6th International Conference
"Neural Networks and Soft Computing"
Zakopane, Poland
June 11-15, 2002

Program

The papers have not been assigned to oral or poster presentations on the basis of their quality but with regard to their subject. Thus, the importance of the papers is not related to the form of the presentations.

Overhead and computer projectors will be available on all oral sessions. Posters should be prepared with the use of big fonts and figures and should not exceed 1,2m x 1,2m area. Please, **do not** use just copies of your papers (A4 size).
Enlarged version (A3) can be accepted, but printed forms of computer presentations (PowerPoint etc.) or transparencies are preferred at the poster sessions.

SIWARNA Hotel, Zakopane-Koscielisko, ul. Sywarne 32
Tel. +48 18 20 149 35, +48 18 20 144 20, tel./fax +48 18 201 46 83
The hotel is equipped with swimming-pool, sauna, solarium, gym, tennis court.
Internet connections (plugs and computers) will be available for the participants.

Outline

Tuesday, June 11	Wednesday, June 12	Thursday, June 13	Friday, June 14	Saturday, June 15
	8:00 Breakfast	**8:00** Breakfast	**8:00** Breakfast	**8:00** Breakfast
Registration	**9:00-10:30 W1** S. Amari O. Kaynak L. Koczy	**9:00-10:45 T1** K. Hirota V. Novak R. Setiono	**9:00-10:45 F1** I. Batyrshin V. Kurkova S. Usui	
	10:30-10:45 Coffee break	10:45-11:00 Coffee break	10:45-11:00 Coffee break	
	10:45-12:45 W2 Z. Bubnicki Z. Pawlak L. Zadeh	**11:00-12:45 T2** W. Kosiński B. Türkşen	**11:00-12:50 F2** S. Y. Lee H. Takagi B. Wilamowski,	
13:00 - Dinner	**13:00** - Dinner	**13:00** - Dinner	**13:00** - Dinner	
	14:00-15:20 Oral sessions **W3, W4, W5**	**14:00-15:20 T3** V. Kecman R. Takahashi	**14:00-15:20** Oral sessions **F3, F4, F5**	
15:00 OPENING CEREMONY L. Rutkowski R. Tadeusiewicz J. Żurada				
	15:20-15:30 Coffee break	15:20-15:30 Coffee break	15:20-15:30 Coffee break	
15:30 Tu1 W. Duch S. Raudys	**15:30-16:50** Oral sessions **W6, W7, W8**	**15:30-17:00** Poster Session **T4**	**15:30-16:50** Oral sessions **F6, F7, F8**	
	16:50-17:00 Coffee break		16:50-17:00 Coffee break	
17:00-17:15 Coffee break	**17:00-18:30** Poster Session **W9**		**17:00-18:30** Poster Session **F9**	
17:15-18:45 Tu2 P. Sincak P. Strumiłło, W. Kamiński				
19:00 Supper	**19:00** Supper, Social event	**19:00** Banquet	**19:00** Supper	

Detailed program

Tuesday, June 11

Time		
13:00-14:00	Dinner	
15:00	**Opening Ceremony Room A**	
		L. Rutkowski, Poland R. Tadeusiewicz, Poland J. Żurada, USA
15:30-17:00	**Invited Session Tu1 Room A**	
	Chairman: R. Tadeusiewicz, Poland	W. Duch, Poland **Understanding of Complex Data Using Computational Intelligence Tools** S. Raudys, Lithuania **On The Universality of The Single-Layer Perceptron Model**
17:00-17:15	Coffee break	
	Invited Session Tu2 Room A	
17:15-18:45	*Chairman: D. Rutkowska, Poland*	P. Sincak, Slovakia **Financial Fraud Identification Using MF-ARTMAP Neural Network** P. Strumiłło, W. Kamiński, Poland **Radial Basis Function Neural Networks: Theory and Applications**
19:00	Supper	

