Table of Contents

Third International Conference on Natural Computation
ICNC 2007

· Volume II ·

Preface ........................................................................................................... xii
Organizing Committee ................................................................................... xiii
Program Committee ....................................................................................... xv
Reviewers .................................................................................................... xviii

Other Topics in Neural Network Models II

Face Recognition Based on WT, FastICA and RBF Neural Network ................................. 3
Ming Li, Fuwen Wu, and Xueyan Liu
Fault Diagnosis Model Based on the Fusion of Hybrid Neural Network and Ant Colony Optimization Algorithm ........................................................................................................ 8
Zhisheng Zhang and Yaming Sun
Fault Diagnosis of Power Transformers Based on BP Network with Clonal Selection Algorithm .......... 13
Chenhao Wang, Huixian Huang, Yewei Xiao, and Weiwei Li
How Important are the Sizes and Locations of Fixation Regions for the BIAS Model? .......... 17
Predrag Neskovic, Ian Sherman, Liang Wu, and Leon N. Cooper
Hydrologic Simulations with Artificial Neural Networks ........................................... 22
Qin Ju, Zhenchun Hao, Changjun Zhu, Dedong Liu, and Zhongbo Yu
Modeling Automotive Engine Control Module with Neural Network Trained by Iterated Kalman Filter Algorithm ........................................................................................................ 28
Pu Sun, Kenneth Marko, and Yaqi Huang
Neural Evidence Integration Model and Its Application ........................................... 34
Shouzhi Wei, Ningde Jin, and Hui Liu
Neural Network Model Coupled with Phase Space Reconstruction and Its Application .......... 40
Weilin Liu, Zengchuan Dong, and Nanxiang Chen
On the Development of Improved Artificial Neural Network Model and Its Application on Hydrological Forecasting ........................................................................................................ 45
Dedong Liu, Zhongbo Yu, Zhenchun Hao, Changjun Zhu, Qin Ju, and Zhongbo Yu
Prediction of Gas Emission Volume Based on Wavelet Neural Network ......................... 50
Li Gao, Yanjun Hu, Guizhen Chen, and Hongzhen Yu
Quantitative Evaluation Method for the Significance of Worsted Fore-spinning Parameters Based on BP Neural Network ................................................................. 54
Gui Liu and Wei-dong Yu
Research and Application of a Hierarchical Fault Diagnosis System Based on Support Vector Machine ......................................................................................................................... 59
Ailun Liu, Xiaoyan Yuan, and Jinshou Yu
The Epidemic Threshold of a More General Epidemic Spreading Model for Network Viruses .......... 66
Lansheng Han, Shuxia Han, and Min Yang
The Simulation of Metal Sheet Pressing Based on ANN ........................................... 70
Deng Zhaohu, Zhang Yanqin, Huang Yaping, and Ruan Feng
The Study of Membrane Fouling Modeling Method Based on Wavelet Neural Network for Sewage Treatment Membrane Bioreactor ................................................................. 75
Meijuan Gao, Jingwen Tian, Lixin Zhao, and Kai Li
The Synchronization and Associative Memory of Spiking Neuronal Networks with Randomly Distributed Time Delays .............................................................................. 80
J H Peng and H J Yu
Uniqueness of Linear Combinations of Ridge Functions ........................................................................... 85
Jinling Long, Wei Wu, Dong Nan, and Junfang Wang
Use Clustering to Improve Neural Network in Financial Time Series Prediction ................................... 89
Feng Liu, Peng Du, Fangfei Weng, and Jun Qu
Using Self-Organizing Feature Maps and Data Mining to Analyze Liability Authentications of Two-Vehicle Traffic Crashes ............................................................................ 94
Pei Liu

