Volume 1: Conference Papers

Artificial Immune Systems and Artificial Neural Systems

A Hierarchical Artificial Immune Model for Virus Detection
Wei Wang, Pengtao Zhang, Ying Tan, and Xingui He
A Virus Detection System Based on Artificial Immune System
Rui Chao and Ying Tan
A Novel Classification Method Based on Artificial Immune System and Quantum Mechanics Theory
Liling Ma, Zhao Zhang, Xiaohang Zhou, and Junzheng Wang
An Improved Immune-Based Multi-modal Function Optimization Algorithm
Xu Zhang and Li Xu
A Parallel Artificial Immune Model for Optimization
Yutao Qi, Fang Liu, and Licheng Jiao
A New Algorithm Estimating the Mixing Matrix for the Sparse Component
Analysis
Suxian Zhang, Hailin Liu, Jiechang Wen, and Weili Chen
Factor Sensitivity Analysis for Multivariable Systems Using Bayesian Neural Networks .................................................................................................................................................................................. 30
  Runbo Bai, Xiumei Qiu, and Maosen Cao

Prediction of C3 Concentration in FCCU Using Neural Estimator Based on Dynamic PCA ........................................................................................................................................................................................................ 34
  Rong Guo and Dongchen Shi

Data Mining and Statistical Data Analysis

Wavelet Smoothing Based Multivariate Polynomial for Anchovy Catches Forecasting .................................................................................................................................................................................................................. 38
  Nibaldo Rodriguez and Eleuterio Yañez

Studying of Data Centre Architecture for Prefecture-level City ........................................................................................................................................................................................................ 42
  Xuanzi Hu and Jiafu Wan

Classifying Computer Session Data Using Self-Organizing Maps ........................................................................................................................................................................................................ 48
  Veronica C. Estrada, Akihiro Nakao, and Enrique C. Segura

Large-Scale Hierarchical Text Classification Based on Path Semantic Vector and Prior Information ........................................................................................................................................................................................................ 54
  Feng Gao, Weiming Fu, Yiping Zhong, and Danfeng Zhao

Discovering Temporal Similarity Pattern Based on Metamorphosis Data ........................................................................................................................................................................................................ 59
  Yuan Tian

The Application of Improved 3D_Apriori Three-Dimensional Association Rules Algorithm in Reservoir Data Mining ........................................................................................................................................................................................................ 64
  Xiao-dong Shao

A Batch Constructing Method of Weighted Concept Lattice Based on Deviance Analysis ........................................................................................................................................................................................................ 69
  Sulan Zhang, Ping Guo, Jifu Zhang, and Xinxin Wang

Intelligent Security Data Analysis .................................................................................................................................................................................................................. 74
  Yun Shen, Trevor P. Martin, and Pete Bramhall

Research on Answer Extraction Method for Domain Question Answering System(QA) ........................................................................................................................................................................................................ 79
  Cun-Li Mao, Li-Na Li, Zheng-Tao Yu, Lu Han, Jian-Yi Guo, and Xiong-Li Lei

The Implementation of the Web Mining Based on XML Technology ........................................................................................................................................................................................................ 84
  Cheng Zheng, Yong Fang, and Yaping Shen

Predict Ranking of Object Summaries with Hidden Markov Model ........................................................................................................................................................................................................ 88
  Le Peng, Zhi Cai, and Guowen Wu

Evolutionary Computing

Improved Differential Evolution Algorithm with Random Migration Operator ........................................................................................................................................................................................................ 92
  Yuelin Gao and Miaomiao Wang

A Genetic Algorithm for Multiobjective Bilevel Convex Optimization Problems ........................................................................................................................................................................................................ 98
  Liping Jia and Yuping Wang
Hybrid Genetic Algorithm with Particle Swarm Optimization Technique .................................................. 103

Guoli Zhang, Mingxin Dou, and Siyan Wang

Quantum Genetic Algorithm and its Application in Power System Reactive Power Optimization .......................................................... 107

