

# **2011 IEEE Symposium on Computational Intelligence in Multicriteria Decision-Making**

**(MDCM'4233)**

**Paris, France  
11 – 15 April 2011**



**IEEE Catalog Number: CFP3120N-PRT  
ISBN: 978-1-61284-068-0**

## TABLE OF CONTENTS

<b>MCDM 2011 COMMITTEE</b> .....	<i>vii</i>
<b>MCDM 2011 TUTORIALS</b> .....	<i>ix</i>
<b>MCDM 2011 TECHNICAL SESSIONS</b> .....	<i>1</i>
<b>Tuesday, April 12</b>	
<b>09:30 - 10:30</b>	
<b>S134: Computational Intelligence in Industry</b> Chair: Yaochu Jin (University of Surrey, United Kingdom)	
<b>Using Q-Learning to Model Bidding Behaviour in Electricity Market Simulation</b> .....	<b>1</b>
Zhiqiang Liao (Monash University, Australia) Ly-Fie Sugianto (Monash University, Australia)	
<b>A Low Complexity Evolutionary Algorithm for Multi-User MIMO Detection</b> .....	<b>8</b>
Saeed Ashrafinia (Simon Fraser University, Canada) Muhammad Naeem (Simon Fraser University, Canada) Daniel Lee (Simon Fraser University, Canada)	
<b>New Parallel Support Vector Regression for Predicting Building Energy Consumption</b> .....	<b>14</b>
Hai-xiang Zhao (Ecole Centrale Paris, France) Frédéric Magoulès (Ecole Centrale Paris, France)	
<b>11:00 - 13:00</b>	
<b>S135: MCDM - Tutorial</b>	
<b>An Introduction to Computational Intelligence in Multi-Criteria Decision-Making: The Intersection of Search, Preference Tradeoff, and Interaction Visualization</b> Piero Bonissone (General Electric Global Research, USA)	
<b>14:00 - 15:40</b>	
<b>S136: Decision Making, Optimization and Learning</b> Chair: Yaochu Jin (University of Surrey, United Kingdom)	
<b>Applying DPSO with Dynamic Diversity to Books Selection Problem</b> .....	<b>22</b>
Tsu-Feng Ho (Ming Chuan University, Taiwan) Shyong Jian Shyu (Ming Chuan University, Taiwan) Yi Ling Wu (National Chiao Tung University, Taiwan) Bertrand M.T. Lin (National Chiao Tung University, Taiwan)	

<b>An Adaptation of the GAIA Visualization Method for Cartography</b> .....	<b>29</b>
Karim Lidouh (Université Libre de Bruxelles, Belgium)	
Yves De Smet (Université Libre de Bruxelles, Belgium)	
Esteban Zimányi (Université Libre de Bruxelles (ULB), Belgium)	
<b>A Confidence-Based Recommender with Adaptive Diversity</b> .....	<b>36</b>
Khalid Alodhaibi (George Mason University, USA)	
Alexander Brodsky (George Mason University, USA)	
George A Mihaila (IBM T. J. Watson Research Center, USA)	
<b>Integrating Multi-Criteria Collaborative Filtering and Trust Filtering for Personalized Recommender Systems</b> .....	<b>44</b>
Qusai Shambour (University of Technology, Sydney, Australia)	
Lu Jie (University of Technology Sydney, Australia)	
<b>Evolving a Non-playable Character Team with Layered Learning</b> .....	<b>52</b>
Sean Mondesire (University of Central Florida, USA)	
R. Paul Wiegand (University of Central Florida, USA)	
<b>10:30 - 16:30</b>	
<b>PS16: MCDM - 2011</b>	
<b>Poster Session</b>	
<b>Decision-Making on the Liquefied Natural Gas (LNG) Projects using Game Theory</b> .....	<b>60</b>
Luis Castillo (Norwegian University of Science and Technology (NTNU), Norway)	
Carlos Dorao (Norwegian University of Science and Technology (NTNU), Norway)	
<b>Supporting Nuclear Safety Culture Assessment Using Intelligent Decision System</b> .....	<b>67</b>
Dong-Ling Xu (The University of Manchester, United Kingdom)	
Da Ruan (Belgian Nuclear Research Centre, Belgium)	
Jian-Bo Yang (The University of Manchester, United Kingdom)	
<b>16:30 - 18:30</b>	
<b>S137: Evolutionary Multiobjective Optimization</b>	
Chair: Piero Bonissone (General Electric Global Research, USA)	
<b>Evolutionary Multiobjective Optimization for Memory-Encoding Controllers in the Artificial Ant Problem</b> .....	<b>73</b>
DaeEun Kim (Yonsei University, Korea)	
<b>Multi-Objective Optimisation of Cancer Chemotherapy using Smart PSO with Decomposition</b> .....	<b>81</b>
Noura Al Moubayed (Robert Gordon University, United Kingdom)	
Andrei V. Petrovski (Robert Gordon University, United Kingdom)	
John McCall (Robert Gordon University, United Kingdom)	
<b>A Performance Comparison of Multi-objective Optimization Evolutionary Algorithms for All-Optical Networks Design</b> .....	<b>89</b>
Danilo R. B. Araújo (University of Pernambuco, Brazil)	
Carmelo J A Bastos-Filho (University of Pernambuco, Brazil)	
Erick Barboza (University of Pernambuco, Brazil)	
Daniel A R Chaves (Federal University of Pernambuco, Brazil)	
Joaquim F. Martins-Filho (Federal University of Pernambuco, Brazil)	

