

**Monday, July 19, 2010****[S016-1] Special Session: Computational Intelligence in Bioinformatics, Computational Biology, and Bioengineering I**

Monday, July 19, 8:40AM-10:00AM, Room: 133

Chair: Michael A. Lones, Jung-Hsien Chiang, Alexandru Floares, Gilles Bernot, Alioune Ngom, Francesco Masulli

- 8:40AM** *A Dynamic Graph to Fold Amino Acid Interaction Networks* [#7104]. Omar Gaci
- 9:00AM** *Genetic Algorithm Feature-Based Resampling for Protein Structure Prediction* [#7451]. Trent Higgs, Bela Stantic, Tamjidul Hoque and Abdul Sattar
- 9:20AM** *Clustered Memetic Algorithm for Protein Structure Prediction* [#7555]. Md Kamrul Islam and Madhu Chetty
- 9:40AM** *A Study of RNA Secondary Prediction Using Different Mutation Operators* [#7872]. Herbert H. Tsang, Tiancheng Jiang, Kay C. Wiese and Christian Jacob

**[S106-1] Special Session: Advances in Clustering Methods and Their Applications I**

Monday, July 19, 8:40AM-10:00AM, Room: 134

Chair: Huseyin Seker, James C. Bezdek

- 8:40AM** *A Surface Reconstruction Method Based on Self-organizing Maps and Intrinsic Delaunay Triangulation* [#545]. Renata Lucia Mendonca Ernesto do Rego and Aluizio Fausto Ribeiro Araujo
- 9:00AM** *Improved Kohonen Feature Map Probabilistic Associative Memory based on Weights Distribution* [#522]. Shingo Noguchi and Yuko Osana
- 9:20AM** *Self Organizing Maps with the Correntropy Induced Metric* [#177]. Rakesh Chalasani and Jose Principe

**[PL-1] Plenary Talk: Sushmita Mitra****“Hybridization with Rough Sets”**

Monday, July 19, 10:30AM-11:30AM, Room: 117

Chair: Fernando Gomide

**[S016-2] Special Session: Computational Intelligence in Bioinformatics, Computational Biology, and Bioengineering II**

Monday, July 19, 11:30AM-12:50PM, Room: 133

Chair: Michael A. Lones, Jung-Hsien Chiang, Alexandru Floares, Gilles Bernot, Alioune Ngom, Francesco Masulli

- 11:30AM** *Gene Ontology Classification: Building High-level Knowledge using Genetic Algorithms* [#7893]. Laurence Amaral and Estevam Hruschka
- 11:50AM** *Binary-Organoid Particle Swarm Optimisation for Inferring Genetic Regulatory Networks* [#8005]. Santi Chanthaphavong and Madhu Chetty
- 12:10PM** *Simplified Chain Folding Models as Metaheuristic Benchmark for Tuning Real Protein Folding Algorithms?* [#7394]. Dragos Horvath and Camelia Chira

**12:30PM** *Parameter Estimation with Term-wise Decomposition in Biochemical Network GMA Models by Hybrid Regularized Least Squares-Particle Swarm Optimization* [#7588]. Prospero Naval, Luis Sison and Eduardo Mendoza

**[S106-2] Special Session: Advances in Clustering Methods and Their Applications II**

Monday, July 19, 11:30AM-12:50PM, Room: 134

Chair: Huseyin Seker, James C. Bezdek

**11:30AM** *A Novel Framework to Elucidate Core Classes in a Dataset* [#7256]. Daniele Soria and Jonathan M. Garibaldi

**11:50AM** *Clustering elliptical anomalies in sensor networks* [#39]. James Bezdek, Timothy Havens, James Keller, Christopher Leckie, Laurence Park, Marimuthu Palaniswami and Sutharshan Rajasegarar

**12:10PM** *Switched hybrid dynamic systems identification based on pattern recognition approach* [#432]. Omar Ayad, Moamar Sayed-Mouchaweh and P. Billaudel

**12:30PM** *Dynamic Fuzzy c-Means (dFCM) Clustering for Continuously Varying Data Environments* [#366]. Radha Sandhir and Satish Kumar.

**[S016-3] Special Session: Computational Intelligence for Biopattern Data Analysis: Bioinformatics I**

Monday, July 19, 2:30PM-3:30PM, Room: 133

Chair: Elia Biganzoli, Leif Peterson, Alfredo Vellido, Paulo Lisboa, José D. Martín-Guerrero, Alioune Ngom, Roberto Tagliaferri

**2:30PM** *Genome-Wide Germline Single Nucleotide Polymorphisms for Cancer Classification in the Framingham Heart Study* [#849]. Leif Peterson, Jaya Paraniham, Jiaqiong Xu and Federico A. Monzon

**2:50PM** *Neural Network-based Taxonomic Clustering for Metagenomics* [#700]. Steven Essinger, Robi Polikar and Gail Rosen

**3:10PM** *DNA Base-Calling Using Polynomial Classifiers* [#537]. Omniyah Mohd, Khaled Assaleh, Ghaleb Husseini, Amin Majdalawieh and Scott Woodward

**[S106-3] Special Session: Advances in Clustering Methods and Their Applications III**

Monday, July 19, 2:30PM-3:30PM, Room: 134

Chair: Huseyin Seker, James C. Bezdek

**2:30PM** *Optimal Method for Growth in Dynamic Self Organizing Learning Systems* [#733]. Sampath Yerramalla, Edgar Fuller and Bojan Cukic