Cognitive Science

3D Two Spirals Separation Based Upon Qualitative Mapping ........................................................................ 103
Xu Guanglin, Liu Yongchang, Li Hua, and Feng Jiali
Indexing by Metric Adaptation and Representation Upgrade in an Emotion-Based Agent Model ........... 108
Rodrigo Ventura and Carlos Pinto-Ferreira
Ubiquitous Commerce Utilizing a Process Model ..................................................................................... 113
Sang Chan Park, Cheol Young Kim, and Kwang Hyuk Im
Classification of Direction Perception EEG Based on PCA-SVM .......................................................... 116
Jing Jin, Xingyu Wang, and Bei Wang
Tuning of the Structure and Parameters of Dynamic Process Neural Network Using Improved Chaotic PSO ........................................................................................................................................ 121
Guangbin Yu, Guixian Li, Xiangyang Jin, and Yanwei Bai
A Hybrid Tactical Plan Recognition Method Base on Planning System ................................................... 126
W. S. Li and W. X. Wang
A Musical Approach to Artificial Emotion ................................................................................................ 131
Jin-xian Lin and Yin Guan
Application of Clustering and Multi-cluster Selection in SoftMan's Perception System ........................... 134
Aizhong Mi, Xuefeng Zheng, and Xuyan Tu
Artificial Behavioral System by Sensor-Motor Mapping Strategy for Multi-objective Robot Tasks ........... 139
Evren Dağlarlı and Hakan Temeltas
Computational Model for Rotation-Invariant Perception ......................................................................... 144
Wenlu Yang, Liqing Zhang, and Libo Ma
Emotion in Decision Making under Uncertainty and Cognitive Control: A Computational Framework .... 149
Ping Xu and Tao Wang
Image Quality Evaluation Based on No-Reference Method with Visual Component Detection .............. 155
Li Zhu and Guoyou Wang
Making FF Faster in ADL Domains ........................................................................................................... 160
Dunbo Cai, Jigui Sun, and Minghao Yin
Multiple-Part Based Pedestrian Detection Using Interfering Object Detection ......................................... 165
Xin Mao, Feihu Qi, and Wenjia Zhu
A Robust Object Tracking Approach Using Mean Shift ........................................................................... 170
Zhiqiang Wen and Zixing Cai
Algorithm of Vein Surface of 3D Reconstruction for Ultrasonic Cervix Image ........................................ 175
Lingqiu Zeng, Qingsheng Zhu, and Ji Liu
An Efficient Method of Locating Vehicle License Plate ............................................................................ 180
Zhigang Xu and Honglei Zhu
Face Oriented Discriminating Gabor Features ......................................................................................... 184
Fan Ou, Chong Liu, Xusheng Tang, and Zongying Ou
Photometric Invariant Feature Detection Based on Oriented Tensor Filter ............................................ 189
Chengwen Yu, Qianjin Zhang, and Lei Guo
The Effect of Camera Calibration Space on Visual Pose's Precision ...................................................... 194
Jing Zhou, Yingming Hao, Feng Zhu, and Lei He
The Right Way of Cognitive Vision Modeling: An Information Processing Approach............................... 199
Emanuel Diamant
A Fast Path Planning Algorithm for Vehicle Navigation System......................................................... 204
Bi Jun, Zhu Guang-yu, and Xie Zheng-yu
A Study of Neighborhood Competing Models Based Verification Method ........................................ 207
Chengli Sun, Gang Liu, and Jun Guo
Adaptive Particle Swarm Optimization Algorithm with Genetic Mutation Operation........................... 211
Yuelin Gao and Zihui Ren
Application of Time-Varying Coherence to Coordinative Connectivity Based on Event Related EEG..... 216
Xiaotong Wen, Kai Yin, Dongzhi Sun, Li Yao, and Xiaojie Zhao
Contour Detection Based on Self-Organizing Feature Clustering ....................................................... 221
Yu Ma, Xiaodong Gu, and Yuanuyuan Wang
Evaluation of Logistics Service Provider Using Analytic Network Process .......................................... 227
Kong Feng and Liu Hong-yan
Multi-document summarization Based on Cohesion with Disambiguation ......................................... 232
Yanmin Chen and Xizhong Lou
Orthogonal Multiple Vector-valued Multivariate Wavelet Packets ...................................................... 237
Qingjiang Chen and Hua Li
The Design and Realization of CAT with Cognitive Diagnosis Based on Formal Concept Analysis........ 241
Shuqun Yang, Shuliang Ding, Xiaodong Zhu, and Qiulin Ding
The Precise Recognition of Moving Object in Complex Background ............................................... 246
Weiyao Huang, Zhijing Liu, and Wenjuan Pan