Wednesday, June 12

Time		
8:00–9:00	Breakfast	
9:00-10:30	**Invited Session W1 Room A**	
	Chairman: W. Duch, Poland	S. Amari, Japan **New Consideration on Criteria of Model Selection** O. Kaynak, Turkey **An Experimental Study of a VSS Theory Based Neural Network Controller** L. Koczy, Hungary **Interpolation in Hierarchical Rule Bases**
10:30-10:45	Coffee Break	
10:45-12:45	**Invited Session W2 Room A**	

Chairman: L. Rutkowski, Poland

Z. Bubnicki, Poland
Soft Variables as a Generalization of Uncertain, Random and Fuzzy Variables
Z. Pawlak, Poland
Decision Algorithms, Bayes' Theorem and Flow Graphs
L. Zadeh, USA
It is a Fundamental Limitation to Base Probability Theory on Bivalent Logic

13:00-14:00 Dinner

14:00-15:20

Session W3 Room A	Session W4 Room B	Session W5 Room C
Soft Computing in Classification and Pattern Recognition I	**Evolutionary Algorithms I**	**Medical Applications of Soft Computing I**
Chairman: Z. Hasiewicz, Poland	*Chairman: W. Kosiński, Poland*	*Chairman: J. Łęski, Poland*
Face Recognition/Detection by Clustering and Probabilistic Neural Networks *Capizzi G., Coco S., Giuffrida C., Laudani A., Pappalardo G.*	**A Floating-Point Based Evolutionary Algorithm for Model Parameters Extraction and Optimization in HBT Device Simulation** *Dr. Li Yiming, Sun Chuen-Tsat, Chen Cheng-Kai,*	**Can Neural Networks be Used to Define the Rules of Cardiovascular Disease Prevention in the Nutrition Domain?** *Borowiec A., Fronczyk K., Macukow B. Grzenda M.*
Fuzzy Bayesian Classifier: a Multi-Agent System for Information Retrieval in the Web *Cortés J. C. R., Sheremetov L. B.*	**Genetic Algorithm for Observer Parameters Tuning in Sensorless Induction Motor Drive** *Przybył A., Jelonkiewicz J.*	**Neural Expert System for Pharmaceutical Formulation Development – Focus on Solid Dispersions** *Mendyk A., Jachowicz R., Błasiak A.*
Reasoning in Structured Bayesian Networks *Kłopotek M.A.*	**Rule Extraction from Trained Neural Network with Evolutionary Algorithms** *Markowska-Kaczmar U., Chumieja M.*	**Using Artificial Neural Network as a Tool for Epidemiological Data Analysis** *Polak S., Mendyk A., Brandys J.*
Sequential Classification *Kołakowska A., Malina W.*	**Moving Objects in the Problem of Path Planning by Evolutionary Computation** *Śmierzchalski R., Łebkowski A.*	**A Neural Network Based Investigation of High Frequency Components of the ECG** *Tamošiunaite M., Raudys Š.*