**2:50PM** *Spectral Clustering with Reverse Soft K-Nearest Neighbor Density Estimation* [#696]. Olcay Kursun

**3:10PM** *Building "invertible" fractals: Introduction to Context-Dependant Iterated Function Systems* [#415]. Timothee Leleu

**[S134-1] Special Session: Intelligent Sensor Networks I**

Monday, July 19, 3:30PM-4:30PM, Room: 133

Chair: Sandeep Chandana, Henry Leung

**3:30PM** *Towards Evolutionary-Pricing Framework for Mobile Sensor Network Self-organization* [#7552]. Vladimir Marbukh, Kamran Sayrafian-Pour, Hamid Mahboubi, Ahmadreza Momeni and Amir G. Aghdam

**3:50PM** *Optimal Node Scheduling for the Lifetime Maximization of Two-tier Wireless Sensor Networks* [#7202]. Ying Lin, Xiao-min Hu, Jun Zhang, Ou Liu and Hai-lin Liu

**4:10PM** *Fuzzy Decision Fusion for Single Target Classification in Wireless Sensor Networks* [#291]. Sercan Gök, Adnan Yazici, Ahmet Coşar and Roy George

### [S136-1] Special Session: Image Characterization and Feature Extraction I

Monday, July 19, 3:30PM-4:30PM, Room: 134

Chair: Belén Prados Suárez, Eduard Montseny

**3:30PM** *A New Fuzzy Approach to Brain Tumor Segmentation* [#473]. Nelly Gordillo, Eduard Montseny and Pilar Sobrevilla

**3:50PM** *Evaluation of Adaptive FRIFS Method through several Classification Comparisons* [#392]. Vincent Bombardier, Laurent Wendling and Emmanuel Schmitt

**4:10PM** *Enhanced Weakly Trained Frontal Face Detector for Surveillance Purposes* [#419]. Wael Louis, Konstantinos N. Plataniotis and Yong Man Ro

### [S016-4] Special Session: Computational Intelligence in Bioinformatics, Computational Biology, and Bioengineering III

Monday, July 19, 4:50PM-6:30PM, Room: 133

Chair: Michael A. Lones, Jung-Hsien Chiang, Alexandru Floares, Gilles Bernot, Alioune Ngom, Francesco Masulli

**4:50PM** *Discriminating Normal and Cancerous Thyroid Cell Lines using Implicit Context Representation Cartesian Genetic Programming* [#7697]. Michael Lones, Stephen Smith, Andrew Harris, Alec High, Sheila Fisher, D. Alastair Smith and Jennifer Kirkham

**5:10PM** *Alignment versus Variation Methods for Clustering Microarray Time-Series Data* [#7539]. Numanul Subhani, Yifeng Li, Alioune Ngom and Luis Rueda

**5:30PM** *Effective Parameter Estimation for S-system Models using LPMs and Evolutionary Algorithms* [#7113]. Shuhei Kimura, Yusuke Amano, Koki Matsumura and Mariko Okada-Hatakeyama

**5:50PM** *Genetic Algorithm based Fuzzy Multiple Regression for the Nocturnal Hypoglycaemia Detection* [#7085]. Sai Ho Ling, Hung Nguyen and Kit Yan Chan

**6:10PM** *Integration of Functional Information of Genes in Fuzzy Clustering of Short Time Series Gene Expression Data* [#7701]. Ashish Anand, Nikhil Pal and Ponnuthurai Suganthan

### [S106-4] Special Session: Advances in Clustering Methods and Their Applications IV

Monday, July 19, 4:50PM-6:30PM, Room: 134

Chair: Huseyin Seker, James C. Bezdek

**4:50PM** *MK-means - Modified K-means clustering algorithm* [#388]. Hesam Dashti, Tiago Simas, Rita Ribeiro, Amir Assadi and Andre Moitinho

**5:10PM** *Robust Mixture Modeling using the Pearson Type VII Distribution* [#351]. Jianyong Sun, Ata Kaban and Jonathan M. Garibaldi

**5:30PM** *Performance Evaluation of a Community Structure Finding Algorithm Using Modularity and C-rand Measures* [#269]. Harun Pirim, Dilip Gautam, Tanmay Bhowmik, Andy Perkins and Burak Eksioğlu

**5:50PM** *Clustering using SOFM and Genetic Algorithm* [#105]. Jose Carlos Palomares, Agustin Aguera, Juan Jose Gonzalez and Jose Gabriel Ramiro

**6:10PM** *SOAR - Sparse Oracle-based Adaptive Rule Extraction: Knowledge Extraction from Large-Scale Datasets to Detect Credit Card Fraud* [#151]. Nick Ryman-Tubb and Artur d'Avila Garcez

## Tuesday, July 20, 2010

### [S016-5] Special Session: Computational Intelligence for Biopattern Data Analysis

Tuesday, July 20, 8:00AM-10:00AM, Room: 133

Chair: Leif Peterson, Elia Biganzoli, Alfredo Vellido

- 8:00AM** *Cohort-based Kernel Visualisation with Scatter Matrices* [#825]. Enrique Romero, Ana Sofia Fernandes, Tingting Mu and Paulo Lisboa
- 8:20AM** *Finding Association of Impact Factor for Breast Cancer Patient- A Novel Statistical Approach* [#20]. Kwok-Pan Pang and A B M Shawkat Ali
- 8:40AM** *Modeling the Listeria monocytogenes survival/death curves using Wavelet Neural Networks* [#21]. Mahdi Amina, Vassilis Kodogiannis, Efsthios Panagou and George Nychas
- 9:00AM** *Flexible Parametric Modelling of the Hazard Function in Breast Cancer Studies* [#386]. Ilaria Ardoino, Federico Ambrogi, Chris Bajdik, Paulo Lisboa, Elia Biganzoli and Patrizia Boracchi
- 9:20AM** *Improving Recall Values in Breast Cancer Diagnosis with Incremental Background Knowledge* [#697]. Catarina Silva, Bernardete Ribeir and Noel Lopes
- 9:40AM** *Classification of Micro-array Gene Expression Data using Neural Networks* [#584]. David Tian and Keith Burley