Bioinformatics and Bio-medical Engineering

A Mutual Information Based Sequence Distance for Vertebrate Phylogeny Using Complete Mitochondrial Genomes ............................................................................................................................ 253
Z.G. Yu, Z. Mao, L.Q. Zhou, and V.V. Anh
A New Clustering Segmentation Algorithm of 3D Medical Data Field Based on Density-isoline .......... 258
Xinwu Li
A New Dynamic Bayesian Network for Integrating Multiple Data in Estimating Gene Networks .......... 264
Yu Zhang, Zhidong Deng, and Peifa Jia
A Simulated Annealing Algorithm for Multiple Sequence Alignment with Guaranteed Accuracy ........ 270
Hongwei Huo and Vojislav Stojkovic
Accurate Lung Segmentation for X-ray CT Images ............................................................................... 275
Qixin Gao, ShengJun Wang, Dazhe Zhao, and Jiren Liu
An Algorithm to Detect P300 Potentials Based on F-Score Channel Selection and Support Vector Machines .......................................................................................................................... 280
Licai Yang, Jinliang Li, Yucui Yao, and Guanglin Li
Cellular Neural Network Based Urinary Image Segmentation ............................................................... 285
Zanchao Zhang, Shunren Xiu, and Huilong Duan
Diagnosis in Traditional Chinese Medicine Using Artificial Neural Networks: State-of-the-Art and Perspectives ........................................................................................................................................ 290
Minghui Shi and Changle Zhou
Distinguish Coding and Noncoding Sequences in a Complete Genome Using Fourier Transform ....... 295
Yu Zhou, Li-Qian Zhou, Zu-Guo Yu, and Vo Anh
Gene Identification Based on Geometrical Representation of DNA Sequence ..................................... 300
JiaWei Luo, Li Yang, and YingChun Zhou
Log-Correlation Distance and Fourier Transform With Kullback-Leibler Divergence Distance for Construction of Vertebrate Phylogeny Using Complete Mitochondrial Genomes ......................................................... 304
L.Q. Zhou, Z.G. Yu, P.R. Nie, F.F. Liao, V.V. Anh, and Y.J. Chen
Mental Fatigue Estimation Based on Multichannel Linear Descriptors and Support Vector Machine with Optimizing Parameters ..................................................................................................... 309
Chong Zhang, Chongxun Zheng, Xiaolin Yu, and Yangyi Ou
Missile Guidance Law Design Using Nonlinear Output Regulation and T-S Model ............................... 314
Li-Ying Yuan and Shi-Yong Li
Communications and Computer Networks

A FDRS-Based Data Classification Method Used for Abnormal Network Intrusion Detection ........................................ 375  
Zhenxiang Chen, Haiyang Wang, Bo Yang, Lin Wang, and Runyuan Sun

A Multiple Models Approach for Adaptive Predictive Control of Networked Control Systems .................. 381  
Chunmao Li, Jian Xiao, Lili Chu, and Junhua Liu

A Statistical and Instant Information Combined Handoff Target Prediction Scheme in NGI .................. 387  
Xingwei Wang, Ye Tian, and Min Huang

Adaptive Increase and Adaptive Decrease Algorithm for Wireless TCP .................................................. 392  
Lin Cui, Seok J. Koh, Xin Cui, and Yong Jin Kim

An ABC Supported QoS Unicast Routing Scheme Based on the Ant Algorithm ........................................ 399  
Xingwei Wang, Guang Liang, and Min Huang

An Application of GA for Symbol Detection in MIMO Communication Systems .................................. 404  
Sajid Bashir, Adnan Ahmed Khan, Muhammed Naeem, and Syed Ismail Shah

An Improved Resource Discovery Algorithm for Gnutella Networks .................................................. 411  
Yu-Tang Guo, Wan-Li Lv, and Bin Luo

Analysis of Transmission System Based on Phase Locked Loop .................................................. 415  
Chen-hao Qi, Man Feng, and Le-nan Wu

Application of a Multi-species Optimizer in Ubiquitous Computing for RFID Networks Scheduling .... 420  
Hanning Chen, Yunlong Zhu, Kunyuan Hu, and Ben Niu

Dynamic Policy Scheme for Resource Allocation in Mobile IP Handoff ........................................ 426  
Xue-jie Liu and Yan-heng Liu

Geometric Feature Equalizers Based on Hybrid Genetic Algorithm .................................................. 431  
Renzhang Zhu, Lenan Wu, and Ruo Shu

Hybrid Modulation for AM Broadcasting .................................................. 436  
Chen-hao Qi, Man Feng, and Le-nan Wu

