

2012 Brazilian Symposium on Neural Networks

(SBRN 2012)

**Curitiba, Parana, Brazil
20 – 25 October 2012**



IEEE Catalog Number: CFP1202B-PRT
ISBN: 978-1-4673-2641-4

2012 Brazilian Symposium on Neural Networks

SBRN 2012

Table of Contents

Preface	x
Organizing Committee	xi
Program Committee	xii
Reviewers	xiv

TS 1: Supervised Machine Learning

Combining Meta-Learning with Multi-objective Particle Swarm Algorithms for SVM Parameter Selection: An Experimental Analysis	1
<i>Pérides B.C. Miranda, Ricardo B.C. Prudêncio, André C.P.L.F. Carvalho, and Carlos Soares</i>	
Meta-Learning for Periodic Algorithm Selection in Time-Changing Data	7
<i>André Luis Debiase Rossi, André C.P.L.F. Carvalho, and Carlos Soares</i>	
A Study on Class Noise Detection and Elimination	13
<i>Luís Paulo F. Garcia, Ana Carolina Lorena, and André C.P.L.F. Carvalho</i>	
Negative Selection with High-Dimensional Support for Keystroke Dynamics	19
<i>Paulo Henrique Pisani and Ana Carolina Lorena</i>	

TS 2: Unsupervised Machine Learning

Variable-Wise Kernel-Based Clustering Algorithms for Interval-Valued Data	25
<i>Francisco de A.T. de Carvalho, Gibson B.N. Barbosa, and Marcelo R.P. Ferreira</i>	
An Energy Exchanging Mechanism for Data Clustering	31
<i>Roberto Alves Gueleri and Liang Zhao</i>	
A Density-Based Clustering Approach for Behavior Change Detection in Data Streams	37
<i>Rosane M.M. Vallim, José A. Andrade Filho, André C.P.L.F. Carvalho, and João Gama</i>	

Combining Information from Distributed Evolutionary k-Means	43
<i>Murilo Coelho Naldi and Ricardo José Gabrielli Barreto Campello</i>	

TS 3: Bioinformatics

A Comparison of External Clustering Evaluation Indices in the Context of Imbalanced Data Sets	49
<i>Marcilio C.P. de Souto, André L.V. Coelho, Katti Faceli, Tiemi C. Sakata, Viviane Bonadia, and Ivan G. Costa</i>	

On the Ensemble Prediction of Gene Regulatory Networks: A Comparative Study	55
<i>Mariana R. Mendoza and Ana L.C. Bazzan</i>	

Predicting Gene Functions Using Semi-supervised Clustering Algorithms with Objective Function Optimization	61
<i>Valmir Macario, Ivan G. Costa, João F.L. Oliveira, and Francisco de A.T. de Carvalho</i>	

An Epsilon-Greedy Mutation Operator Based on Prior Knowledge for GA Convergence and Accuracy Improvement: An Application to Networks Inference	67
<i>Mariana R. Mendoza, Adriano V. Werhli, and Ana L.C. Bazzan</i>	

TS 4: Semi-supervised Learning

A Semi-supervised Approach to Estimate the Number of Clusters per Class	73
<i>Davidson M. Sestaro, Thiago F. Covões, and Eduardo R. Hruschka</i>	

Particle Competition and Cooperation to Prevent Error Propagation from Mislabeled Data in Semi-supervised Learning	79
<i>Fabricio Breve and Liang Zhao</i>	

Robustness Analysis of Network-Based Semi-supervised Learning Algorithms	85
<i>Bilzã Araújo and Liang Zhao</i>	

Using Interacting Forces to Perform Semi-supervised Learning	91
<i>Thiago H. Cupertino and Liang Zhao</i>	

TS 5: Neural Networks

Firing Activity Induced by Nonidentical Signal Phases in Two Coupled Excitable Neurons	97
<i>Xiaoming Liang and Liang Zhao</i>	

On the Universality of Quantum Logical Neural Networks	102
<i>Adenilton J. da Silva, Teresa B. Ludermir, and Wilson R. de Oliveira</i>	

Hardware/Software Co-design Implementation of On-Chip Backpropagation	107
<i>Mauricio A. Dias, Fernando S. Osorio, and Denis Wolf</i>	
A Hybrid RNN Model for Cursive Offline Handwriting Recognition	113
<i>Byron Leite Dantas Bezerra, Cleber Zanchettin, and Vinícius Braga de Andrade</i>	