### [S122] Special Session: Computational Intelligence and Cyberinfrastructure in Medical Informatics and e-Health

Tuesday, July 20, 8:00AM-10:00AM, Room: 134

Chair: Shang-Ming Zhou, Mike Gravenor, Ronan Lyons, Sinead Brophy

- 8:00AM** *Construction of Parsimonious Takagi-Sugeno Fuzzy Rule Based Model in Characterising Impacts of Child Health, Socioeconomic Deprivations on Educational Outcomes* [#307]. Shang-Ming Zhou, Ronan Lyons and Mike Gravenor
- 8:20AM** *Context-Aware Knowledge Modelling for Decision Support in E-Health* [#583]. Obinna Anya, Hissam Tawfik, Saad Amin, Atulya Nagar and Khaled Shaalan
- 8:40AM** *Creating Health Typologies with Random Forest Clustering* [#348]. Ping Sun, Irena Begaj, Iris Fermin and Jim McManus
- 9:00AM** *Retinal Image Classification using a Histogram Based Approach* [#397]. Mohd Hanafi Ahmad Hijazi, Frans Coenen and Yalin Zheng
- 9:20AM** *SVM with Entropy Regularization and Particle Swarm Optimization for Identifying Children's Health and Socioeconomic Determinants of Education Attainments Using Linked Datasets* [#420]. Shang-Ming Zhou, Ronan Lyons, Owen Bodger, Joanne Demmler and Mark Atkinson

### [S082-1] Special Session: Commercialization of CI Research Outcomes I

Tuesday, July 20, 11:30AM-12:50PM, Room: 133

Chair: Ali M S Zalzal, Keeley A Crockett

- 11:30AM** *Marketing Computational Intelligence in Industry* [#7070]. Arthur Kordon
- 11:50AM** *Robust Evolution Optimization at the Edge of Chaos: Commercialization of Culture Algorithms* [#7846]. Xiangdong Che, Mostafa Ali and Robert Reynolds
- 12:10PM** *Commercializing Computational Intelligence Techniques in a Business Intelligence Application* [#7992]. Hussein Al-Natsheh and Ali Zalzal

### [S200-1] Special Session: Computational Intelligence in Earth and Environmental Sciences I

Tuesday, July 20, 11:30AM-12:50PM, Room: 134

Chair: Vladimir Krasnopolsky, Dimitri Solomatine, Vladimir Cherkassky, Julio Valdes

- 11:30AM** *Multi-model Ensemble Forecasting in High Dimensional Chaotic System* [#794]. Michael Siek and Dimitri Solomatine
- 11:50AM** *ANN-based Representation of Parametric and Residual Uncertainty of Models* [#674]. Francesca Pianosi, Durga Lal Shrestha and Dimitri Solomatine
- 12:10PM** *Uncertainty with the Gamma Test for Model Input Data Selection* [#292]. Dawei Han, Weizhong Yan and Ali Moghaddamnia
- 12:30PM** *Forecasting Airborne Pollen Concentration of Poaceae (Grass) and Oleaceae (Olive), using Artificial Neural Networks and Genetic Algorithms, in Thessaloniki, Greece.* [#266]. Dimitris Voukantsis, Kostas Karatzas, Athanasios Damialis and Despina Vokou

### [S082-2] Commercialization of CI Research Outcomes II

Tuesday, July 20, 2:30PM-3:30PM, Room: 133

Chair: Ali M S Zalzal, Keeley A Crockett

- 2:30PM** *The Yorkshire Enterprise Fellowship: A Framework for Successful Commercialization of Computational Intelligence Research* [#535]. Stephen Smith
- 2:50PM** *Goal Orientated Conversational Agents - the rocky road to commercialization* [#207]. Keeley Crockett, Zuhair Bandar, James O'Shea and David Mclean
- 3:10PM** *Commercialisation of an Artificially Intelligent Deception Detection System in the Current Security Climate* [#264]. David Mclean, Zuhair Bandar, Jim O'Shea and Keeley Crockett

### [S136-2] Special Session: Image Characterization and Feature Extraction II

Tuesday, July 20, 2:30PM-3:30PM, Room: 134

Chair: Belén Prados Suárez, Eduard Montseny

- 2:30PM** *Filtering False Detections of Small Multiple Sclerosis Lesions using Fuzzy Regional Analysis* [#607]. Francesc Xavier Aymerich, Pilar Sobrevilla, Eduard Montseny and Alex Rovira
- 2:50PM** *Oppositional Fuzzy Image Thresholding* [#453]. Fares Al-Qunaieer, Hamid Tizhoosh and Shahryar Rahnamayan
- 3:10PM** *Color Component Feature Selection in Feature-Level Fusion Based Color Face Recognition* [#378]. Seung Ho Lee, Jae Young Choi, Konstantinos Plataniotis and Yong Man Ro

