

# Table of Contents

## Section I: Ant Colony and Particle Swarm Optimization

A Discrete PSO-Based Fault-Tolerant Topology Control Scheme in Wireless Sensor Networks .....	1
<i>Bingyu You, Guolong Chen, and Wenzhong Guo</i>	
Feature Selection Using Ant Colony Optimization for Text-Independent Speaker Verification System .....	13
<i>Javad Sohaft-Bonab and Mehdi Hosseinzadeh Aghdam</i>	
GPS Height Fitting Using Gene Expression Programming .....	25
<i>Xuezhi Yue, Zhijian Wu, Dazhi Jiang, and Kangshun Li</i>	
Parameter Evolution for a Particle Swarm Optimization Algorithm .....	33
<i>Aimin Zhou, Guixu Zhang, and Andreas Konstantinidis</i>	
The Ant Colony Optimization Algorithm for Multiobjective Optimization Non-compensation Model Problem Staff Selection .....	44
<i>Ryszard Tadeusiewicz and Arkadiusz Lewicki</i>	

## Section II: Differential Evolution

A New Self-adaption Differential Evolution Algorithm Based Component Model .....	54
<i>Shen Li and Yuanxiang Li</i>	
A Novel Interpolation Method Based on Differential Evolution-Simplex Algorithm Optimized Parameters for Support Vector Regression .....	64
<i>Dongmei Zhang, Wei Liu, Xue Xu, and Qiao Deng</i>	
A Variant of Differential Evolution Based on Permutation Regulation Mechanism .....	76
<i>Dazhi Jiang, Hui Wang, and Zhijian Wu</i>	
Differential Evolution Based Band Selection in Hyperspectral Data Classification .....	86
<i>Xiaobo Liu, Chao Yu, and Zhihua Cai</i>	
Diversity Analysis of Opposition-Based Differential Evolution—An Experimental Study .....	95
<i>Hui Wang, Zhijian Wu, Shahryar Rahnamayan, and Jing Wang</i>	

Hybrid Differential Evolution Algorithm with Chaos and Generalized Opposition-Based Learning .....	103
<i>Jing Wang, Zhijian Wu, and Hui Wang</i>	

Self-adapting Differential Evolution Algorithm with Chaos Random for Global Numerical Optimization .....	112
<i>Ming Yang, Jing Guan, Zhihua Cai, and Lu Wang</i>	

### Section III: Distributed Computing

A Concurrent-Hybrid Evolutionary Algorithms with Multi-child Differential Evolution and Guotao Algorithm Based on Cultural Algorithm Framework .....	123
<i>Xia Li, Kunqi Liu, Lixiao Ma, and Huanzhe Li</i>	

A Hierarchical Distributed Evolutionary Algorithm to TSP .....	134
<i>Chengjun Li, Guangfu Sun, Dongmei Zhang, and Songhu Liu</i>	

A New Distributed Node Localization Scheme Using a Mobile Beacon .....	140
<i>Sheng Xiao, Changfeng Xing, and Zhangsong Shi</i>	

A Novel Multi-Population Genetic Algorithm for Multiple-Choice Multidimensional Knapsack Problems .....	148
<i>Qian Zhou and Wenjian Luo</i>	

Comparative Analysis for $k$ -Means Algorithms in Network Community Detection .....	158
<i>Jian Liu</i>	

Framework for Distributed Evolutionary Algorithms in Computational Grids .....	170
<i>Steffen Limmer and Dietmar Fey</i>	

### Section IV: Genetic Algorithms

A Review of Tournament Selection in Genetic Programming .....	181
<i>Yongsheng Fang and Jun Li</i>	

Genetic Algorithm for Mixed Chinese Postman Problem .....	193
<i>Hua Jiang, Lishan Kang, Shuqi Zhang, and Fei Zhu</i>	

Hybrid Evolutionary Algorithms Design Based on Their Advantages ....	200
<i>Guangming Lin, Sundong Liu, Fei Tang, and Huijie Wang</i>	

Hybridized Optimization Genetic Algorithm for QOS-Based Multicast Routing Problem .....	211
<i>Yunliang Chen, Jianzhong Huang, and Changsheng Xie</i>	

Retroviral Iterative Genetic Algorithm for Real Parameter Function Optimization Problems .....	220
<i>Renato Simões Moreira, Glauber Duarte Monteiro, Otávio Noura Teixeira, Átila Siqueira Soares, and Roberto Célio Limão de Oliveira</i>	

The RM-MEDA Based on Elitist Strategy .....	229
<i>Li Mo, Guangming Dai, and Jiankai Zhu</i>	

## Section V: Multi-agent Systems

A Proactive Perception Model in Agent-Based Software Integration and Evolution .....	240
<i>Qingshan Li, Chengguang Zhao, Haishun Yun, and Lili Guo</i>	