Hongxia Miao, Honghua Wang, and Zhixiang Deng

Task Scheduling for Heterogeneous Computing Based on Bayesian Optimization Algorithm .......................................................... 112

Jiadong Yang, Hua Xu, and Peifa Jia

A Clustering-Based Evolutionary Algorithm for Traveling Salesman Problem ................................................ 118

Dalian Liu, Xinfeng Wang, and Jinling Du

Multiobjective Differential Evolution Based on Opposite Operation ................................................................. 123

Ning Dong and Yuping Wang

An Approach for a Class of Bilevel Multiobjective Programming Problem .................................................. 128

Yulan Liu

Optimization of Logistics Nodes in Dynamic Location with a Multi-objective Evolutionary Algorithm .......................................................... 133

Yan Liu, Lei Fan, Yuping Wang, and Qianli Dong

Study on Dynamic Game Models in a Two-Echelon Supply Chain ................................................................. 138

Jian-hu Cai and Li-ping Wang

EKF-Ah Based State of Charge Online Estimation for Lithium-ion Power Battery .......................................................... 142

Zhiwei He, Mingyu Gao, and Jie Xu

Image Understanding and Knowledge Discovery

Neighborhood-Based Weighted Regularization of Video Sequence Super-Resolution .......................................................... 146

Yaozu An, Yao Lu, and Hong Zhao

The Correction SART Algorithm Based on Circular Symmetrical Object .......................................................... 151

Dong-jiang Ji and Wen-zhang He

Feature Extraction and Matching for Plant Images .......................................................... 155

Peizhen Wang, Lei Shi, and Hengzhi Dong

Extracting the Coronary Artery in Angiographic Image Based on à Trous Wavelet of Rotary Gaussian with Adaptive Space Coefficient .......................................................... 160

Qingzhu Wang, Ke Wang, Donghong An, Bo Chen, Miao Liu, and Yingying Ying

Object Detection and Tracking Using Spatiotemporal Wavelet Domain Markov Random Field in Video .......................................................... 165

Xuchao Li and Dongsheng Liu

Extraction of Limit Streamlines in 2D Flow Field Using Virtual Boundary .......................................................... 171

Wenyao Zhang and Jing Su

The Close-Degree of Covering Rough Sets .......................................................... 176

Dingjun Chen
An Ontology-Based NLP Approach to Semantic Annotation of Annual Report ................................................. 180

Baohua Wang, Hejiang Huang, Xiaolong Wang, and Wensheng Chen

**Support Vector Machines, Machine Learning, and Learning Algorithms**

Using SVM to Organize the Image Database ........................................................................................................ 184

Bingxin Xu, Qian Yin, and Guangjun Lv

A New Support Vector Machine Model Based on the Discrete Conditional Value-at-Risk .......................................................... 188

Min Jiang, Zhiqing Meng, and Gengui Zhou

Web Document Classification Based on Fuzzy k-NN Algorithm .............................................................................. 193

Juan Zhang, Yi Niu, and Huabei Nie

A New Method for Simultaneous Extraction of All Roots of Algebraic Polynomial ...................................................... 197

Ying Zhang and Zhe-zhao Zeng

PD-Type Sampled-Data Iterative Learning Control for Nonlinear Systems with Time Delays and Uncertain Disturbances ....................................................................................... 201

Yang Fan, Shuping He, and Fei Liu

**Multi-agent Systems and Neural Networks**

Trust Relationship Modelling in E-commerce-Based Social Network ......................................................................... 206

Zaobin Gan, Juxia He, Qian Ding, and Vijay Varadharajan

A Multi-agent and GIS Based Simulation for Emergency Evacuation in Park and Public Square ........................................ 211

Bo Yang, Yong-gang Wu, and Cheng Wang

An Intelligent Decision Support System of Lake Water Pollution Control Based on Multi-agent Model ......................... 217

