## **Table of Contents**

## **Neural Networks**

Complex Functional Network Hebbian-Type Learning Algorithm and Convergence	1
Yongquan Zhou, Yanlian Du, and Zhengxin Huang	
A New Intelligent Control Strategy of High-Voltage Power Supply for ECRH Based on CMAC Neural Network	8
Self-configuration Using Artificial Neural Networks	16
Evolutionary Learning and Genetic Algorithms	
An Improvement of AdaBoost for Face Detection with Random Forests  Jun-Ying Zeng, Xiao-Hua Cao, and Jun-Ying Gan	22
Hybrid Good Point Set Evolutionary Strategy for Constrained Optimization	30
Research of Modified Quantum Genetic Algorithm and It's Application in Collision Detection	40
Granular Computing and Rough Sets	
A New Method of Attribute Reduction and Prediction in Fuzzy Decision System	48
Particle Swarm Optimization and Niche Technology	
Development of Automatic Code Generation Tool for Condensation  Algorithm	53



## Swarm Intelligence and Optimization

A New Hybrid Multi-objective Pareto Archive PSO Algorithm for a Classic Job Shop Scheduling Problem with Ready Times	61
Multi-objective Particle Swarm Optimization for Sequencing and Scheduling a Cellular Manufacturing System	69
A Hybrid PSO Algorithm with Transposon for Multiobjective Optimization	76
Independent Component Analysis and Blind Source Separation	
Joint Multichannel Blind Speech Separation and Dereverberation:  A Real-Time Algorithmic Implementation	85
An Efficient Pairwise Kurtosis Optimization Algorithm for Independent Component Analysis	94
Combinatorial and Numerical Optimization	
The Mechanical Behavior of the Double Piece of Tape Spring Fu Ling Guan, Xin Yan Wu, and You Wei Wang	102
Systems Biology and Computational Biology	
Cancer Immunoprevention: What Can We Learn From in Silico Models?	111
Francesco Pappalardo, Marzio Pennisi, Alessandro Cincotti, Ferdinando Chiacchio, Santo Motta, and Pier-Luigi Lollini	111
Oscillatory Dynamics of Double Negative Feedback Loop Motif by MicroRNAs	119

	Table of Contents	XIII
Neural Computing and Optimization		
Neural Network Approach for Greenery Warranty Systems Sang Hyun Lee, Sung Eui Cho, and Kyung Il Moon	tems	124
Knowledge Discovery and Data Mining		
Comprehensive Evaluation of Effects of Naomaitong Rhubarb Aglycone Combined with Bone Mesenchyma Transplantation on Brain in Rats with Cerebral Ische Analytic Hierarchy Process	ll Stem Cells mia Based on	130
Aggregating and Weighting Expert Knowledge in Gro	oup Decision	
3.6.1.		138
A New Heuristic Feature Selection Algorithm Based o Hua Zhao, Keyun Qin, and Xiaoping Qiu	n Rough Sets	147
Developing a Procedure to Obtain Knowledge of Optin a Travelling Salesman Problem		154
Trajectory Simplification and Classification for Movin Road-Constraint	•	160
Training a Pac-Man Player with Minimum Domain K Basic Rationality		169
Hybrid Self-Organizing Map and Neural Network Clufor Technology Professionals Turnover Rate Forecastin Cheng Sheng Lin, Chin-Yuan Fan, Pei-Shu Fan, a	ng	178
Ensemble Methods		
A Study of Strength and Correlation in Random Fore Simon Bernard, Laurent Heutte, and Sébastien Ad		186
Machine Learning Theory and Methods		
A Comparison Study of Conditional Random Fields T Yong Cheng, Chengjie Sun, Lei Lin, and Yuanchad		192
Robot Reinforcement Learning Based on Learning Cla Jie Shao and Jing-yu Yang	assifier System	200