### [S134-2] Special Session: Intelligent Sensor Networks II

Tuesday, July 20, 3:30PM-4:30PM, Room: 133

Chair: Sandeep Chandana, Henry Leung

- 3:30PM** *An Energy Aware Fuzzy Unequal Clustering Algorithm for Wireless Sensor Networks* [#77]. Hakan Bagci and Adnan Yazici
- 3:50PM** *Context-Aware Collective Decision Making based on Fuzzy Outranking* [#523]. Sandeep Chandana and Henry Leung
- 4:10PM** *On the Use of Unified And-Or Fuzzy Operator for Distributed Node Exhaustion Attack Decision-making in Wireless Sensor Networks* [#408]. Salman Khan and Zubair Baig

### [S148-1] Special Session: Soft Computing in Medical Imaging I

Tuesday, July 20, 3:30PM-4:30PM, Room: 134

Chair: Sergio Damas, Gerald Schaefer

- 3:30PM** *Microcalcification Detection in Mammograms Using Interval type-2 Fuzzy logic System with Automatic Membership Function Generation* [#534]. Suraphon Chumklin, Sansanee Auephanwiriyaikul and Nipon Theera-Umpon
- 3:50PM** *Using Type-II Fuzzy Function for Diagnosing Brain Tumors based on Image Processing Approach* [#30]. Muhammad Hussein Fazel Zarandi, Marzieh Zarinbal, Amir Zarinbal, I. Burhan Turksen and Mina Izadi

### [S016-6] Special Session: Computational Intelligence for Biopattern Data Analysis: Bioinformatics II

Tuesday, July 20, 4:50PM-6:30PM, Room: 133

Chair: Elia Biganzoli, Leif Peterson, Alfredo Vellido, Paulo Lisboa, José D. Martín-Guerrero, Alioune Ngom, Roberto Tagliaferri

- 4:50PM** *Complexity Measures of Supervised Classifications Tasks: a Case Study for Cancer Gene Expression Data* [#87]. Marcilio C. P. de Souto, Ana C. Lorena, Newton Spolaor and Ivan G. Costa
- 5:10PM** *On the Effectiveness of Discretization on Gene Selection of Microarray Data* [#226]. Veronica Bolon-Canedo, Noelia Sanchez-Marono and Amparo Alonso-Betanzos
- 5:30PM** *Classification of LIBS Protein Spectra using Support Vector Machines and Adaptive Local Hyperplanes* [#487]. Tia Vance, Natasa Reljin, Aleksandar Lazarevic, Dragoljub Pokrajac, Vojislav Kecman, Nouredine Melikechi, Aristides Marcano, Yuri Markushin and Samantha McDaniel
- 5:50PM** *Detecting Differentially Aberrant Genomic Regions in Multi-Sample Array CGH Experiments Using Nearest-Neighbor Multivariate Test* [#501]. Yuta Ishikawa and Ichiro Takeuchi
- 6:10PM** *DNA Microarray Analysis Using Equalized Orthogonal Mapping* [#129]. Jagdish Patra, Nyttle George and Pramod Meher

### [S148-2] Special Session: Soft Computing in Medical Imaging II

Tuesday, July 20, 4:50PM-6:30PM, Room: 134

Chair: Sergio Damas, Gerald Schaefer

- 4:50PM** *3D level set image segmentation refined by intelligent agent swarms* [#7947]. David Feltell and Li Bai
- 5:10PM** *GRASP and Evolutionary Path Relinking for Medical Image Registration based on Point Matching* [#7812]. Jose Santamaria, Oscar Cordon, Sergio Damas, Rafael Marti and Ricardo J. Palma
- 5:30PM** *Neocortical Frame-free Vision Sensing and Processing through Scalable Spiking ConvNet Hardware* [#100]. Luis Camuñas Mesa, J. A. Pérez-Carrasco. C. Zmarreño-Ramos, T. Serrano-Gotarredona and B. Linares-Barranco
- 5:50PM** *Region Of Interest Based Image Classification Using Time Series Analysis* [#396]. Ashraf Elsayed, Frans Coenen, Marta Garcia-Finana and Vanessa Sluming
- 6:10PM** *Segmentation of Head MR Images Using Hybrid Neural Networks of Unsupervised Learning* [#182]. Toshimitsu Otani, Kazuhito Sato, Hirokazu Madokoro and Atsushi Inugami

## Wednesday, July 21, 2010

### [S016-7] Special Session: Fuzzy Systems in Bio-Medicine

Wednesday, July 21, 8:00AM-10:00AM, Room: 133

Chair: Mihail Popescu, Jim Keller

- 8:00AM** *An Ontological Fuzzy Smith-Waterman with Applications to Patient Retrieval in Electronic Medical Records* [#295]. Mihail Popescu
- 8:20AM** *Similarity Measures for Protein Structures based on Fuzzy Histogram Comparison* [#445]. Thomas Fober and Eyke Hüllermeier
- 8:40AM** *Computational Inference of Transcription Factor Cooperation by Fuzzy Frequent Itemset Mining* [#271]. Francisco-Javier Lopez, Carlos Cano, Fernando Garcia and Armando Blanco
- 9:00AM** *Study of Fault Feature Extraction Based on KPCA Optimized by PSO Algorithm* [#300]. Pan Hongxia, Wei Xiuye and Huang Jinying