<b>Studying the SPEA2 Algorithm for Optimising a Pattern-Recognition Based Machine Translation System .....</b>	<b>97</b>
Sokratis Sofianopoulos (Institute for Language and Speech Processing (ILSP), Greece)	
George Tambouratzis (Institute for Language & Speech Processing, Greece)	
<b>An Adaptive Multi-Objective Evolutionary Algorithm With Human-Like Reasoning For Enhanced Decision-Making in Building Design .....</b>	<b>105</b>
Michael S. Bittermann (Delft University of Technology, The Netherlands)	
I. Sevil Sariyildiz (Delft University of Technology, The Netherlands)	
<b>Many-Objective Test Problems with Multiple Pareto Optimal Regions in a Decision Space .....</b>	<b>113</b>
Hisao Ishibuchi (Osaka Prefecture University, Japan)	
Naoya Akedo (Osaka Prefecture University, Japan)	
Hiroyuki Ohyanagi (Osaka Prefecture University, Japan)	
Yasuhiro Hitotsuyanagi (Osaka Prefecture University, Japan)	
Yusuke Nojima (Osaka Prefecture University, Japan)	
 <b>Wednesday, April 13</b>	
<b>08:30 - 10:30</b>	
<b>S138: Decision Making</b>	
Chair: Yaochu Jin (University of Surrey, United Kingdom)	
<b>A Strategic Bargaining Decision Support Model for Project-based Alliance.....</b>	<b>121</b>
Min-Ren Yan (Chinese Culture University (SCE), Taiwan)	
Sheng-Tun Li (National Cheng Kung University, Taiwan)	
<b>One Weight Plus One Andness Per Criterion.....</b>	<b>129</b>
Benoit Bagot (TU Dortmund, Germany)	
<b>A Hybrid Model in the Selection of Prototypes for Educational Tools: An Applicability In Verbal Decision Analysis .....</b>	<b>135</b>
Thais Cristina Sampaio Machado (University of Fortaleza, Brazil)	
Andréa Carvalho Menezes (University of Fortaleza Brazil, Brazil)	
Isabelle Tamanini (University of Fortaleza Brazil, Brazil)	
Placido Rogerio Pinheiro (University of Fortaleza, Brazil)	
<b>Preferred solutions computed with a label setting algorithm based on Choquet integral for Multi-Objective Shortest Paths .....</b>	<b>143</b>
Hugo Fouchal (University of Nantes, France)	
Xavier Gandibleux (University of Nantes, France)	
Fabien Lehuédé (Ecole des Mines de Nante, France)	
<b>A New Decision Making Method with Uncertain Induced Aggregation Operators.....</b>	<b>151</b>
Montserrat Casanovas (University of Barcelona, Spain)	
José M. Merigó (University of Barcelona, Spain)	

<b>Selecting The Best Portfolio Alternative From A Hybrid Multiobjective GA-MCDM Approach For New Product Development In The Pharmaceutical Industry.....</b>	<b>159</b>
Luis Fernando Morales Mendoza (LGC-CNRS-INP Université de Toulouse, France)	
Jose Luis Perez Escobedo (LGC-CNRS-INP Université de Toulouse, France)	
Catherine Azzaro-Pantel (LGC-CNRS-INP Université de Toulouse, France)	
Luc Pibouleau (LGC-CNRS-INP Université de Toulouse, France)	
Serge Domenech (LGC-CNRS-INP Université de Toulouse, France)	
Alberto Aguilar-Lasserre (Instituto Tecnológico de Orizaba, Mexico)	

**11:00 - 13:00**

**S139: Multi-Objective Optimization and Classification**  
Chair: Piero Bonissone (General Electric Global Research, USA)

<b>Design-Informatics Approach Applicable to Real-World Problem.....</b>	<b>167</b>
Kazuhisa Chiba (Hokkaido Institute of Technology, Japan)	
Yoshikazu Makino (Japan Aerospace Exploration Agency, Japan)	
Takeshi Takatoya (Japan Aerospace Exploration Agency, Japan)	

<b>An Approximation Algorithm for Convex Multiplicative Programming Problems .....</b>	<b>175</b>
Lizhen Shao (University of Science and Technology Beijing, P.R. China)	
Matthias Ehrgott (The University of Auckland, New Zealand)	

<b>An Efficient Multi-Objective Optimization Approach for Online Test Paper Generation .....</b>	<b>182</b>
Minh Luan Nguyen (Nanyang Technological University, Singapore)	
Siu Cheung Hui (Nanyang Technological University, Singapore)	
Acm Fong (Nanyang Tech University, Singapore)	

<b>Combining One Class Classification Models for Avian Influenza Outbreaks.....</b>	<b>190</b>
Jie Zhang (University of Technology, Sydney, Australia)	
Jie Lu (University of Technology, Sydney, Australia)	
Guangquan Zhang (University of Technology, Sydney, Australia)	

<b>Rule-Based Classification By Means of Bipolar Criteria.....</b>	<b>197</b>
J. Tinguaro Rodríguez (Complutense University of Madrid, Spain)	
Begoña Vitoriano (Complutense University of Madrid, Spain)	
Javier Montero (Complutense University of Madrid, Spain)	

<b>A Novel Calibration Method of Parallel Kinematic Manipulators based on Multi-Population Coevolutionary Neural Network.....</b>	<b>205</b>
Dan Zhang (University of Ontario Institute of Technology, Canada)	
Zhen Gao (University of Ontario Institute of Technology, Canada)	
Peigang Jiang (Qingdao Technological University, P.R. China)	

**14:00 - 1600**

**S140: Tutorial**

**A Tutorial on Evolutionary Multi-Objective Machine Learning**  
Yaochu Jin (University of Surrey, United Kingdom)

<b>AUTHOR INDEX.....</b>	<b>212</b>
--------------------------	------------