TS 6: Control and Robotics

Recurrent Self-Organizing Maps for Recognition of Grasp Sequence of Movements	119
<i>Paulo Henrique Muniz Ferreira and Aluizio Fausto Ribeiro Araújo</i>	
On-Line Learning Using a Connectionist Controller for Simulated Robot Soccer	125
<i>Christian Northfleet, Paulo Martins Engel, and Milton Roberto Heinen</i>	
Learning Abstract Behaviors with the Hierarchical Incremental Gaussian Mixture Network	131
<i>Renato de Pontes Pereira, Paulo Martins Engel, and Rafael C. Pinto</i>	
Self-Organizing Mapping of Robotic Environments Based on Neural Networks	136
<i>Mônica Figueiredo, Sílvia Botelho, Paulo Drews, and Celina Haffele</i>	

TS 7: Evolutionary Systems

SCAS-IS: Knowledge Extraction and Reuse in Multiprocessor Task Scheduling Based on Cellular Automata	142
<i>Murillo G. Carneiro and Gina M.B. Oliveira</i>	
Performance Comparison of Parameter Variation Operators in Self-Adaptive Differential Evolution Algorithms	148
<i>Rodrigo C. Pedrosa Silva, Rodolfo A. Lopes, Alan R.R. Freitas, and Frederico G. Guimarães</i>	
Multiobjective Genetic Optimization of Fuzzy Partitions and T-Norm Parameters in Fuzzy Classifiers	154
<i>Edward Hinojosa Cárdenas and Heloisa A. Carmago</i>	
A Multi-agent Approach to the Adaptation of Migration Topology in Island Model Evolutionary Algorithms	160
<i>Rodolfo A. Lopes, Rodrigo C. Pedrosa Silva, Felipe Campelo, and Frederico G. Guimarães</i>	

TS 8: Swarm Intelligence

I-MOPSO: A Suitable PSO Algorithm for Many-Objective Optimization	166
<i>André Britto and Aurora Pozo</i>	
Self-Controlling Dominance Particle Swarm Optimization	172
<i>Olacir Rodrigues Castro Junior, André Britto, and Aurora Pozo</i>	
Effect of the PSO Topologies on the Performance of the PSO-ELM	178
<i>Elliackin M.N. Figueiredo and Teresa B. Ludermit</i>	
Particle Swarm Optimization Applied to the Dynamic Allocation Problem	184
<i>Jean L. Pierobom, Myriam R. Delgado, and Celso A.A. Kaestner</i>	

TS 9: Hybrid Intelligent Systems

Evolving Neural Networks Using Differential Evolution with Neighborhood-Based Mutation and Simple Subpopulation Scheme	190
<i>Nicole L. Mineu, Adenilton J. da Silva, and Teresa B. Ludermit</i>	
Extreme Learning for Evolving Hybrid Neural Networks	196
<i>Fernando Bordignon and Fernando Gomide</i>	
An Experimental Study of Ensemble Systems on Cancellable Iris	202
<i>Fernando Pinto and Anne M.P. Canuto</i>	
A Multiagent Approach for Metaheuristics Hybridization Applied to the Traveling Salesman Problem	208
<i>Givanaldo R. Souza, Elizabeth F.G. Goldberg, Marco C. Goldberg, and Anne M.P. Canuto</i>	

TS 10: Multiobjective Optimization

Electrical Transmission Lines Design through Integer Multiobjective Particle Swarm Optimization Approach	214
<i>Helon Vicente Hultmann Ayala, Leandro dos Santos Coelho, Fabio Alessandro Guerra, and Mariana Cristina Coelho</i>	
Harmony Search for Multi-objective Optimization	220
<i>Lucas M. Pavelski, Carolina P. Almeida, and Richard A. Gonçalves</i>	
ADEMO/D: Adaptive Differential Evolution for Multiobjective Problems	226
<i>Sandra M. Scós Venske, Richard A. Gonçalves, and Myriam R. Delgado</i>	

TS 11: Pattern Recognition

Using Katz Centrality to Classify Multiple Pattern Transformations	232
<i>Thiago H. Cupertino and Liang Zhao</i>	

An Object-Based Visual Selection Model with Bottom-Up and Top-Down Modulations	238
<i>Alcides X. Benicasa, Marcos G. Quiles, Liang Zhao, and Roseli A.F. Romero</i>	
A System Based on Swarm Particle Optimization to Extract Knowledge from Times Series Data	244
<i>Henrique C.T. Santos, Gabriela I.L. Alves, Neilson F. de Lima, Paulo S.G. de Mattos Neto, and Tiago A.E. Ferreira</i>	
Author Index	250