15:20-15:30 Coffee break

15:30-16:50

Session W6 Room A	Session W7 Room B	Session W8 Room C
Soft Computing in Classification and Pattern Recognition II	**Evolutionary Algorithms II**	**Medical Applications of Soft Computing II**
Chairman: W. Malina, Poland	*Chairman: J. Mańdziuk, Poland*	*Chairman: S. Raudys, Lithuania*
Determining Relevant Input Dimensions for the Self-Organizing Map *Bojer T., Hammer B., Strickert M., Villmann T.*	**Investigation of the Neighborhood Attraction Evolutionary Algorithm based on Neural Gas** *Huhse J., Villmann T., Zell A.*	**A Practical Approach to Image Reconstruction From Projections Using Neural Networks Structure** *Cierniak R.*
The Use of Wide-frame Cepstrum in Speech Recognition *Brześcińska J., de Jastrzębiec Wykowski T.*	**A Fate of Two Evolutionary Walkers after the Departure from the Origin** *Imada A.*	**A Systolic Realisation of the Neuro-Tomograph** *Cierniak R., Smoląg J.*
A Posteriori Corrections to Classification Methods *Duch W., Itert Ł.*	**Genetic Algorithms with Adaptive Meta-heuristics for 2D Packing Problem** *Jagielski R.*	**An Investigation of Differential Skin Colonization of Neonates by Staphylococci, Using an Artificial Neural Network-Based System** *Cundell D.R., Sztandera L., Arbeter A., Morrone J.M.*
Competent Undemocratic Committees *Duch W., Itert Ł., Grudziński K.*	**Genetic Decryption of Columnar Transposition Code** *Kleszczyńska A., Szczepaniak P.*	**Evolutionary Computing Techniques for Diagnosis of Urinary Tract Infections in Vivo, Using Gas Sensors** *Kodogiannis V., Pavlou A. K., Chountas P., Turner A. P. F.*
Machine Learning Methods for Improving Gender Recognition From Stop Consonants *Łukasik E., Susmaga R.*		

	Automatic Ischemic Stroke Segmentation Using Various Techniques *Ušinskas A., Pranckeviciene E., Wittenberg T., Hastreiter P., Tomandl B.F.*
16:50-17:00	Coffee Break
17:00-18:30	**Poster Session W9**

Neural Networks

Population Learning Metaheuristic for Neural Network Learning
Czarnowski I., Jędrzejowicz P.

A Synaptic Indicator Based Approach for Hidden Parameters Extraction in Industrial Environment
Madani K., Berechet I.

Regression Hyper Surfaces with a Modified Neural Network Architecture
de Mingo L.F., Gisbert P., Carrillo J.D., Hernández C.,

Discrete Quasi-Gradient Features Weighting Algorithm
Jankowski N.

Evaluation of Dipolar Neural Networks in Survival Time Prediction
Krętowska M., Bobrowski L.

Input Ranking Revisited: A Theoretical Input Sensitivity Approach
Kang S., Isik C., Morphet S.

On the Node Complexity of Threshold Gate Circuits with Sub-linear Fan-ins
Beiu V.

Feature Selection Based on Information Theory Filters
Duch W., Biesiada J., Winiarski T., Grudziński K., Grąbczewski K.

Neural Network Designing without Learning
Dudek-Dyduch E., Gomółka Z.

On Very Large Scale Hamiltonian Neural Nets
Sienko W., Citko W.

How to Test Overfitting when There is not Enough Data for a Testing Set?
Rejer I., Piegat A.

Extended RBF Nets - Preliminary Studies
Rafajłowicz E.

On the Influence of Synaptic Dilution on Memory Properties of Artificial Neural Networks
Kosiński R., Sinołęcka M.M.

New Ontogenic Neural Network Classificator Based on Probabilistic Reasoning
Adrian Horzyk

Numerically Robust Learning Algorithms for Feed Forward Neural Networks
Bilski J., Rutkowski R.

Fuzzy Systems

New Index of Significance for Inputs Selection
Chimiak-Opoka J.

Membership Functions as Combinations of Expert's Knowledge with Population Information
Straszecka E., Straszecka J.

Towards More Human Consistent Reasoning via Intuitionistic Fuzzy Sets
Szmidt E, Kacprzyk J.

Fitting Fuzzy Membership Functions Using Particle Swarm Optimization
Esmin A.A.A., Aoki A. R., Lambert-Torres G.

Fuzzy Optimization Using Direct Crisp and Fuzzy Interval Comparison
Sevastjanov P., Rog P.

Fuzzy Relational Thesauri Expansion Using Categorized Textual Data
Tikk D., Yang Jae Dong

A New Approach to Fuzzy Constraints in Linear Programming
Banaś J.

Variable Precision Rough Sets in Analysis of Inconsistent Decision Tables
Mieszkowicz-Rolka A., Rolka L.

