

## CONTENTS

Preface .....	IX
Scientific Programme .....	1
Author Listing.....	119

### INVITED PRESENTATIONS

<b>Granular Computing: A new Paradigm in Information Processing</b> JingTaoYao .....	5
<b>Verification and Validation of Neuro-adaptive Aircraft Control Systems</b> Johann Schumann, Yan Liu and Pramod Gupta .....	7
<b>Glorious Accidents or Expected Results?</b> Peter Grogono.....	9

### SOFT COMPUTING THEORY AND PRACTICE

<b>Toward Human Level Machine Intelligence - Is it Achievable? The Need for a Paradigm Shift</b> Lotfi A. Zadeh .....	13
<b>Modeling Numerical and Spatial Uncertainty in Grayscale Image Capture using Fuzzy Set Theory</b> M. Nachtegael, P. Sussner, T. Mélange and E.E. Kerre .....	15
<b>A Granular Unified Min-Max Fuzzy-Neuro Framework for Learning Fuzzy Systems</b> Mokhtar Beldjehem .....	23
<b>Prediction of Ferrous Bio-oxidation Rate in a Packed Bed Bioreactor using Artificial Neural Network</b> Hasan Yousefi, S. Mohammad Mousavi, Arezou Jafari and Azita Soleymani..	31
<b>Extension of Rank Based Ant System with Exponential Pheromone Deposition for Speed-up and Improved Accuracy</b> Ayan Acharya, Aritra Banerjee, Amit Konar and Mokhtar Beldjehem .....	37

### SIMULATION BASED SOFTWARE ENGINEERING

<b>Computation with Imprecise Probabilities</b> Lotfi A. Zadeh .....	45
---	----

## **CONTENTS**

<b>Monte Carlo Validation of Model Stability</b> Pierre N. Robillard and Simon Labelle.....	<b>47</b>
<b>Standard Error Estimation for EM Applications related to Latent Class Models</b> Liberato Camilleri .....	<b>52</b>
<b>A Petri net framework for the modeling, simulation and data analysis of biological models</b> Simon Hardy and Pierre N. Robillard.....	<b>57</b>
<b>A Granular Unified Framework for a Machine Visual System</b> Mokhtar Beldjehem .....	<b>63</b>

## **WEB COMPUTING AND COGNITIVE SIMULATION FOR PROBLEM SOLVING**

<b>A New Frontier in Computation: Computation with Information described in Natural Language</b> Lotfi A. Zadeh.....	<b>73</b>
<b>Simulation of a Human Machine Interaction: Locate Objects Using a Contextual Assistant</b> Chikhaoui Belkacem and Pigot Hélène .....	<b>75</b>
<b>A Granular Framework for Recognition of Arabic Handwriting: The GOAVMREC System</b> Mokhtar Beldjehem .....	<b>81</b>
<b>Behavior Based Predictive Motion Controller for a Mobile Robot</b> Krzysztof Skrzypczyk, Krzysztof Fujarewicz and Adam Galuszka .....	<b>89</b>
<b>Cognitive Modeling of a Cooking Activity: Integration of the Contention Scheduling Theory in the Cognitive Architecture ACT-R</b> Pierre-Yves Groussard and Hélène Pigot.....	<b>94</b>
<b>Developing an Ontology Extraction Agent for a Biomedical Learning Social Network</b> S. Mohammed, J. Fiaidhi and O. Mohammed .....	<b>99</b>

## **INDUSTRIAL APPLICATIONS**

<b>Moving Containers in Small Terminal as Strips Planning Problem- Preliminary Results</b> Adam Galuszka and Krzysztof Skrzypczyk .....	<b>107</b>
--	------------

## **CONTENTS**

- Introduction to Comparison of Traditional and Virtual Patterns Design in 3D**  
Agnieszka Cichocka and Pascal Bruniaux ..... 110