Minimizing Interference in Satellite Communications Using Chaotic Neural Networks .................. 441  
Wen Liu, Haixiang Shi, and Lipo Wang

Remote Network Controller Design Based on Fully Tuned RBF Neural Network .................................. 445  
Yun-an Hu, Jing Li, and Bin Zuo

Some Aspects of Gaussian-Hermite Moments in Image Analysis .................................................. 450  
Lin Wang, Youfu Wu, and Mo Dai
<table>
<thead>
<tr>
<th>Title</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Application of Hybrid Genetic Particle Swarm Optimization Algorithm in the Distribution Network</td>
<td>455</td>
</tr>
<tr>
<td>Caiqing Zhang, Jingjing Zhang, and Xihua Gu</td>
<td></td>
</tr>
<tr>
<td>Comparative Dimensional Analysis of Atrial Fibrillation of Treatment of PPF (propafenone)</td>
<td>460</td>
</tr>
<tr>
<td>Kuang-Fu Tien</td>
<td></td>
</tr>
<tr>
<td>A Cluster-Based Random Key Pre-distribution Scheme in Large Scale Sensor Networks</td>
<td>462</td>
</tr>
<tr>
<td>Yi Jiang and Haoshan Shi</td>
<td></td>
</tr>
<tr>
<td>An Auto-Regulative Document Recommendation System Based on P2P Networks</td>
<td>467</td>
</tr>
<tr>
<td>Feng Guo, Shaozi Li, and Kunhui Lin</td>
<td></td>
</tr>
<tr>
<td>Forecasting of the Reactive Dyes K/S Value Based on BP Nerve Network</td>
<td>472</td>
</tr>
<tr>
<td>Hui-Yu Jiang, Min Dong, and Feng Yang</td>
<td></td>
</tr>
<tr>
<td>Expert System and Informatics</td>
<td>479</td>
</tr>
<tr>
<td>A Novel GA-LM Based Hybrid Algorithm</td>
<td></td>
</tr>
<tr>
<td>Changsheng Zhang, Jigui Sun, Qiansheng Wang, and Zhe Feng</td>
<td></td>
</tr>
<tr>
<td>A Spam Filter Approach with the Improved Machine Learning Technology</td>
<td>484</td>
</tr>
<tr>
<td>Xiu-Li Pang, Yu-Qiang Feng, and Wei Jiang</td>
<td></td>
</tr>
<tr>
<td>Prior Knowledge SVM-based Intrusion Detection Framework</td>
<td>489</td>
</tr>
<tr>
<td>Gang Zhang, Jian Yin, Zhaohui Liang, and Yan-Guang Cai</td>
<td></td>
</tr>
<tr>
<td>Proposed Shift Quality Metrics and Experimentation on AMT Shift Quality Evaluation</td>
<td>494</td>
</tr>
<tr>
<td>Jianguo Zhang, Yulong Lei, Xin Hua, Jian Wang, and Anlin Ge</td>
<td></td>
</tr>
<tr>
<td>Research of Product Styling Design Method Based on Neural Network</td>
<td>499</td>
</tr>
<tr>
<td>Jianning Su and Fengqiang Li</td>
<td></td>
</tr>
<tr>
<td>The MCMC Approach for Solving the Pareto/NBD Model and Possible Extensions</td>
<td>505</td>
</tr>
<tr>
<td>Shao-hui Ma and Jin-Lan Liu</td>
<td></td>
</tr>
<tr>
<td>Financial Engineering</td>
<td>513</td>
</tr>
<tr>
<td>A Hybrid RST and GA-BP Model for Chinese Listed Company Bankruptcy Prediction</td>
<td></td>
</tr>
<tr>
<td>Ying Sai, Chenjian Zhong, and Peiyou Nie</td>
<td></td>
</tr>
<tr>
<td>A Stock Pattern Recognition Algorithm Based on Neural Networks</td>
<td>518</td>
</tr>
<tr>
<td>Xinyu Guo, Xun Liang, and Xiang Li</td>
<td></td>
</tr>
<tr>
<td>An Artificial Immune Method for Stock Market Avoiding Control of Hedge Fund</td>
<td>523</td>
</tr>
<tr>
<td>Ze-Jun Wu, Wang Xu, and Yi-Wen Liang</td>
<td></td>
</tr>
<tr>
<td>Application of Artificial Neural Network Supported by BP and Particle Swarm Optimization Algorithm for Evaluating the Criticality Class of Spare Parts</td>
<td>528</td>
</tr>
<tr>
<td>Lin Wang, Yurong Zeng, Chao Gui, and Hong Wang</td>
<td></td>
</tr>
<tr>
<td>Intelligence Model for the Sensitivity Analysis of Financial Time Series</td>
<td>533</td>
</tr>
<tr>
<td>Hua Zheng, Li Xie, and Lizi Zhang</td>
<td></td>
</tr>
<tr>
<td>A Research on Information Spillover Effects in Initial Public Offerings</td>