Triangular, Uni- and Balanced Norms: Aspects of Data Aggregation
Homenda W.

On a Linguistic Description of Dependencies in Data
Batyrshin I., Wagenknecht M.

Fuzzy Reliability Analysis
Mazurkiewicz J., Walkowiak T.

The Newton Interpolation Method with Fuzzy Numbers as the Entries
Rakus-Andersson E.

On sup - * Compositions of Fuzzy Implications
Baczyński M., Drewniak J., Sobera J.

19:00	Supper, Social Event

Thursday, June 13

Time	Session
8:00–9:00	Breakfast

Invited Session T1 Room A
9:00-10:45

Chairman: J. Kacprzyk, Poland

K. Hirota, Japan
Image Data Compression/Reconstruction by Fuzzy Relational Equation

V. Novak, Czech Republic
Formal Fuzzy Logic and its Use in Modeling of Vagueness and Computing with Words

R. Setiono, Singapore
A Hybrid Connectionist System for Multiple Regression

Time	
10:45-11:00	Coffee Break

Invited Session T2 Room A
11:00-12:45

Chairman: I. Batyrshin, Russia

W. Kosiński, Poland
On Algebraic Operations on Fuzzy Reals

B. Türkşen, Canada
Belief, Plausability and Probability Measures over Type 2 Fuzzy Sets

Time	
13:00-14:00	Dinner

Invited Session T3 Room A
14:00-15:20

Chairman: J. Żurada, USA

V. Kecman, New Zealand
Learning from Experimental Data by Support Vector Machines

R. Takahashi, Japan
Possible Application of Fuzzy Subset to High Performance Computing

Time	
15:20-15:30	Coffee Break

Poster Session T4
15:30-17:00

Neuro-Fuzzy Systems

Fuzzy Calculus by RBF Neural Networks
Kecman V., Li Z.
Simple Modification of Takagi-Sugeno Model
Butkiewicz B.S.
Generation of Fuzzy Neural Network Structure
Świątnicki Z., Olej V.
Applying Genetic Algorithm for Training Hybrid Neuro-Fuzzy Classifier - the *nfg*Class System
Grądzki P.
Extending Neuro-Fuzzy Classification to Semi-Supervised Learning

Various Methods of Soft Computing

Visualization of large data sets using MDS combined with LVQ
Naud A., Duch W.
Transformation Distances, Strings and Identification of DNA Promoters
Marczak M., Duch W., Grudziński K., Naud A.
Forests of Decision Trees
Grąbczewski K., Duch W.
Controlling the Asymptotic Level Density for Quantization Processes with Self-Organizing Maps

Memory Management in Artificial Immune System
Trojanowski K., Wierzchoń S.T.
Formal Neuro-Immune Network
Tarakanov A., Penev G., Madani K.
Conditional Belief Functions versus Proper Belief Functions
KłopotekM.A., Wierzchoń S. T.
Learning by Constraint Relaxation
Day J.
Solving Stochastic Shortest Path Problem Using Monte Carlo Sampling Method: a Distributed Learning Automata Approach
Meybodi M. R., Beigy H.

Klose A., Girimonte D., Kruse R.
Gradient Descent Based Optimization of Transparent Mamdani Systems
Riid A., Rüstern E.
An ε-insensitive Learning in Neuro-fuzzy Modeling
Łęski J., Henzel N.
A Fuzzy Relational System with Linguistic Certainty Factors
Scherer R., Rutkowski L.
A Neural Network Equivalent to a Neuro-fuzzy System for Classification
Rutkowska D.
Compromise Weighted Neuro - Fuzzy Systems
Cpałka K., Rutkowski L.
Soft Techniques for Bayesian Classification
Nowicki R., Rutkowski L.
Interval Type 2 Neuro-Fuzzy Systems based on Interval Consequents
Starczewski J., Rutkowski L.

