

# Table of Contents – Part II

## Session 2: Neural Modeling

On the Optimization of Multiclass Support Vector Machines Dedicated to Speech Recognition . . . . .	1
<i>Freha Mezzoudj and Assia Benyettou</i>	
Time Series Prediction Method Based on LS-SVR with Modified Gaussian RBF . . . . .	9
<i>Yangming Guo, Xiaolei Li, Guanghan Bai, and Jiezhong Ma</i>	
An Improved Method of Identification Based on Thermal Palm Vein Image . . . . .	18
<i>Ran Wang, Guoyou Wang, Zhong Chen, Jianguo Liu, and Yu Shi</i>	
Modelling Energy Use and Fuel Consumption in Wheat Production Using Indirect Factors and Artificial Neural Networks . . . . .	25
<i>Majeed Safa and Sandhya Samarasinghe</i>	
A Gaussian Mixture Model Based System for Detection of Macula in Fundus Images . . . . .	33
<i>Anam Tariq, Arslan Shaukat, and Shoab A. Khan</i>	
The Brain's Sequential Parallelism: Perceptual Decision-Making and Early Sensory Responses . . . . .	41
<i>Tobias Brosch and Heiko Neumann</i>	
Estimating Neural Firing Rates: An Empirical Bayes Approach . . . . .	51
<i>Shinsuke Koyama</i>	
Assessment of Financial Risk Prediction Models with Multi-criteria Decision Making Methods . . . . .	60
<i>Jose Salvador Sánchez, Vicente García, and Ana Isabel Marqués</i>	
Improving Risk Predictions by Preprocessing Imbalanced Credit Data . . . . .	68
<i>Vicente García, Ana Isabel Marqués, and Jose Salvador Sánchez</i>	
Hybrid Validation of Handwriting Process Modelling . . . . .	76
<i>Mohamed Aymen Slim, Maroua El Kastouri, Afef Abdelkrim, and Mohamed Benrejeb</i>	
Off-Line Handwritten Arabic Word Recognition Using SVMs with Normalized Poly Kernel . . . . .	85
<i>Abdulrahman Alalshekmubarak, Amir Hussain, and Qiu-Feng Wang</i>	

Bayesian Modeling of Visual Attention . . . . .	92
<i>Jinhua Xu</i>	
Classifier Ensemble Using a Heuristic Learning with Sparsity and Diversity . . . . .	100
<i>Xu-Cheng Yin, Kaizhu Huang, Hong-Wei Hao, Khalid Iqbal, and Zhi-Bin Wang</i>	
Optimization of SIRM's Fuzzy Model Using Lukasiewicz Logic . . . . .	108
<i>Takashi Mitsuishi, Takanori Terashima, and Yasunari Shidama</i>	
Synchronization of Hopfield Like Chaotic Neural Networks with Structure Based Learning . . . . .	117
<i>Nariman Mahdavi and Jürgen Kurths</i>	
Incremental Self-Organizing Map (iSOM) in Categorization of Visual Objects . . . . .	125
<i>Andrew P. Papliński</i>	
The Elastic Net as Visual Category Representation: Visualisation and Classification . . . . .	133
<i>Dror Cohen and Andrew P. Papliński</i>	
A Computational Model for Development of Post-Traumatic Stress Disorders by Hebbian Learning . . . . .	141
<i>Sebastien Naze and Jan Treur</i>	
Power-Law Scaling of Synchronization Robustly Reproduced in the Hippocampal CA3 Slice Culture Model with Small-World Topology . . . .	152
<i>Toshikazu Samura, Yasuomi D. Sato, Yuji Ikegaya, Hatsuo Hayashi, and Takeshi Aihara</i>	
A Dynamic Bio-inspired Model of Categorization . . . . .	160
<i>Hamidreza Jamalabadi, Hossein Nasrollahi, Majid Nili Ahmadabadi, Babak Nadjar Araabi, Abdolhossein Vahabie, and Mohammadreza Abolghasemi</i>	
Improving Support Vector Machine Using a Stochastic Local Search for Classification in DataMining . . . . .	168
<i>Messaouda Nekkaa and Dalila Boughaci</i>	
Variety of Cortical Pathways Formed by Topographic Neural Projection: A Computational Study . . . . .	176
<i>Naoyuki Sato</i>	
Identification of Neural Network Structure from Multiple Spike Sequences . . . . .	184
<i>Kaori Kuroda, Kantaro Fujiwara, and Tohru Ikeguchi</i>	

