Table of Contents

Fuzzy Systems

A New Perspective on Reasoning with Fuzzy Rules ....................... 1
  D. Dubois, H. Prade, L. Ughetto

On Interpretability of Fuzzy Models ...................................... 12
  T. Furuhashi

Degree of Similarity in Fuzzy Partition ............................... 20
  R. Intan, M. Mukaidono

Fuzzy Set in Default Reasoning ........................................ 27
  S. Raha, S. Hossain

Interpolation in Hierarchical Rule-Bases with Normal Conclusions .... 34
  L.T. Kóczy, L. Maresan

The Dempster-Shafer Approach to Map-Building for an Autonomous Mobile Robot with Fuzzy Controller ........... 40
  Y.-C. Kim, S.-B. Cho, S.-R. Oh

The Fuzzy Model for Aircraft Landing Control ....................... 47
  S. Ionita, E. Sofron

Implementation of Nonlinear Fuzzy Models Using Microcontrollers .... 55
  S. Himavathi, B. Umamaheswari

A Gain Adaptive Fuzzy Logic Controller .............................. 62
  R.K. Mudi, K. Majumdar, C. Dey

A Traffic Light Controlling FLC Considering the Traffic Congestion .... 69
  W.K. Choi, H.S. Yoon, K. Kim, I.Y. Chang, S.J. Lee

Vehicle Routing, Scheduling and Dispatching System Based on HIMS Model ...................................................... 76
  K. Hirota, F. Dong, K. Chen, Y. Tukama

Similarity between Fuzzy Multi-objective Control and Eligibility .......... 85
  H.-C. Myung, Z.Z. Bien

A Fuzzy Goal Programming Approach for Solving Bilevel Programming Problems ................................................. 91
  B.N. Moitra, B.B. Pal
Table of Contents

Material Handling Equipment Selection
by Fuzzy Multi-criteria Decision Making Methods
S.K. Deb, B. Bhattacharyya, S.K. Sorkhel

Soft Computing – Theory and Applications
The Rough Set View on Bayes’ Theorem
Z. Pawlak

Verbalizing Computers – A Way to Everyday Language Computing
M. Sugeno

Soft Computing Based Emotion/Intention Reading for Service Robot
Z.Z. Bien, J.-B. Kim, D.-J. Kim, J.-S. Han, J.-H. Do

Generalization of Rough Membership Function
Based on $\alpha$-Coverings of the Universe
R. Intan, M. Mukaidono

A Class of Quantitative-Qualitative Measures of Directed-Divergence
H.C. Taneja

$(\alpha, \beta)$ Reduction of Decision Table: A Rough Approach
S. Ghosh, S.S. Alam

Wavelet Transform Based Fuzzy Inference System
for Power Quality Classification
A.K. Tiwari, K.K. Shukla

A Fuzzy-Neural Technique for Flashover Diagnosis
of Winding Insulation in Transformers
A. De, N. Chatterjee

Feature Identification for Fuzzy Logic Based Adaptive Kalman Filtering
A. Mukherjee, P.P. Adhikari, P.K. Nandi

Soft-Biometrics: Soft-Computing Technologies
for Biometric-Applications
K. Franke, J. Ruiz-del-Solar

Comparative Study between Different Eigenspace-Based Approaches
for Face Recognition
P. Navarrete, J. Ruiz-del-Solar

Static Signature Verification Employing a Kosko-Neuro-fuzzy Approach
K. Franke, Y.-N. Zhang, M. Köppen
A Control Analysis of Neuronal Information Processing:
A Study of Electrophysiological Experimentation
and Non-equilibrium Information Theory ............................. 191
  P.K. Roy, J.P. Miller, D. Dutta Majumder

Neural Networks

Modeling of Nonlinear Systems by Employing Self-Organization
and Evaluation – SOR Network ........................................ 204
  T. Yamakawa, K. Horio

Characterization of Non-linear Cellular Automata Model
for Pattern Recognition .................................................. 214
  N. Ganguly, P. Maji, A. Das, B.K. Sikdar, P. Pal Chaudhuri

On Convergence of a Neural Network Model Computing MSC ........ 221
  S.K. Parui, A. Datta

Recognition of Handprinted Bangla Numerals
Using Neural Network Models ........................................... 228

Optimal Synthesis Method for Binary Neural Network Using NETLA .... 236

A Neural Network Based Seafloor Classification
Using Acoustic Backscatter ............................................. 245
  B. Chakraborty

Neuro-fuzzy Systems

Designing Rule-Based Classifiers with On-Line Feature Selection:
A Neuro-fuzzy Approach .................................................. 251
  D. Chakraborty, N.R. Pal

Decomposed Neuro-fuzzy ARX Model ................................. 260
  M. Golob, B. Tovornik

Weather Forecasting System Based on Satellite Imageries
Using Neuro-fuzzy Techniques ......................................... 267
  C.-W. Tham, S.-H. Tian, L. Ding

Evolutionary Subsethood Product Fuzzy Neural Network ............ 274
  C.S. Velayutham, S. Paul, S. Kumar

VSS Learning Based Intelligent Control of a Bioreactor System ........ 281
  U. Yildiran, O. Kaynak
## Pattern Recognition

Some Notes on Alternating Optimization ........................................ 288  
   *J.C. Bezdek, R.J. Hathaway*