### [S029-1] Special Session: Medical and Educational Applications of Computer Intelligence to Benefit Society I

Wednesday, July 21, 8:00AM-10:00AM, Room: 134

Chair: Keeley A Crockett, Bernadette Bouchon-Meunier

- 8:00AM** *Artificial neural networks for non-invasive chromosomal abnormality screening of fetuses* [#622]. Costas Neocleous, Kypros Nicolaides, Kleanthis Neokleous and Christos Schizas
- 8:20AM** *Rule Extraction from Neural Networks for Medical Domains* [#603]. Darren Dancey, Zuhair Bandar and David McLean
- 8:40AM** *Fuzzy Predictive Models to Help Teachers in e-Learning Courses* [#365]. Angela Nebot, Francisco Mugica and Felix Castro
- 9:00AM** *Testing Potentials of Dynamic Quadratic Neural Unit for Prediction of Lung Motion during Respiration for Tracking Radiation Therapy* [#749]. Ivo Bukovsky, Kei Ichiji, Noriyasu Homma, Makoto Yoshizawa and Ricardo Rodriguez
- 9:20AM** *Development of Comparative Reading System Using 1D SOM for Brain Dock Examinations* [#220]. Kazuhito Sato, Sakura Kadowaki, Hirokazu Madokoro and Atsushi Inugami
- 9:40AM** *Automatic Concept Type Identification from learning Resources* [#270]. Sahar Changuel, Nicolas Labroche and Bernadette Bouchon-Meunier

### [S016-8] Special Session: Computational Intelligence for Biopattern Data Analysis: Bioinformatics III

Wednesday, July 21, 11:30AM-12:50PM, Room: 133

Chair: Elia Biganzoli, Leif Peterson, Alfredo Vellido, Paulo Lisboa, José D. Martín-Guerrero, Alioune Ngom, Roberto Tagliaferri

- 11:30AM** *Complementary Use of Cluster Analysis and Biplots to Discover and Validate Patterns of Gene Expression in Microarray Data* [#400]. Niccolo Bassani, Federico Ambrogi, Danila Coradini, Patrizia Boracchi and Elia Mario Biganzoli
- 11:50AM** *Gene regulatory networks with variable-order dynamic Bayesian networks* [#430]. Jagath Rajapakse and Iti Chaturvedi
- 12:10PM** *Evolving Spiking Neural Networks for Predicting Transcription Factor Binding Sites* [#699]. Heike Sichtig, J. David Shaffer and Alberto Riva

**12:30PM** *A comprehensive comparison of ML algorithms for gene expression data classification* [#706]. Bruno Feres de Souza, Andre C.P.L.F. Carvalho and Carlos Soares

### [S200-2] Special Session: Computational Intelligence in Earth and Environmental Sciences II

Wednesday, July 21, 11:30AM-12:50PM, Room: 134

Chair: Vladimir Krasnopolsky, Dimitri Solomatine, Vladimir Cherkassky, Julio Valdes

**11:30AM** *Development of Neural Network Convection Parameterizations for Numerical Climate and Weather Prediction Models using Cloud Resolving Model Simulations* [#765]. Vladimir Krasnopolsky, Michael Fox-Rabinovitz and Alexei Belochitski

**11:50AM** *Central England Temperatures and Solar Activity: A Computational Intelligence Approach*. [#334]. Julio Valdes and Antonio Pou

### [S134-3] Special Session: Intelligent Sensor Networks III

Wednesday, July 21, 2:30PM-3:30PM, Room: 133

Chair: Sandeep Chandana, Henry Leung

**2:30PM** *Complex Situation Modeling in Distributed Sensor Networks* [#769]. Sandeep Chandana and Henry Leung

**2:50PM** *Intelligent Sensor Design in Network based Automatic Control* [#772]. Donglin Wang, Sandeep Chandana, Renlun He, Jiuqiang Han, Xiangyu Zhu, Ke Zou and Yong He

### [S115-1] Special Session: Computational Intelligence in Computer Vision I

Wednesday, July 21, 2:30PM-3:30PM, Room: 134

Chair: Javier Montero, Jesús Chamorro-Martínez, Mike Nachtgael

**2:30PM** *An Adaptive Fuzzy Approach for Texture Modelling* [#574]. Jesus Chamorro-Martinez and Pedro Manuel Martinez-Jimenez

**2:50PM** *Tuning of a Hierarchical Fuzzy System for Video De-interlacing* [#481]. Piedad Brox, Iluminada Baturone and Santiago Sanchez-Solano

**3:10PM** *Basic properties of the interval-valued fuzzy morphological operators* [#273]. Tom Melange, Mike Nachtgael, Peter Sussner and Etienne Kerre

### [S132-1] Special Session: Computational Finance and Economics I

Wednesday, July 21, 3:30PM-4:30PM, Room: 133

Chair: Daniel Paraschiv, Uzay Kaymak, Agostino Capponi, Yago Saez, Robert Golan

**3:30PM** *Fast and Effective Predictability Filters for Stock Price Series using Linear Genetic Programming* [#7090]. Garnett Wilson and Wolfgang Banzhaf

**3:50PM** *The effect of level of rationality on Macro-Activities of the Lucas-Island model* [#7159]. Ahmed Okasha and Colin Johnson

**4:10PM** *Complex Selection Processes: Dealing with Dependencies* [#181]. Will Fleury

### [S136-3] Special Session: Image Characterization and Feature Extraction III

Wednesday, July 21, 3:30PM-4:30PM, Room: 134

Chair: Belén Prados Suárez, Eduard Montseny

**3:30PM** *Automatic Extraction of Linguistic Models for Image Description* [#552]. Iluminada Baturone and Andres Gersnoviez

**3:50PM** *A Fast Iris Location Based on Aggregating Gradient Approximation Using QMA-OWA Operator* [#601]. Yuniol Alvarez-Betancourt and Miguel Garcia-Silvente

**4:10PM** *Extraction of thin color pattern from images for histology investigation* [#418]. Alexander Nedzved and Valery Starovoitov