## Intelligent Computing in Bioinformatics Research of Marker Gene Selection for Tumor Classification Based on 208 Jian-Geng Li and Xin Li Reverse Engineered Gene Networks Reveal Markers Predicting the Outcome of Breast Cancer ..... 214Vitoantonio Bevilacqua and Paolo Pannarale 222 Vitoantonio Bevilacqua, Ernesto Picardi, Graziano Pesole, Daniele Ranieri, Vincenzo Stola, and Vito Reno Intelligent Computing in Computational Biology and Drug Design Application for Artificial Bee Colony Algorithm in Migration of Mobile 232 Agent Jian Jiao, Shan Yao, and Chunehe Xia Computational Genomics and Proteomics A Novel Tool for Assisted In-silico Cloning and Sequence Editing in 239Vitoantonio Bevilacqua, Filippo Menolascina, Domenico Aurora, Sergio Lucivero, and Nicola Francesco Quatela Intelligent Computing in Signal Processing A New Method Using Table to Sparse Representation in Pairs of Bases 246Qinli An, Youqian Fenq, Dahua Gao, and Fuping Yu Intelligent Computing in Pattern Recognition 250 Palmprint Recognition Method Using WTA-ICA Based on 2DPCA..... Li Shang, Pingang Su, Guiping Dai, Yunian Gu, and Zhiqiang Zhao Study of TCM Diagnosis of Syndromes of Acute Exacerbation of Chronic Obstructive Pulmonary Disease Based on Dynamic Fuzzy 258Jiansheng Li, Jinliang Hu, Zhiwan Wang, Jiehua Wang,

Suyun Li, Minghang Wang, and Haifeng Wang

A Sequential Cooperative Spectrum Sensing Scheme Based on

Nhan Nguyen-Thanh and Koo Insoo

Dempster Shafer Theory of Evidence .....

343

High Resolution Direction Finding of Multiple Coherent Signals  Xueguang Zhu	351
Extract and Maintain the Most Helpful Wavelet Coefficients for Continuous K-Nearest Neighbor Queries in Stream Processing Ling Wang, Tie Hua Zhou, Ho Sun Shon, Yang Koo Lee, and Keun Ho Ryu	358
A Neural Network-Based Cooperative Spectrum Sensing Scheme for Cognitive Radio Systems	364
Intelligent Computing in Robotics	
Comparison of the Observability Indices for Robot Calibration Considering Joint Stiffness Parameters	372
Intelligent Computing in Computer Vision	
Human Computer Interaction Using Hand Gestures	381
Smart Wheelchair Navigation Based on User's Gaze on Destination Tomari Razali, Rong Zhu, Kobayashi Yoshinori, and Kuno Yoshinori	387
Entrance Detection of Building Component Based on Multiple Cues Dae-Nyeon Kim, Hoang-Hon Trinh, and Kang-Hyun Jo	395
Intelligent Prediction and Time Series Analysis	
Developing an Evolutionary Neural Network Model for Stock Index Forecasting  Esmaeil Hadavandi, Arash Ghanbari, and Salman Abbasian-Naghneh	407
A Tower-Shadow Model for Wind Turbines Using a Wavelet-Prony  Method	416
Special Session on New Hand-Based Biometric Methods	
Contrast Enhancement and Metrics for Biometric Vein Pattern Recognition	425
Rasmus Larsen	

Pingang Su, Yongfeng Gui, and Wenbin Dou

520

Special Session on Search Based Software Engineering	
Software Security Testing of Web Applications Based on SSD	527
Special Session on Bio-inspired Computing and Applications	
A Review of Bacterial Foraging Optimization Part I: Background and Development	535
A Review of Bacterial Foraging Optimization Part II: Applications and Challenges	544
Liquidity Risk Portfolio Optimization Using Swarm Intelligence	551
Ben Niu, Han Xiao, Lijing Tan, Yan Fan, and Junjun Rao	
Ben Niu, Han Xiao, Lijing Tan, Yan Fan, and Junjun Rao  Special Session on Advance in Dimensionality Reduction Methods and Its Applications	
Special Session on Advance in Dimensionality	559
Special Session on Advance in Dimensionality Reduction Methods and Its Applications  Dimension Reduction with Semi-supervised Pairwise Covariance-Preserving Projection	559
Special Session on Advance in Dimensionality Reduction Methods and Its Applications  Dimension Reduction with Semi-supervised Pairwise Covariance-Preserving Projection  Xiaoming Liu, Zhaohui Wang, Jun Liu, and Zhilin Feng  Special Session on Recent Advances in Medical	559 566