Jianjun Ni, Chuanbiao Zhang, and Li Ren

Lag Synchronization of Uncertain Chaotic Neural Networks with Mixed Time-Varying Delays Based on Adaptive Control ............................................................................................................ 222

Xiaozheng Mou, Wuneng Zhou, Lin Pan, Qingyu Zhu, and Jian’an Fang

Support Vector Regression Based on Particle Swarm Optimization and Projection Pursuit Technology for Rainfall Forecasting ........................................................................................................... 227

Jiansheng Wu, Jie Zhou, and Yuelin Gao

Image Target Detection Using Morphological Neural Network ................................................................................ 234

Cheng-tian Song and Ke-yong Wang

A Novel Control Method Based on Fuzzy Neural Network ............................................................................................. 237

Lixin Xing, Shanqing Gao, and Yunfei Chen
Swarm Intelligence
Research on Reduction of Commutation Torque Ripple in Brushless DC Motor Drives Based on Fuzzy Logic Control .......................................................... 240
Soumah Yaya and Wang Honghua
A Topology Optimization for Truss Based on Improved Group Search Optimizer .................................................. 244
Haobin Xie, Feng Liu, and Lijuan Li
A Quick Group Search Optimizer with Passive Congregation and its Convergence Analysis ................................................. 249
Guang Qin, Feng Liu, and Lijuan Li
The Analysis and Improvement of Binary Particle Swarm Optimization ...................................................... 254
Jianhua Liu and Xiaoping Fan
System Identification Based on Particle Swarm Optimization Algorithm .......................................................... 259
Xiuqin Deng
Minimal Merrifield-Simmons Index of 5-leaf-trees .................................................................................................. 264
Chengfu Ye
Reliability Polynomials of Networks with Vertex Failure ....................................................................................... 268
Haixing Zhao and Liang Wei
On Orderings of Some Graphs by the Extreme Roots of their Graph Polynomials ......................................................... 272
Haizhen Ren
A Novel Particle Swarm Optimization Based on the Self-Adaptation Strategy of Acceleration Coefficients ...................................................... 277
Li Guo and Xu Chen
The Particle Swarm Optimization Algorithm Based on Dynamic Chaotic Perturbations and its Application to K-Means .................................................................. 282
Jie Zhang, Yajuan Yang, and Quanju Zhang
Texture Image Retrieval Using Non-separable Wavelets and Local Binary Patterns ......................................................... 287
Xin Liu, Xinge You, and Yiu-ming Cheung
Research on the Evolution of Supply Chain Based on SWARM ........................................................................ 292
Wenxue Niu, Yajuan Yang, Xiao Luo, and Quanju Zhang
Fuzzy Systems and Intelligent Systems
Measuring the Spread of Fuzzy Variable by L-S Integral ....................................................................................... 296
Xiao-Li Wu and Yan-Kui Liu
PNN Based Motion Detection with Adaptive Learning Rate .................................................................................. 301
Zhiming Wang, Li Zhang, and Hong Bao
Proof of Two Kinds of Fingerprint Feature Extraction CNN ........................................................................ 307
LongMei Jie, Hui Wang, DeRong Li, and GuoQiang Shao
A Sound Dynamic Resource-Constrained Scheduling Scheme ............................................................. 311

Juyang Zhang and Ningkang Jiang

Pattern Recognition

On the Role of Interpolation in the Normalization of Non-ideal Visible Wavelength Iris Images .................................................................................................................. 315

Gil Melfe Mateus Santos and Hugo Pedro Martins Carriço Proença

Face Recognition Using Modular Locality Preserving Projections ...................................................... 320

Pengzhang Liu, Tingzhi Shen, Yu Hu, and Sanyuan Zhao

Multi-pose Face Detection Based on Adaptive Skin Color and Structure Model ................................. 325