Skubalska-Rafajłowicz E.
Regularization Background of Clustering Algorithms
Boguś P., Lewandowska K., Masulli F.
Simulated Annealing C-Means Clustering Algorithm Convergence Proof
Boguś P., Massone A.M., Masulli F.
Agent Populations as Computational Intelligence
Kisiel-Dorohinicki M., Dobrowolski G., Nawarecki E.

19:00	Banquet

Friday, June 14

8:00–9:00	Breakfast		
9:00-10:45	**Invited Session F1 Room A**		
	Chairman: L. Koczy, Hungary	I. Batyrshin, Russia **Generalized Conjunction, Disjunction and Negation Operations in Fuzzy Modeling** V. Kurkova, Czech Republic **High-dimensional Approximation by Neural Networks** S. Usui, Japan **Neuroinformatics Research in Vision**	
10:45-11:00	Coffee Break		
11:00-12:50	**Invited Session F2 Room A**		
	Chairman: K. Cios, USA	S. Y. Lee, Korea **Independent Component Analysis for Simultaneous Active Noise Canceling and Blind Signal Separation** H. Takagi, Japan **Introduction of Interactive Evolutionary Computation and Its Application to CG Creativity** B. Wilamowski, USA **Soft Computing in Hardware Implementations**	
13:00-14:00	Dinner		
14:00-15:20	**Session F3 Room A**	**Session F4 Room B**	**Session F5 Room C**
	Image Processing	**Soft Computing in Automatics**	**Economic Applications**

	Chairman: S. Usui, Japan	*Chairman: T. Kaczorek, Poland*	*Chairman: A. Piegat, Poland*

Chairman: S. Usui, Japan

A Software Platform for Evaluation of Neural Algorithms for Stereo Image Processing
Cyganek B., Borgosz J.

Sequential Analysis of Medical Images Using Neural Networks
Czeleń M., Wojtas G., Mikrut Z.

Medical Image Recognition Based on Fractal Features
Kącki E., Janaszewski M.

Improving Image Database Summarization by Automatic Image Feature Selection Using GA
Stejić Z., Iyoda E.M., Takama Y., Hirota K.

Chairman: T. Kaczorek, Poland

System Identification using Delaunay Tessellation of Self-Organizing Maps
Abonyi J., Szeifert F.

Training of Neural Network Wiener Models with Recursive Prediction Error Algorithm
Janczak A.

Dynamic GMDH type Neural Networks
Mrugalski M., Arinton E., Korbicz J.

Neural Network Reactive Navigation and Control of Wheeled Mobile Robot
Hendzel Z.

Chairman: A. Piegat, Poland

Dynamic Programming with NAR Model Versus Q-learning - Case Study
Chrobak J., Pacut A.

Evaluation of Economic Effectiveness of Provinces with Rough and Fuzzy Sets
Korzeń M., Piegat A.

Evolutionarily Developed Neural Networks for Investment Strategies Construction
Morajda J.

Credit Granting Procedure: Multilayer Perceptron and Classification Tree
Witkowska D., Staniec I.

15:20-15:30 Coffee break

15:30-16:50

Session F6 Room A

Neural Network Learning

Chairman: W. Kamiński, Poland

A Neural Network Based Approach For Sensors Issued Data Fusion
Chebira A., Madani K.

A Penalty Function to Obtain Satisfactory Local Models of Complex Systems
Drałus G., Świątek J.

Evolutionary algorithm vs. other methods for constructive optimisation of RBF network kernels
Koszlaga J., Strumiłło P.

Evolutionarily Developed Neural Networks for Investment Strategies Construction
Horzyk A.

Session F7 Room B

Neural Networks for Signal Processing

Chairman: M. Kłopotek, Poland

Generalized Spectrum Analysis by Means of Neural Networks
Grabowski D., Walczak J.

Wavelet Network for Recursive Function Learning
Hasiewicz Z.

Interpolation and Approximation of Models
Pelletier B.