Time Domain Parameters for Online Feedback fNIRS-Based Brain-Computer Interface Systems .....	192
<i>Tuan Hoang, Dat Tran, Khoa Truong, Trung Le, Xu Huang, Dharmendra Sharma, and Toi Vo</i>	
Embedding Relevance Vector Machine in Fuzzy Inference System for Energy Consumption Forecasting .....	202
<i>Hamid Aghaie Moghanjooghi, Babak Nadjar Araabi, and Majid Nili Ahmadabadi</i>	
GMM-ClusterForest: A Novel Indexing Approach for Multi-features Based Similarity Search in High-Dimensional Spaces .....	210
<i>Yuchai Wan, Xiabi Liu, Kunqi Tong, Xue Wei, Yi Wu, Fei Guan, and Kunpeng Pang</i>	
A Regularized Linear Classifier for Effective Text Classification .....	218
<i>Sharad Nandanwar and M. Narasimha Murty</i>	
A Real-Time, Event Driven Neuromorphic System for Goal-Directed Attentional Selection .....	226
<i>Francesco Galluppi, Kevin Brohan, Simon Davidson, Teresa Serrano-Gotarredona, José-Antonio Pérez Carrasco, Bernabé Linares-Barranco, and Steve Furber</i>	
Analog Neural Network Approach for Source Localization Using Time-of-Arrival Measurements .....	234
<i>Chi-Sing Leung, H.C. So, Frankie K.W. Chan, and A.G. Constantinides</i>	
Construction of Decision Trees by Using Feature Importance Value for Improved Learning Performance .....	242
<i>Md. Ridwan Al Iqbal, Mohammad Saiedur Rahaman, and Syed Irfan Nabil</i>	
Wavelet Transform Based Consonant - Vowel (CV) Classification Using Support Vector Machines .....	250
<i>T.M. Thasleema and N.K. Narayanan</i>	
Using Agent Based Modeling and Simulation for Data Mining .....	258
<i>Emin Kugu, Levent Altay, and Ozgur Koray Sahingoz</i>	
Neurodynamical Top-Down Processing during Auditory Attention .....	266
<i>Emili Balaguer-Ballester, Abdelhamid Bouchachia, Beibei Jiang, and Susan L. Denham</i>	
A Hybrid Visualization-Induced Self-Organizing Map for Multi Dimensional Reduction and Data Visualization .....	274
<i>Chee Siong Teh, Ming Leong Yui, Chwen Jen Chen, and Zahan Tapan Sarwar</i>	

Human-Like Intuitive Playing in Board Games .....	282
<i>Jacek Mańdziuk</i>	
Identification of Diffusion Coefficient in Nonhomogeneous Landscapes.....	290
<i>Min A, John D. Reeve, Mingqing Xiao, and Dashun Xu</i>	
Data Discretization for Dynamic Bayesian Network Based Modeling of Genetic Networks .....	298
<i>Nguyen Xuan Vinh, Madhu Chetty, Ross Coppel, and Pramod P. Wangikar</i>	
Generation of Environmental Representation of a Large Indoor Parking Lot .....	307
<i>Jung-Ming Wang, Chih-Fan Hsu, Sei-Wang Chen, and Chiou-Shann Fuh</i>	
Survey on Simplified Olfactory Bionic Model to Generate Texture Images .....	316
<i>Zhang Jin, Deng Yang, Li Yong-jun, Wang Ying, and Wang Ru-long</i>	
An Improved Method to Calculate Phase Locking Value Based on Hilbert-Huang Transform and Its Application.....	324
<i>Zhang Jin, Wang Na, Kuang Huan, and Wang Ru-long</i>	
A Novel Hierarchical Statistical Model for Count Data Modeling and Its Application in Image Classification .....	332
<i>Ali Shojaei Bakhtiari and Nizar Bouguila</i>	
Multitask Twin Support Vector Machines .....	341
<i>Xijiong Xie and Shiliang Sun</i>	
Bandit-Based Structure Learning for Bayesian Network Classifiers.....	349
<i>Sepehr Eghbali, Mohammad Hassan Zokaei Ashtiani, Majid Nili Ahmadabadi, and Babak Nadjar Araabi</i>	
Modeling the Mental Differentiation Task with EEG.....	357
<i>Tan Vo, Tom Gedeon, and Dat Tran</i>	
Office-Space-Allocation Problem Using Harmony Search Algorithm .....	365
<i>Mohammed A. Awadallah, Ahamad Tajudin Khader, Mohammed Azmi Al-Betar, and Phuah Chea Woon</i>	
A Unified Framework of Binary Classifiers Ensemble for Multi-class Classification .....	375
<i>Takashi Takenouchi and Shin Ishii</i>	
An Orientation Detection Model Based on Fitting from Multiple Local Hypotheses.....	383
<i>Hui Wei and Yuan Ren</i>	