Zhao-yi Peng, Yu Zhou, and Ping Wang

Use of In-Situ Visible and Near-Infrared Spectroscopy for Non-invasive Discrimination of Spirulina Platensis ........................................................................................................... 330

Di Wu, Tianyun Ma, Pengcheng Nie, Zhiping Wang, Zhengjun Qiu, and Yong He

Efficient Mean Shift Particle Filter for Sperm Cells Tracking .............................................................. 335

Xiuzhuang Zhou and Yao Lu

Extraction and Recognition Alphabetic and Digital Characters on Industrial Containers ................................................................. 340

Bingxia Shi, Na Yu, Jia Xu, and Quanming Zhao

Efficient Object Recognition Using Corner Features ............................................................................. 344

Jian Cao, Kan Li, Chunxiao Gao, and Qiongxin Liu

Contour-Shape Recognition and Retrieval Based on Chain Code ......................................................... 349

Sun Junding and Xu Heli

An Improved Kernel Fisher Discriminant Analysis for Face Recognition ........................................... 353

Fulong Wang, Xiaoliang Liu, and Cheng Huang

Locally Supervised Discriminant Analysis in Kernel Space ........................................................................ 358

Caikou Chen, Jun Shi, and Yiming Yu

Pseudo-inverse Locality Preserving Projections ..................................................................................... 363

Rong-Hua Li, Zhiping Luo, and Guoqiang Han

A Fusion of Face Symmetry of Two-Dimensional Principal Component Analysis and Face Recognition ............................................................. 368

Fulong Wang, Cheng Huang, and Xiaoliang Liu

Fast Parameter Estimation in Image Restoration Based on Hierarchical Bayesian Framework ................................................................. 372

Su Xiao, Guoqiang Han, Yan Wo, Zhan Li, and Xiangji Chen

A Region-Based Active Contour Model for Image Segmentation ....................................................... 376

Yun Tian, Ming-quan Zhou, Zhong-ke Wu, and Xing-ce Wang

A Locally Gaussian Mixture Based RBF Network for Classification of Chinese Herbal Infrared Spectrum Fingerprint ....................................................................................... 381

Taijun Wang and Yiu-ming Cheung
Cryptograph, Watermarking, and Applications

Computing the m-Tight Error Linear Complexity of Periodic Binary Sequences
Jianqin Zhou, Cheng Shangguan, and Zemao Zhao .......................................................... 386

Deterministic Secure Bidirectional Quantum Communication
Dazu Huang, Zhigang Chen, Xin Li, and Jianquan Xie ...................................................... 391

Different Authentication Properties and a Signcryption Scheme Revisited
Zhengjun Cao and Olivier Markowitch .................................................................................. 395

An Efficient Threshold Signature Scheme Without Random Oracles
Wei Gao, Zhenyou Wang, Fei Li, and Li'e Chen .................................................................. 400

Analysis of Two Signature Schemes from CIS’2006
Lihua Liu and Zhengjun Cao ................................................................................................. 405

The Walsh Spectrum Property of Resilient Boolean Functions
Jiayao Wang, Bin Hu, and Quanlai Wang ................................................................................ 409

Cryptanalysis of Short Signature Scheme Without Random Oracles
Hua Shao, Xinglan Zhang, and Feng Shao ............................................................................. 414

Predators Combat Good Point Set Scanning-Based Self-Learning Worms
Fangwei Wang, Yunkai Zhang, Changguang Wang, and Jianfeng Ma ................................... 418

An Improved Identity-Based Group Signature Scheme
Zuowen Tan ............................................................................................................................ 423

ID-Based Proxy Re-Encryption Schemes Without Random Oracle
Xiaoming Hu, Zhe Zhang, and Taozhi Si ................................................................................ 428

Efficient Certificateless Strong Designated Verifier Signature Scheme
Bo Yang, Zhengming Hu, and Zibi Xiao ................................................................................ 432

A Novel Robust Watermarking Algorithm Based on DWT and DCT
Wang Na, Wang Yunjin, and Li Xia ....................................................................................... 437