Wavelet Network Estimating Regression Function
Śliwiński P.

Session F8 Room C

Mechanical Applications

Chairman: Z. Waszczyszyn, Poland

Reliability Analysis of Structure by Neural Network Supported Monte Carlo Methods
Kaliszuk J., Waszczyszyn Z.

BP Neural Network Computation of Response Spectra Using a Subpicture Idea
Kuźniar K.

Neural Networks in Updating of Dynamic Models with Experimental Verification
Miller B., Ziemiański L.

A Fuzzy Neural Network for the Analysis of Experimental Structural Mechanics Problems
Pabisek E., Jakubek M., Waszczyszyn Z.

Neural Network Identification of a Circular Hole in the Rectangular Plate
Piątkowski G., Ziemiański L.

Neural Analysis of Concrete Shrinkage
Urbańska A., Waszczyszyn Z.

16:50-17:00 Coffee Break

17:00-18:30

Poster Session F9

Various Applications

Evaluation of a Helicopter Model using Generalized Back Propagation Through Time
Fujarewicz K.

Neural Classifier for Bottom Sediments
Szulc D., Wąż M.

Neural Network Simulation of Energy Transfer Processes in a Membrane Protein System

Artificial Neural Network Predictive System for Oxygen Steelmaking Converter
Falkus J., Pietrzkiewicz P., Pietrzyk W., Kusiak J.

The WWW Based Data Mining Toolbox Architecture
Kurgan Ł., Cios K., Trombley M.

Decomposition and Argument Reduction of Neural Networks
Buciak P., Łuba T., Niewiadomski H., Pleban M., Sapiecha P., Selvaraj H.

Neural Network Based Benchmarks In Quality

Concept of Neural Model of the Sea Bottom Surface
Łubczonek J., Stateczny A.

Irregular Shape Particle Size Analysis Using Neural Network Approach
Rój E.

Short-term Load Forecasting For Energy Markets
Bartkiewicz W., Matusiak B.

Neural Network Modifiers of Nonlinear Dynamical Systems

Nazarov P.V., Apanasovich V.V., Lutkovski V.M., Hemminga M.A., Koehorst R.B.M.

Neural Network Approach to Acoustic Detection of Number of Vehicles
Walkowiak T., Żogał P.

Systolic Simulation of Hamming Neural Network
Mazurkiewicz J.

Probabilistic-Fuzzy Method of Ship Manoeuvre Safety Assessment in a Restricted Area
Pietrzykowski Z.

Short-term Weather Forecasting with Neural Networks
Jaruszewicz M., Mańdziuk J.

Response Surface Methodology at Irregular Grids Based on Voronoi Scheme with Neural Network Approximator
Pietraszek J.

Assessment Of Unkeyed Message Digest Algorithms For Secure Multimedia Communication Systems
Karras D.A., Zordakis V.

Correction of Non-linear Dynamic Properties of Temperature Sensors by the Use of ANN
Jackowska-Strumiłło L.

Traffic Flow Simulation - Cellular Automata with Fuzzy Rules Approach
Burzyński M., Cudny W., Kosiński W.

Performance of ROC Curves and LVQ Neural Networks in Detection of Middle Cerebral Artery Spasm
Świercz M., Mariak Z., Krejza J.,

Ossowski A.

Forecasting of Meteorologic Data by Artificial Neural Networks
Cigizoglu H. K.

An MLP Predictor of ELF Environmental Magnetic Fields Pollution
Capizzi G., Coco S., Giuffrida C., Laudani A., Pappalardo G., Pulverini R.

Method for Detection of Wheat Grain Damage with Application of Neural Networks
Kubiak A., Mikrut Z.

Systolic Architecture for Higher Order Neural Networks
Bilski J., Smoląg J.

Software Environments for Evolutionary Computations
Zola J., Wyrzykowski R.

19:00	Supper

Saturday, June 15

8:00–9:00	Breakfast