Noisy Speech Segmentation/Enhancement with Multiband Analysis  
and Neural Fuzzy Networks .................................................. 301  
   *C.-T. Lin, D.-J. Liu, R.-C. Wu, G.-D. Wu*

Towards Optimal Feature and Classifier  
for Gene Expression Classification of Cancer .......................... 310  
   *J. Ryu, S.-B. Cho*

Fuzzy C-Means Clustering-Based Speaker Verification ............. 318  
   *D. Tran, M. Wagner*

Noise Clustering-Based Speaker Verification .......................... 325  
   *D. Tran, M. Wagner*

A Combination Scheme for Fuzzy Clustering .......................... 332  
   *E. Dimitriadou, A. Weingessel, K. Hornik*

Clustering of Symbolic Data and Its Validation ........................ 339  
   *K. Mali, S. Mitra*

Generalised Fuzzy Hidden Markov Models for Speech Recognition .... 345  
   *D. Tran, M. Wagner*

On Generalization and K-Fold Cross Validation Performance  
of MLP Trained with EBPDT ............................................... 352  
   *P. Roy Chowdhury, K.K. Shukla*

## Image Processing

Pictorial Indexes and Soft Image Distances .......................... 360  
   *V. Di Gesù, S. Roy*

Stereo Correspondence Using a Fuzzy Approach ..................... 367  
   *S. Srinivas Kumar, B.N. Chatterji*

Implementation of BTTC Image Compression Algorithm  
Using Fuzzy Technique ..................................................... 375  
   *M.V.N.K. Prasad, K.K. Shukla, R.N. Mukherjee*

Applications of the ILF Paradigm in Image Processing ............ 382  
   *A. Soria-Frisch*

On OCR of Degraded Documents Using Fuzzy Multifactorial Analysis ... 388  
   *U. Garain, B.B. Chaudhuri*
A Bootstrapped Modular Learning Approach for Scaling and Generalisation of Grey-Level Corner Detection
   R. Kumar, P. Rockett

Towards Fuzzy Calibration
   C.V. Jawahar, P.J. Narayanan

Fuzzy-Similarity-Based Image Noise Cancellation
   G. Tolt, I. Kalaykov

Evolutionary Computation

Genetic-Fuzzy Approach in Robot Motion Planning Revisited:
   Rigorous Testing and towards an Implementation
   A. Mohan, K. Deb

Evolutionary Approaches to Rule Extraction
   for Fuzzy Logic Controllers
   T. Pal

Regular Grammatical Inference: A Genetic Algorithm Approach
   P. Pawar, G. Nagaraja

Parallelized Crowding Scheme Using a New Interconnection Model
   P.K. Nanda, D.P. Muni, P. Kanungo

A GA-FUZZY Approach to Evolve Hopfield Type Optimum Networks
   for Object Extraction
   S. Ghosh, A. Ghosh

Data Mining

Soft Computing in E-Commerce
   R. Krishnapuram, M. Kumar, J. Basak, V. Jain

Info-Miner: Bridging Agent Technology
   with Approximate Information Retrieval
   V. Loia, P. Luongo, S. Senatore, M.I. Sessa

Fuzzy Mathematics

Fuzzy Points and Fuzzy Prototypes
   J.M. Barone

Some Injective Cogenerators in Fuzzy Topology
   A.K. Srivastava

Derivative and Differential of Convex Fuzzy Valued Functions
   and Application
   W. Congxin, W. Guixiang, W. Cong
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Topology for Fuzzy Automata</td>
<td>485</td>
</tr>
<tr>
<td>A.K. Srivastava, S.P. Tiwari</td>
<td></td>
</tr>
<tr>
<td>Fuzzy Number Linear Programming: A Probabilistic Approach</td>
<td>491</td>
</tr>
<tr>
<td>H.R. Maleki, H. Mishmast N., M. Mashinchi</td>
<td></td>
</tr>
<tr>
<td>Composition of General Fuzzy Approximation Spaces</td>
<td>497</td>
</tr>
<tr>
<td>J. Mi, W. Zhang</td>
<td></td>
</tr>
<tr>
<td>The Lower and Upper Approximations of Fuzzy Sets in a Fuzzy Group</td>
<td>502</td>
</tr>
<tr>
<td>D. Chen, W. Zhang</td>
<td></td>
</tr>
<tr>
<td>T-Fuzzy Hyperalgebraic Systems</td>
<td>509</td>
</tr>
<tr>
<td>R. Ameri, M.M. Zahedi</td>
<td></td>
</tr>
<tr>
<td>On Some Weaker Forms of Fuzzy Compactness</td>
<td>515</td>
</tr>
<tr>
<td>R.N. Bhaumik</td>
<td></td>
</tr>
<tr>
<td>Some Results on Fuzzy Commutative and Fuzzy Cyclic Subgroups</td>
<td>520</td>
</tr>
<tr>
<td>S.K. Bhakat</td>
<td></td>
</tr>
<tr>
<td>Fuzzy Hypotheses Testing with Fuzzy Data: A Bayesian Approach</td>
<td>527</td>
</tr>
<tr>
<td>S.M. Taheri, J. Behboodian</td>
<td></td>
</tr>
<tr>
<td>Author Index</td>
<td>535</td>
</tr>
</tbody>
</table>