<td>538</td>
</tr>
<tr>
<td>Jao-Hong Cheng, Huei-Ping Chen, and Sun-Far Chang</td>
<td></td>
</tr>
<tr>
<td>Correlative Relationship of Learning-Oriented Organizational Innovation and Technological Innovation in Chinese High-Tech Manufacturing Firms</td>
<td>543</td>
</tr>
<tr>
<td>Chong Xin and Chun-sheng Shi</td>
<td></td>
</tr>
<tr>
<td>Honglin Yang, Shou Chen, and Yan Yang</td>
<td></td>
</tr>
<tr>
<td>Theoretical and Empirical Research on Dynamic Optimization Model of Structural Adjustment of International Reserves</td>
<td>557</td>
</tr>
<tr>
<td>Jie Ma and Fang Shu</td>
<td></td>
</tr>
<tr>
<td>Pattern Recognition and Diagnostics</td>
<td>565</td>
</tr>
<tr>
<td>3D Model Retrieval Based on V System Rotation Invariant Moments</td>
<td></td>
</tr>
<tr>
<td>Zongmin Li, Xiuping Men, Yujie Liu, and Hua Li</td>
<td></td>
</tr>
<tr>
<td>A Hybrid Model for Hydroturbine Generating Unit Trend Analysis</td>
<td>570</td>
</tr>
<tr>
<td>Min Zou, Jianzhong Zhou, Zhong Liu, and Liangliang Zhan</td>
<td></td>
</tr>
</tbody>
</table>
Similarity Search in Time Series Database Based on SOFM Neural Network .............................................. 715  
  Peng Zhang, Xue-ren Li, Jun Du, Zong-lin Zhang, and Jian-ye Zhang  
Study on Stereo Vision-Based Cross-Country Obstacle Detection Technology for Intelligent Vehicle .... 719  
  Linhui Li, Rongben Wang, and Mingheng Zhang  
SVM-based Fingerprint Classification Using Orientation Field ............................................................................. 724  
  Luping Ji and Zhang Yi  
The Application of Multi-sensors Fusion in Vehicle Transmission System Fault Diagnosis ....................... 728  
  Xiaobing Wu, Shuangzhe Liu, and Dharmendra Sharma  
The Filtering of Internet Images Based on Detecting Erotogenic-Part ................................................................. 732  
  Xuanjing Shen, Wei Wei, and Qingji Qian  
Toe Shape Recognition Algorithm Based on Fuzzy Neural Networks ................................................................. 737  
  Rong Wang, Fanliang Bu, Hua Jin, and Lihua Li  
Video Object Segmentation with a Potts Model ..................................................................................... 742  
  Jieyu Zhao and Xiaoquan Wang

Robotics and Intelligent Control I

Automotive Gear-Shifting Decision Making Based on Neural Network Computation Model ....................... 749  
  Jingxing Tan, Xiaofeng Yin, Liang Yin, and Ling Zhao  
Eigenstructure Assignment Based Flight Control for Advanced Fighter: An Optimization Based Approach ..................................................................................................................... 754  
  Yong Fan, Jihong Zhu, Chunning Yang, and Zengqi Sun  
Engine Noise of Identification Using an Improved Blind Sources Separation Algorithm .................................. 759  
  Lin Yongman and Lin Tusheng  
Fault Line Detection in Small Current Grounding Systems Based on RBF Network ....................................... 764  
  Yundong Song, Shun Yuan, Yanjie Wang, and Chunfang Zhao  
MAS4AMR: A Self Organized Multi Agent System Designed for Auto Mobile Robot ............................. 769  
  Liang HaiHua and Zhu MiaoLiang  
Niche Genetic Algorithm for Robot Path Planning ..................................................................................... 774  
  Xuanzi Hu and Cunxi Xie

Author Index ................................................................................................................................................. 779