Avoiding Catastrophic Forgetting by a Biologically Inspired Dual-Network Memory Model . . . . .	392
<i>Motonobu Hattori</i>	
Color Fractal Structure Model for Reduced-Reference Colorful Image Quality Assessment . . . . .	401
<i>Lihuo He, Dongrue Wang, Xuelong Li, Dacheng Tao, Xinbo Gao, and Fei Gao</i>	
Validation Based Sparse Gaussian Processes for Ordinal Regression . . .	409
<i>P.K. Srijith, Shirish Shevade, and S. Sundararajan</i>	
Cross-Subject Classification of Speaking Modes Using fNIRS . . . . .	417
<i>Christian Herff, Dominic Heger, Felix Putze, Cuntai Guan, and Tanja Schultz</i>	
Temporal Finite-State Machines: A Novel Framework for the General Class of Dynamic Networks . . . . .	425
<i>Karim El-Laithy and Martin Bogdan</i>	
A Novel Node Splitting Criteria for Decision Trees Based on Theil Index . . . . .	435
<i>Shina Sheen and R. Anitha</i>	
Modeling of Polycaprolactone Production from $\varepsilon$ -Caprolactone Using Neural Network . . . . .	444
<i>Senthil Kumar Arumugasamy, Mohamad Hekarl Uzir, and Zainal Ahmad</i>	
Global Reweighting and Weight Vector Based Strategy for Multiclass Boosting . . . . .	452
<i>M. Baig and Mian Muhammad Awais</i>	
Suppression of Functional System with Markovian Switching . . . . .	460
<i>Lizhu Feng, Yi Shen, and Zhuguo Li</i>	
P-Order Normal Cloud Model: Walking on the Way between Gaussian and Power Law Distributions . . . . .	467
<i>Yu Liu and Tianwei Zhang</i>	
A Novel Method of Sparse Least Squares Support Vector Machines in Class Empirical Feature Space . . . . .	475
<i>Takuya Kitamura and Takamasa Sekine</i>	
Semantic De-biased Associations (SDA) Model to Improve Ill-Structured Decision Support . . . . .	483
<i>Tasneem Memon, Jie Lu, and Farookh Khadeer Hussain</i>	