### [S016-9] Special Session: Computational Intelligence for the Pharmaceutical Industry

Wednesday, July 21, 4:50PM-6:30PM, Room: 133

Chair: José D. Martín-Guerrero, Paulo Lisboa, Roberto Tagliaferri

**4:50PM** *Signaling Pathways Coupling Phenomena* [#743]. Michele Donato and Sorin Draghici

**5:10PM** *Gene Ontology Fuzzy-Enrichment Analysis to investigate Drug Mode-of-Action* [#366]. Francesco Iorio, Loredana Murino, Diego di Bernardo, Giancarlo Raiconi and Roberto Tagliaferri

**5:30PM** *Neural Network Based Drug Design for Diabetes Mellitus Using QSAR with 2D and 3D Descriptors* [#261]. Jagdish C. Patra and Kenny H. K. Chua

**5:50PM** *Predicting Drug Absorption Rates Through Human Skin* [#688]. Yi Sun, Lun Tak Lam, Gary Moss, Maria Prapoulou, Rod Adams, Neil Davey, David Gray and Mark Brown

**6:10PM** *Assessment of benefit vs. risk of drug therapy: the potential for outcome analysis with flexible models* [#842]. Paulo J.G. Lisboa, Ana Sofia Fernandes, Jose Manuel Fonseca, Chris Bajdik and Elia Biganzoli

### [S029-2] Special Session: Medical and Educational Applications of Computer Intelligence to Benefit Society II

Wednesday, July 21, 4:50PM-6:30PM, Room: 134

Chair: Keeley A Crockett, Bernadette Bouchon-Meunier

**4:50PM** *Application of a Semantic-Based Conversational Agent to Student Debt Management* [#116]. Karen O'Shea, Keeley Crockett and Zuhair Bandar

**5:10PM** *Adaptive Neuro-Fuzzy Inference System (ANFIS) in Modelling Breast Cancer Survival* [#270]. Hazlina Hamdan and Jonathan M. Garibaldi

**5:30PM** *Oscar: An Intelligent Conversational Agent Tutor to Estimate Learning Styles* [#235]. Annabel Latham, Keeley Crockett, David McLean, Bruce Edmonds and Karen O'Shea

**5:50PM** *Fuzzy Inference for Learning Object Recommendation* [#362]. Mario Garcia-Valdez, Arnulfo Alanis and Brunnete Parra

## Thursday, July 22, 2010

### [S132-2] Special Session: Computational Finance and Economics II

Thursday, July 22, 8:00AM-10:00AM, Room: 133

Chair: Daniel Paraschiv, Uzay Kaymak, Agostino Capponi, Yago Saez, Robert Golan

- 8:00AM** *Equilibrium Pricing Vector Based on the Hybrid Mean-Variance Theory with Investor's Subjectivity* [#220]. Takashi Hasuike
- 8:20AM** *Modelling Preference Relaxation in e-Commerce* [#274]. Maciej Dabrowski and Thomas Acton
- 8:40AM** *The Syntax of Stock Selection: Grammatical Evolution of a Stock Picking Model* [#7348]. Richard McGee, Michael O'Neill and Anthony Brabazon
- 9:00AM** *Modeling the Behavior of the Stock Market with an Artificial Immune System* [#7600]. Matthew Butler and Dimitar Kazakov
- 9:20AM** *Empirical Analysis of International Trade Market using Evolutionary Multi-Agent Modeling with Game Theory* [#7658]. Seung-Hyun Lee, Han-Saem Park and Sung-Bae Cho
- 9:40AM** *Interactive Evolutionary Multipleobjective Optimization using Dominance-based Rough Set Approach* [#7776]. Salvatore Greco, Benedetto Matarazzo and Roman Slowinski

### [S087-1] Special Session: Evolutionary Computation for Knowledge Discovery I

Thursday, July 22, 8:00AM-10:00AM, Room: 134

Chair: Jorge Casillas, Jaume Bacardit

- 8:00AM** *A Spiking Neural Representation for XCSF* [#7326]. Gerard Howard, Larry Bull and Pier-Luca Lanzi
- 8:20AM** *A Grammar Based Ant Programming Algorithm for Mining Classification Rules* [#7728]. Juan Luis Olmo, Jose Raul Romero and Sebastian Ventura
- 8:40AM** *Knowledge Discovery with Artificial Immune Systems for Hierarchical Multi-label Classification of Protein Functions* [#353]. Roberto Alves, Myriam Delgado and Alex Freitas
- 9:00AM** *A Pittsburgh Multi-Objective Classifier for User Preferred Trajectories and Flight Navigation* [#7843]. Viet V. Pham, Lam T. Bui, Sameer Alam, Chris Lokan and Hussein A. Abbass
- 9:20AM** *Dynamic matching range in Exemplar-based Learning Classifier System* [#7990]. Hiroyasu Matsushima, Kiyohiko Hattori, Hiroyuki Sato and Keiki Takadama
- 9:40AM** *Evolved Apache Lucene SpanFirst Queries are Good Text Classifiers* [#7356]. Laurie Hirsch

### [S132-3] Special Session: Computational Finance and Economics III

Thursday, July 22, 11:30AM-12:50PM, Room: 133

Chair: Daniel Paraschiv, Uzay Kaymak, Agostino Capponi, Yago Saez, Robert Golan

- 11:30AM** *A Multiobjective Approach for Bidding Recommendations in Combinatorial Auctions* [#7984]. Yago Saez, Asuncion Mochon, Jose Luis Gomez-Barroso and Pedro Isasi
- 11:50AM** *Index Tracking Fund Enhancement Using Evolving Multi-Criteria Fuzzy Decision Models* [#7614]. Adam Ghandar, Zbigniew Michalewicz, Ralf Zurbrugg and Chee Cheong

