 353
   Chengying Mao

A Study on an Evaluation Model for Robust Nurse Rostering Based on Heuristics .......................................................... 361
   Ziran Zheng and Xiaoju Gong

A Study of Human Flesh Search Based on SIR Flooding on Scale-Free Networks .......................................................... 369
   Dawei Meng, Lei Zhang, and Long Cheng

### Bee Colony Algorithms

A Modified Artificial Bee Colony Algorithm for Post-enrolment Course Timetabling .................................................. 377
   Asaju La’aro Bolaji, Ahamad Tajudin Khader, Mohammed Azmi Al-Betar, and Mohammed A. Awadallah
Immune Based Chaotic Artificial Bee Colony Multiobjective Optimization Algorithm ............................................. 387
Xia Zhou, Jiong Shen, and Yiguo Li

Using Modular Neural Network with Artificial Bee Colony Algorithm for Classification ............................................. 396
Weixin Ling and Yunxia Wang

Algorithms and Framework for Comparison of Bee-Intelligence Based Peer-to-Peer Lookup ............................................. 404
Vesna Šešum-Cavić and Eva Kühn

Differential Evolution

Differential Evolution with Group Crossover for Automatic Synthesis of Analog Circuit ............................................. 414
Ting Wu and Jingsong He

MMODE: A Memetic Multiobjective Differential Evolution Algorithm ................................................................. 422
Zhou Wu, Xiaohua Xia, and Jiangfeng Zhang

One Parameter Differential Evolution (OPDE) for Numerical Benchmark Problems ............................................. 431
Y. Kang, T.O. Ting, Xin-She Yang, and Shi Cheng

Parameter Optimization

Parameter Optimization of Local-Concentration Model for Spam Detection by Using Fireworks Algorithm ................. 439
Wenrui He, Guyue Mi, and Ying Tan

Parameter Optimization for Bezier Curve Fitting Based on Genetic Algorithm .................................................. 451
Linghui Zhao, Jingqing Jiang, Chuyi Song, Lanying Bao, and Jingying Gao

OFDM System with Reduce Peak-to-Average Power Ratio Using Optimum Combination of Partial Transmit Sequences .......... 459
Yung-Cheng Yao, Ho-Lung Hung, and Jyh-Horng Wen

Neural Networks

Evolutionary Three-Stage Approach for Designing of Neural Networks Ensembles for Classification Problems ................. 467
Vladimir Bukhtoyarov and Eugene Semenkin
Evolved Neural Network Based Intelligent Trading System for Stock Market .......................................................... 478  
*Lifeng Zhang and Yifan Sun*

The Growing Radial Basis Function (RBF) Neural Network and Its Applications ................................................. 489  
*Yan Li, Hui Wang, Jiwei Jia, and Lei Li*

Network-Based Neural Adaptive Sliding Mode Controller for the Ship Steering Problem ............................................. 497  
*Guoqing Xia and Huiyong Wu*

A Behavior Modeling Method of Virtual Characters Approximated by Artificial Neural Network ................................. 506  
*Ya Zhao, Xianmei Liu, and Qiong Wu*

### Fuzzy Methods

A New Hybrid Fuzzy-Rough Dendritic Cell Immune Classifier ........... 514  
*Zeineb Chelly and Zied Elouedi*

Multi Objective Swarm Optimization Design Fuzzy Controller to Adjust Speed of AC Motor Drive .............................. 522  
*Nassere K. Bachache and Jinyu Wen*

Rough Soft Sets in Fuzzy Setting .............................................. 530  
*Xueyou Chen*

### Evolutionary Programming and Evolutionary Games

A Circuit Generating Mechanism with Evolutionary Programming for Improving the Diversity of Circuit Topology in Population-Based Analog Circuit Design .............................................. 540  
*Mei Xue and Jingsong He*

An Evolutionary Game Model of Organizational Routines on Complex Networks ..................................................... 548  
*Dehua Gao, Xiuquan Deng, and Bing Bai*

A Novel Negative-Correlation Redundancy Evolutionary Framework Based on Stochastic Ranking for Fault-Tolerant Design of Analog Circuit ........................................................ 556  
*Chao Lin and Jingsong He*

Intelligent Modeling and Prediction of Elastic Modulus of Concrete Strength via Gene Expression Programming ........... 564  
*Amir Hossein Gandomi, Amir Hossein Alavi, T.O. Ting, and Xin-She Yang*

### Author Index

.................................................. 573