Echo State Networks and Extreme Learning Machines: A Comparative Study on Seasonal Streamflow Series Prediction . . . . .	491
<i>Hugo Siqueira, Levy Boccatto, Romis Attux, and Christiano Lyra Filho</i>	
Delay-Dependent Stabilization of Uncertain Distributed Systems with Interval Time-Varying Delay . . . . .	501
<i>Lizhu Feng, Yi Shen, and Cheng Wang</i>	
GARF: Towards Self-optimised Random Forests . . . . .	506
<i>Mohamed Bader-El-Den and Mohamed Gaber</i>	
TaskRec: Probabilistic Matrix Factorization in Task Recommendation in Crowdsourcing Systems . . . . .	516
<i>Man-Ching Yuen, Irwin King, and Kwong-Sak Leung</i>	
Feature Selection for Electricity Load Prediction . . . . .	526
<i>Mashud Rana, Irena Koprinska, and Vassilios G. Agelidis</i>	
Statistical and Machine Learning Methods for Electricity Demand Prediction . . . . .	535
<i>Alexandra Kotillova, Irena Koprinska, and Mashud Rana</i>	
EnerPlan: Smart Energy Management Planning for Home Users . . . . .	543
<i>Usman Ali, Zeeshan Ali Rana, Fahad Javed, and Mian Muhammad Awais</i>	
Harnessing Chaotic Activation Functions in Training Neural Network . . . . .	551
<i>Md. Asaduzzaman, A.F.M. Nokib Uddin, Md. Shahjahan, and Kazuyuki Murase</i>	
Self-correcting Symmetry Detection Network . . . . .	559
<i>Wonil Chang, Hyun Ah Song, Sang-Hoon Oh, and Soo-Young Lee</i>	
Parallel Support Vector Configuration for Identification of Fast Independent Components in Morphological Patterns Derived by Cardiovasographic Analysis on the Radial Pulse . . . . .	567
<i>S.H. Karamchandani, M. Panju, S.N. Merchant, U.B. Desai, G.D. Jindal, and D.G. Khairnar</i>	
Energy-Based Temporal Neural Networks for Imputing Missing Values . . . . .	575
<i>Philemon Brakel and Benjamin Schrauwen</i>	
Emergence of Multi-step Discrete State Transition through Reinforcement Learning with a Recurrent Neural Network . . . . .	583
<i>Mohamad Faizal Samsudin, Yoshito Sawatsubashi, and Katsunari Shibata</i>	
Collaborative Generative Topographic Mapping . . . . .	591
<i>Mohamad Ghassany, Nistor Grozavu, and Younès Bennani</i>	

Rule Extraction from Ensemble Methods Using Aggregated Decision Trees . . . . .	599
<i>Md. Ridwan Al Iqbal</i>	
Classification of Power Quality Disturbances Using Artificial Neural Networks and a Logarithmically Compressed S-Transform . . . . .	608
<i>Emir Turajlic and Dzenan Softic</i>	
Multi-Threaded Support Vector Machines for Pattern Recognition . . . . .	616
<i>João Gonçalves, Noel Lopes, and Bernardete Ribeiro</i>	
A Malware Collection and Analysis Framework Based on Darknet Traffic . . . . .	624
<i>Jungsuk Song, Jang-Won Choi, and Sang-Soo Choi</i>	
Markovian Models for Electrical Load Prediction in Smart Buildings . . .	632
<i>Muhammad Kumail Haider, Asad Khalid Ismail, and Ihsan Ayyub Qazi</i>	
Extension of Incremental Linear Discriminant Analysis to Online Feature Extraction under Nonstationary Environments . . . . .	640
<i>Annie anak Joseph, Young-Min Jang, Seiichi Ozawa, and Minh Lee</i>	
Multivariate Isotonic Regression under Tree Semi-order Restrictions and Test in Multivariate Normal Distribution . . . . .	648
<i>Yuzhen Lu, Pu Dong, and Qing Li</i>	
Consonantal Recognition Using SVM and a Hierarchical Decision Structure Based in the Articulatory Phonetics . . . . .	655
<i>Adriano de Andrade Bresolin and Hermes Irineu Del Monego</i>	
SVM-Based Just-in-Time Adaptive Classifiers . . . . .	664
<i>Cesare Alippi, Li Bu, and Dongbin Zhao</i>	
Machine Learning Approach to Enhance the Design of Automated Theorem Provers . . . . .	673
<i>Mahdi Khalifa, Hazem Raafat, and Mohammed Almulla</i>	
Orthogonalized Partial Directed Coherence for Functional Connectivity Analysis of Newborn EEG . . . . .	683
<i>Amir H. Omidvarnia, Ghasem Azemi, Boualem Boashash, John M. O' Toole, Paul Colditz, and Sampsa Vanhatalo</i>	
Classification of Working Memory Load Using Wavelet Complexity Features of EEG Signals . . . . .	692
<i>Pega Zarjam, Julien Epps, Fang Chen, and Nigel H. Lovell</i>	
<b>Author Index</b> . . . . .	<b>701</b>