**[S087-2] Special Session: Evolutionary Computation for Knowledge Discovery II**

Thursday, July 22, 11:30AM-12:50PM, Room: 134

Chair: Jorge Casillas, Jaume Bacardit

- 11:30AM** *A preliminary study on the use of differential evolution for adjusting the position of examples in nearest neighbor classification* [#7716]. Isaac Triguero, Salvador Garcia and Francisco Herrera
- 11:50AM** *Combined Feature Selection and Similarity Modeling in Case-Based Reasoning Using Hierarchical Memetic Algorithm* [#8022]. Ning Xiong and Peter Funk
- 12:10PM** *An Evolutionary Attribute Clustering and Selection Method Based on Feature Similarity* [#7868]. Tzung-Pei Hong, Po-Cheng Wang and Chuan-Kang Ting
- 12:30PM** *Feature Selection in Haptic-based Handwritten Signatures Using Rough Sets* [#454]. Nizar Sakr, Fawaz Alsulaiman, Julio Valdes, Abdulmotaleb El Saddik and Nicolas Georganas

**[S132-4] Special Session: Computational Finance and Economics IV**

Thursday, July 22, 2:30PM-3:30PM, Room: 133

Chair: Daniel Paraschiv, Uzay Kaymak, Agostino Capponi, Yago Saez, Robert Golan

- 2:30PM** *A Fuzzy Model of the MSCI EURO Index Based on Content Analysis of European Central Bank Statements* [#573]. Viorel Milea, Rui Almeida, Uzay Kaymak and Flavius Frasinca
- 2:50PM** *Modeling Loss Aversion and Biased Self-Attribution Using a Fuzzy Aggregation Operator* [#575]. Milan Lovric, Uzay Kaymak and Jaap Spronk

**[S087-3] Special Session: Evolutionary Computation for Knowledge Discovery III**

Thursday, July 22, 2:30PM-3:30PM, Room: 134

Chair: Jorge Casillas, Jaume Bacardit

- 2:30PM** *Memory Control of Tabu Search with Genetic Fuzzy Systems* [#238]. Vitor Marques and Fernando Gomide
- 2:50PM** *Ensemble Classifier Design by Parallel Distributed Implementation of Genetic Fuzzy Rule Selection for Large Data Sets* [#8013]. Yusuke Nojima, Shingo Mihara and Hisao Ishibuchi

**[S134-4] Special Session: Intelligent Sensor Networks IV**

Thursday, July 22, 2:30PM-3:30PM, Room: Room 127

Chair: Sandeep Chandana, Henry Leung

- 2:30PM** *Development of Chebyshev Neural Network-based Smart Sensors for Noisy Harsh Environment* [#426]. Jagdish C. Patra and Cedric Bornand
- 2:50PM** *Monitoring of Distributed Parameter Systems Based on a Sensor Network and ANFIS* [#832]. Constantin Volosencu and Daniel Ioan Curiac

**[S036-1] Special Session: Intelligent Measurement Systems I**

Thursday, July 22, 3:30PM-4:30PM, Room: 133

Chair: Richard J. Duro, Gilles Mauris

- 3:30PM** *SYLPH: An Ambient Intelligence Based Platform for Integrating Heterogeneous Wireless Sensor Networks* [#152]. Dante I. Tapia, Ricardo S. Alonso, Fernando De la Prieta, Carolina Zato, Sara Rodriguez, Emilio Corchado, Javier Bajo and Juan M. Corchado
- 3:50PM** *An Image Color Gradient preserving Color Constancy* [#340]. Ramón Moreno, Manuel Grana and Alicia d'Anju

### [S115-2] Special Session: Computational Intelligence in Computer Vision II

Thursday, July 22, 3:30PM-4:30PM, Room: 134

Chair: Javier Montero, Jesús Chamorro-Martínez, Mike Nachttegael

- 3:30PM** *A Fuzzy Filter for the Removal of Random Impulse Noise in Colour Video* [#277]. Tom Melange, Mike Nachttegael and Etienne Kerre
- 3:50PM** *A New Approach for Defining a Fuzzy Color Space* [#626]. Jose Manuel Soto-Hidalgo, Jesus Chamorro-Martinez and Daniel Sanchez
- 4:10PM** *Fuzzy Qualitative Complex Actions Recognition* [#511]. Chee Seng Chan, Honghai Liu and Weng Kin Lai

### [S036-2] Special Session: Intelligent Measurement Systems II

Thursday, July 22, 4:50PM-6:30PM, Room: 133

Chair: Richard J. Duro, Gilles Mauris

- 4:50PM** *Neural-based Quality Measurement of Fingerprint Images in Contactless Biometric Systems* [#835]. Ruggero Donida Labati, Fabio Scotti and Vincenzo Piuri
- 5:10PM** *Adaptive on-line prediction soft sensing without historical data* [#539]. Petr Kadlec and Bogdan Gabrys
- 5:30PM** *Use of a FIS for low cost student presence detector in e-learning 2.0* [#394]. Vincenzo Di Lecce, Antonella Giove and Alessandro Quarto
- 5:50PM** *Use of Artificial Neural Networks for Improving Fiber Optic Microbend Sensor Performance* [#332]. Hasan Seckin Efendioglu, Tulay Yildirim and Kemal Fidanboyulu
- 6:10PM** *An ANN Based Automatic Hyperspectral Image Processing System with Adaptive Dimensionality Reduction* [#268]. Abraham Prieto, Daniel Souto, Richard Duro and Fernando Lopez-Pena

