2011 IEEE 5th International Workshop on Genetic and Evolutionary Fuzzy Systems

(GEFS 2011)

Paris, France
11 – 15 April 2011
TABLE OF CONTENTS

GEFS 2011 COMMITTEE ......................................................................................................................................... vi
GEFS 2011 KEYNOTE ........................................................................................................................................... viii

Friday, April 15

08:30 - 10:30

S108: Classification and Data Mining
Chair: Rafael Alcalá (University of Granada, Spain)

Multi-objective Design of Highly Interpretable Fuzzy Rule-Based Classifiers With Semantic Cointension......................................................................................................................................................................................................................................................... 1
Raffaele Cannone (University of Bari, Italy)
Jose Alonso (European Centre for Soft Computing, Spain)
Luis Magdalena (European Centre for Soft Computing, Spain)

Evolving Temporal Fuzzy Itemsets from Quantitative Data with a Multi-Objective Evolutionary Algorithm................................................................................................................................................................................................................................................................. 9
Stephen G. Matthews (De Montfort University, United Kingdom)
Mario Gongora (De Montfort University, United Kingdom)
Adrian A Hopgood (De Montfort University, United Kingdom)

Analysis of the Impact of Using Different Diversity Functions for the Subgroup Discovery Algorithm NMEEF-SD .............................................................................................................................................................................................................................................. 17
Cristóbal J. Carmona (University of Jaen, Spain)
Pedro González (University of Jaen, Spain)
Maria Jose Del Jesus (University of Jaen, Spain)
Francisco Herrera (University of Granada, Spain)

A Fast Iterative Rule-Based Linguistic Classifier for Hyperspectral Remote Sensing Tasks ......................... 24
Dimitrios Stavrakoudis (Aristotle University of Thessaloniki, Greece)
Georgia Galidakis (Aristotle University of Thessaloniki, Greece)
Ioannis Gitas (Aristotle University of Thessaloniki, Greece)
John Theocharis (Aristotle University of Thessaloniki, Greece)

Double Cross-Validation for Performance Evaluation of Multi-Objective Genetic Fuzzy Systems ............... 31
Hisao Ishibuchi (Osaka Prefecture University, Japan)
Yusuke Nakashima (Osaka Prefecture University, Japan)
Yusuke Nojima (Osaka Prefecture University, Japan)
11:00 - 12:00

S109: GEFS - Keynote
Chair: Rafael Alcalá (University of Granada, Spain)

Multi-objective Evolutionary Learning of Fuzzy Rule-based Systems for Regression Problems
Francesco Marcelloni (University of Pisa, Italy)

14:00 - 16:00

S110: Regression and Control
Chair: Yusuke Nojima (Osaka Prefecture University, Japan)

Dealing with Three Uncorrelated Criteria by Many-Objective Genetic Fuzzy Systems ........................................ 39
Michel González (Universidad Central Marta Abreu de Las Villas, Cuba)
Jorge Casillas (University of Granada, Spain)
Carlos Morell (Universidad Central Marta Abreu de Las Villas, Cuba)

Multi-objective Evolutionary Generation of Mamdani Fuzzy Rule-Based Systems based on Rule and Condition Selection ........................................................................................................... 47
Michela Antonelli (Dip. Ingegneria dell' Informazione Università di Pisa Italy, Italy)
Pietro Ducange (University of Pisa, Italy)
Beatrice Lazzerini (University of Pisa, Italy)
Francesco Marcelloni (University of Pisa, Italy)

Implementation of Fuzzy NARX IMC PID Control of PAM Robot Arm Using Modified Genetic Algorithms .................................................................................................................................................. 54
Ho Pham Huy Anh (HCM City University of Technology, Vietnam)

Body Posture Recognition By Means Of A Genetic Fuzzy Finite State Machine....................................................... 60
Alberto Alvarez-Alvarez (European Centre for Soft Computing, Spain)
Gracian Trivino (European Centre for Soft Computing, Spain)
Oscar Cordon (European Centre for Soft Computing, Spain)

A Hybrid Continuity Preserving Inference Strategy to Speed Up Takagi-Sugeno Multiobjective Genetic Fuzzy Systems .......................................................................................................................................... 66
Marco Cococcioni (NATO Undersea Research Centre, Italy)
Raffaele Grasso (NURC, Italy)
Michel Rixen (NATO Undersea Research Centre, Italy)

Evolutionary Multi-Objective Algorithm to Effectively Improve the Performance of the Classic Tuning of Fuzzy Logic Controllers for a Heating, Ventilating and Air Conditioning System ........................................ 73
Maria José Gacto (University of Jaén, Spain)
Rafael Alcalá (University of Granada, Spain)
Francisco Herrera (University of Granada, Spain)
16:30 - 17:30

S111: Applications
Chair: Yusuke Nojima (Osaka Prefecture University, Japan)

A Discussion On The Accuracy-Complexity Relationship In Modelling Fish Habitat Preference Using Genetic Takagi-Sugeno Fuzzy Systems ................................................................. 81
  Shinji Fukuda (Kyushu University, Japan)
  Bernard De Baets (Ghent University, Belgium)
  Willem Waegeman (Ghent University, Belgium)
  Ans Mouton (Research Institute for Nature and Forest (INBO), Belgium)
  Jun Nakajima (Fukuoka Institute of Health and Environmental Sciences, Japan)
  Takahiko Mukai (Gifu University, Japan)
  Norio Onikura (Kyushu University, Japan)

KASIA Approach vs. Differential Evolution in Fuzzy Rule-Based Meta-Schedulers for Grid Computing..... 87
  Rocio P. Prado (University of Jaen, Spain)
  Sebastian García-Galán (University of Jaen, Spain)
  Jose Enrique Muñoz Expósito (University of Jaen, Spain)

A Fuzzy Genetic System for Segmentation of On-line Handwriting: Application to ADAB Database .......... 95
  Sourour Njah (REGIM, University of Sfax, National Engineering School of Sfax, Tunisia)
  Hala Bezine (REGIM, University of Sfax, National Engineering School of Sfax, Tunisia)
  Adel M. Alimi (REGIM, University of Sfax, National Engineering School of Sfax, Tunisia)

  Tracy Pik Yin Mok (The Hong Kong Polytechnic University, Hong Kong)

Iterative Rule Learning of Quantified Fuzzy Rules for control in mobile robotics ................................. 111
  Ismael Rodriguez-Fdez (University of Santiago de Compostela, Spain)
  Manuel Mucientes (University of Santiago de Compostela, Spain)
  Alberto J Bugarín (University of Santiago de Compostela, Spain)

AUTHOR INDEX .................................................................................................................................................... 119