Construction of the Initial Structure for Preimage Attack of MD5
Ming Mao, Shaohui Chen, and Jin Xu .................................................................................... 442

Somewhat Secure Mobile Electronic-Voting Systems Based on the Cut-and-Choose Mechanism
Ying Qiu and Huafei Zhu ........................................................................................................ 446

A Note on Twin Diffie-Hellman Problem
Mingqiang Wang and Leibo Li ............................................................................................. 451

Perfect Subliminal Channel in a Paring-Based Digital Signature
Zhenyou Wang, Wei Gao, Li’e Chen, and Fei Li ................................................................... 455

The Dynamic and Double Encryption System Based on Two-Dimensional Image
JiuJun Cheng, Fan Zhang, Kuifei Yu, and Jian Ma ............................................................... 458
Security Management and Intrusion Detection

A New S-Box Structure Based on Graph Isomorphism ................................................................. 463
  Bao Ngoc Tran, Thuc Dinh Nguyen, and Thu Dan Tran

Reversible Logic Gate Cascade Network Based on Series Connection ........................................ 468
  Zhijin Guan, Yiqing Zhang, and Yanming Lü

A New Digital Proxy Signature Scheme Based on ECDLP ......................................................... 473
  Chengming Qi and Xusheng Chen

A Distributed Court System for Intrusion Detection in OLSR .................................................... 478
  Zhang Da and Yeo Chai Kiat

An Extensible Intra Access Control Policy Conflict Detection Algorithm ..................................... 483
  Bei Wu, Xing-yuan Chen, Yong-fui Zhang, and Xiang-dong Dai

A Scenario-Based Test Case Generation Framework for Security Policies .................................. 489
  Chen Yan and Wu Dan

A Chaos-Based Pseudorandom Number Generator and Performance Analysis ............................. 494
  Li Cao, Lequan Min, and Hongyan Zang

A Normal-Traffic Network Covert Channel ................................................................................. 499
  Liping Ji, Haijin Liang, Yitao Song, and Xiamu Niu

An Image Encryption and Digital Signature Scheme Based on Generalized Synchronization Theorem
  Hongyan Zang, Lequan Min, and Li Cao

Combine Elliptic Curve Cryptography with Digital Watermark for OWL-Based Ontology Encryption
  Hongbin Kong, Zhengquan Zeng, Lijun Yan, Jicheng Yang, Shaowen Yao, and Nuoya Sheng

Applied Security

A DDoS-Aware IDS Model Based on Danger Theory and Mobile Agents ...................................... 516
  Mahdi Zamani, Mahnush Movahedi, Mohammad Ebadzadeh, and Hossein Pedram

Strict Integrity Policy of Biba Model with Dynamic Characteristics and its Correctness
  Mingxi Zhang

An Algebra for Composing Access Control Policies in Grid ....................................................... 521
  Xiangran Cheng, Xingyuan Chen, Bin Zhang, and Yan Yang

VAD: A Detail Investigation into Process’s Memory ........................................................................ 526
  Xudong Li, Chunxia Zhang, Xing Lin, and Shuguang Lin

A Novel Architecture for Enterprise Network Security ................................................................. 531
  Chao Chen, Ke Wang, and Yiqi Dai