Algorithmic Trading Strategy Optimization Based on Mutual Information Entropy Based Clustering .....	252
<i>Feng Wang, Keren Dong, and Xiaotie Deng</i>	

An Improved Similarity Algorithm Based on Hesitation Degree for User-Based Collaborative Filtering .....	261
<i>Xiangwei Mu, Yan Chen, Jian Yang, and Jingjing Jiang</i>	

Intrusion Detection System Based on Support Vector Machine Active Learning and Data Fusion .....	272
<i>Man Zhao, Jing Zhai, and Zhouqian He</i>	

Long-Distant Pipeline Emergency Command Decision-Making System Based on Agent .....	280
<i>Huagang He, Man Yang, and Ling Qian</i>	

Sales Forecasting Based on ERP System through BP Neural Networks .....	289
<i>Min Zhang, Haifeng Zhang, and Yujuan Huang</i>	

## Section VI: Multi-objective and Dynamic Optimization

Capacity Allocation Policy of Third Party Warehousing with Dynamic Optimization .....	297
<i>Chang Lin</i>	

Dynamical Multi-objective Optimization Using Evolutionary Algorithm for Engineering .....	304
<i>Lingling Wang and Yuanxiang Li</i>	

Faster Convergence and Higher Hypervolume for Multi-objective Evolutionary Algorithms by Orthogonal and Uniform Design .....	312
<i>Siwei Jiang and Zhihua Cai</i>	

Multi-objective Fuzzy Clustering Method for Image Segmentation  
Based on Variable-Length Intelligent Optimization Algorithm ..... 329  
*Yuankang Fang, Ziyang Zhen, Zhiqiu Huang, and Chao Zhang*

Perspectives in Dynamic Optimization Evolutionary Algorithm ..... 338  
*Zhiqiong Bu and Bojin Zheng*

**Section VII: Robot Intelligence**

A Real Time Vision-Based Hand Gestures Recognition System..... 349  
*Lei Shi, Yangsheng Wang, and Jituo Li*

A Virtual Robot Arm Model with Force Feedback and Contact States  
Identification ..... 359  
*Chengjun Chen and Niu Li*

Improving Reading Comprehension Using Knowledge Model ..... 370  
*Yue Chen*

Modular Robot Path Planning Using Genetic Algorithm Based on  
Gene Pool ..... 380  
*Huaming Zhong, Zhenhua Li, Hao Zhang, Chao Yu, and Ni Li*

Pathfinder Based on Simulated Annealing for Solving Placement and  
Routing Problem ..... 390  
*Zhangyi Yu, Sanyou Zeng, Yan Guo, Nannan Hu, and Liguo Song*

**Section VIII: Statistical Learning**

Application of Data Mining in Multi-Geological-Factor Analysis ..... 402  
*Jing Chen, Zhenhua Li, and Bian Bian*

Applying an Artificial Neural Network to Building Reconstruction ..... 412  
*Dong-Min Woo, Dong-Chul Park, and Hai-Nguyen Ho*

Fast Dimension Reduction Based on NMF ..... 424  
*Pavel Krömer, Jan Platoš, and Václav Snášel*

Frequent Words' Grammar Information in Chinese Chunking ..... 434  
*Quan Qi, Li Liu, and Yue Chen*

Multilabel Classification Using Error Correction Codes ..... 444  
*Abbas Z. Kouzani*

Test-Cost Sensitive Classification Using Greedy Algorithm on Training  
Data ..... 455  
*Chang Wan*

## Section IX: System Design

3-D Magnetotelluric Adaptive Finite-Element Modeling . . . . .	465
<i>Changsheng Liu, Yan Yu, Zhengyong Ren, and Qi Wu</i>	
A Study on Modeling Evolutionary Antenna Based on ST-5 Antenna and NEC2 . . . . .	474
<i>Yuanyuan Fan, Qingzhong Liang, and Sanyou Zeng</i>	
A Synthesis of Four-Branch Microwave Antenna by Evolution Algorithm and Orthogonal Experiment . . . . .	487
<i>Jincui Guo, Jinxin Zou, Yincheng Wang, Xiaojuan Zhao, and Liangjiang Yu</i>	
Band Structures of Multilayer Films with Randomness . . . . .	496
<i>Ping Li, Zhuo Li, and Yong Liu</i>	
Fast Principal Component Analysis Based on Hardware Architecture of Generalized Hebbian Algorithm . . . . .	505
<i>Shiow-Jyu Lin, Yi-Tsan Hung, and Wen-Jyi Hwang</i>	
The Data-Based Mathematical Modeling and Parameter Identification in JAK-STAT Signaling Pathway by Using a Hybrid Evolutionary Algorithm . . . . .	516
<i>Wei Zhang and Xiufen Zou</i>	
The Research on the Intelligent Interpreter for ISO 14649 Programs . . . .	523
<i>Yu Zhang, Yongxian Liu, and Xiaolan Bai</i>	
<b>Author Index . . . . .</b>	<b>535</b>