Reputation Measure for Incentive-Compatible Packet Forwarding in Ad Hoc Networks ................ 537
  Kun Yu and Yunyang Yan
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hybrid Routing Protocol for Wireless Mesh Network</td>
<td>547</td>
</tr>
<tr>
<td>Kai Yang, Jian-feng Ma, and Zi-hui Miao</td>
<td></td>
</tr>
<tr>
<td>An Improved Bytecode Verification Algorithm on Java Card</td>
<td>552</td>
</tr>
<tr>
<td>YaPing Chi, ZhaoBin Li, ZhongHua Wang, and Yong Fang</td>
<td></td>
</tr>
<tr>
<td>The Finite Element Method Appling in the Flow Forming</td>
<td>556</td>
</tr>
<tr>
<td>Xintian Liu, Changhong Liu, Lihui Zhao, Hu Huang, Xiaoyong Zhao, and Xin yi Sun</td>
<td></td>
</tr>
<tr>
<td>A Preliminary Study on Why Using the Nonself Detector Set for Anomaly</td>
<td>559</td>
</tr>
<tr>
<td>Baoliang Xu, Wenjian Luo, and Xufa Wang</td>
<td></td>
</tr>
<tr>
<td>Preserving FDs in K-Anonymization by K-MSDs and Association</td>
<td>565</td>
</tr>
<tr>
<td>Generalization</td>
<td></td>
</tr>
<tr>
<td>Jinling Song, Liming Huang, Qi He, Yan Gao, Xin Liu, and Yuxiang Li</td>
<td></td>
</tr>
<tr>
<td>The Intelligent Reconfigurable Measuring Node Based on Wireless Access</td>
<td>570</td>
</tr>
<tr>
<td>Liming Wu, Junxiu Liu, Ji Zhang, and Yuling Luo</td>
<td></td>
</tr>
<tr>
<td>Mixed Commitments Mediated Transcoders: A Simple Implementation</td>
<td>574</td>
</tr>
<tr>
<td>of Mercurial Mediated Transcoders</td>
<td></td>
</tr>
<tr>
<td>Huafei Zhu and Ying Qiu</td>
<td></td>
</tr>
<tr>
<td>Other Applications</td>
<td></td>
</tr>
<tr>
<td>Example-Based Facial Sketch Hallucination</td>
<td>578</td>
</tr>
<tr>
<td>Hong Zhao, Yao Lu, and Zhengang Zhai</td>
<td></td>
</tr>
<tr>
<td>Clarity Algorithm of Images in the Fog and Application</td>
<td>583</td>
</tr>
<tr>
<td>Wenzhang He and Yunfei Ma</td>
<td></td>
</tr>
<tr>
<td>Computation Model of Machining Mechanics of Glass Micromilling</td>
<td>587</td>
</tr>
<tr>
<td>Zhi Wei, Jianhua Zhang, Nan Li, and Xu Li</td>
<td></td>
</tr>
<tr>
<td>Topology Control Algorithm Based on Bottleneck Node for Large-Scale WSNs</td>
<td>592</td>
</tr>
<tr>
<td>Yiming Fan, Qingzhang Chen, and Jianjun Yu</td>
<td></td>
</tr>
<tr>
<td>Stereo Matching with Adaptive Arbitrary Support-Pixel Set and Adaptive</td>
<td>598</td>
</tr>
<tr>
<td>Support-Weight</td>
<td></td>
</tr>
<tr>
<td>Zhengang Zhai, Yao Lu, and Hong Zhao</td>
<td></td>
</tr>
<tr>
<td>Error Concealment Method for Embedded Wavelet codec</td>
<td>603</td>
</tr>
<tr>
<td>Xue-wen Ding, Wen-zhang He, and Zhao-xuan Yang</td>
<td></td>
</tr>
<tr>
<td>Propagated Analysis of Airport Delays Based on Timed Petri Nets</td>
<td>608</td>
</tr>
<tr>
<td>Jianli Ding, Tantan Chen, and Tao Xu</td>
<td></td>
</tr>
<tr>
<td>FEM Based Numerical Analysis on the Temperature Field in Grind-hardening</td>
<td>615</td>
</tr>
<tr>
<td>Jianhua Zhang, Hongsheng Xu, Yang Yu, and Zhi Wei</td>
<td></td>
</tr>
<tr>
<td>Contrast Restoration for Fog-Degraded Images</td>
<td>619</td>
</tr>
<tr>
<td>Yishu Zhai and Yong Zhang</td>
<td></td>
</tr>
</tbody>
</table>