### [S087-4] Special Session: Evolutionary Computation for Knowledge Discovery IV

#### [S115-3] CI in Computer Vision II

Thursday, July 22, 4:50PM-6:30PM, Room: 134

Chair: Jorge Casillas, Jaume Bacardit

- 4:50PM** *Automated Discovery of Vital Knowledge from Pareto-optimal Solutions: First Results from Engineering Design* [#7622]. Sunith Bandaru and Kalyanmoy Deb
- 5:10PM** *A Multiobjective Variant of the Subdue Graph Mining Algorithm based on the NSGA-II Selection Mechanism* [#7759]. Prakash Shelokar, Arnaud Quirin and Oscar Cordon
- 5:30PM** *A Distance-Based Mutation Operator for Learning Bayesian Network Structures using Evolutionary Algorithms* [#7907]. Edimilson Santos, Estevam Hruschka, Eduardo Hruschka and Nelson Ebecken
- 5:50PM** *A Multi-Objective Evolutionary Concept Learner* [#7270]. Celine Dandois, Federico Divina and Wim Vanhoof

## Friday, July 23, 2010

### [S143] Special Session: Motion Analysis

Friday, July 23, 8:00AM-10:00AM, Room: 133

Chair: Pedro Couto, Pedro Melo-Pinto, Charles Robinson

- 8:00AM** *Eigenposes: Using Principal Components to Describe Body Configuration for Analysis of Postural Control Dynamics* [#323]. Joseph Skufca, Erik Bollt, Rakesh Pilkar and Charles Robinson
- 8:20AM** *Bio-Inspired Model for Robust Motion Detection Under Noisy Conditions* [#185]. Russell Brinkworth and David O'Carroll
- 8:40AM** *Adaptive Washout Filter Design with Human Visual-Vestibular Based (HVVB) for VR-based Motion Simulator* [#126]. Chin-I Huang
- 9:00AM** *Fuzzy Controller for UAV-landing task using 3D-position Visual Estimation* [#397]. Miguel A. Olivares-Méndez, Iván F. Mondragón Pascual Campoy and Carol Martínez
- 9:20AM** *Fuzzy Dynamic Model for Feature Tracking* [#278]. Pedro Couto, Nuno Lopes, Humberto Bustince and Pedro Melo-Pinto
- 9:40AM** *Robot Visual Homing using Conjugate Gradient Temporal Difference Learning, Radial Basis Features and A Whole Image Measure* [#788]. Abdulrahman Altahhan

### [S034-1] Special Session: Computational Intelligence on Consumer Games and Graphics Hardware (CIGPU) I

Friday, July 23, 8:00AM-10:00AM, Room: 134

Chair: Tony Lewis, W. B. Langdon, Simon Harding, Man Leung Wong

- 8:00AM** *Data Mining Using Parallel Multi-Objective Evolutionary Algorithms on Graphics Hardware* [#7458]. Man Leung Wong and Geng Cui
- 8:20AM** *GPU-Based Implementation of Spiking Neural Networks with Real-Time Performance & High Accuracy* [#573]. Dmitri Yudanov, Muhammad Shaaban, Roy Melton and Leon Reznik
- 8:40AM** *High-Performance Bankruptcy Prediction Model using Graphics Processing Units* [#605]. Bernardete Ribeiro, Noel Lopes and Catarina Silva
- 9:00AM** *FPGA Implementation of a Support Vector Machine for Classification and Regression* [#477]. Marta Ruiz-Llata, Guillermo Guarnizo and Mar Yebenes-Calvino
- 9:20AM** *Neuromorphic Algorithms on Clusters of PlayStation 3s* [#751]. Tarek Taha, Pavan Yalamanchili, Mohammad Bhuiyan, Rommel Jalasutram, Chong Chen and Richard Linderman
- 9:40AM** *Porting Autodock to CUDA* [#7216]. Sarnath Kannan and Raghavendra Ganji

### [S036-3] Special Session: Intelligent Measurement Systems III

Friday, July 23, 11:30AM-12:50PM, Room: 133

Chair: Richard J. Duro, Gilles Mauris

- 11:30AM** *Time Series Analysis of inertial-body signals for the extraction of dynamic properties from human gait* [#848]. Albert Sama, Diego E. Pardo-Ayala, Joan Cabestany and Alejandro Rodríguez-Molinero
- 11:50AM** *Correntropy-based density-preserving data sampling as an alternative to standard cross-validation* [#127]. Marcin Budka and Bogdan Gabrys

**[S034-2] Special Session: Computational Intelligence on Consumer Games and Graphics Hardware (CIGPU) II**

Friday, July 23, 11:30AM-12:50PM, Room: 134

Chair: Tony Lewis, W. B. Langdon, Simon Harding, Man Leung Wong

- 11:30AM** *PUGACE, A Cellular Evolutionary Algorithm framework on GPUs* [#7223]. Nicolas Soca, Jose Blengio, Martin Pedemonte and Pablo Ezzatti
- 11:50AM** *Evolving a CUDA Kernel from an nVidia Template* [#7404]. W. B. Langdon and M. Harman
- 12:10PM** *Parallel Hybrid Evolutionary Algorithms on GPU* [#7616]. The Van Luong, Nouredine Melab and El-Ghazali Talbi
- 12:30PM** *An Analytical Study of GPU Computation for Solving QAPs by Parallel Evolutionary Computation with Independent Run* [#7887]. Shigeyoshi Tsutsui and Noriyuki Fujimoto

**[S200-3] Special Session: Computational Intelligence in Earth and Environmental Sciences III**

Friday, July 23, 3:30PM-4:30PM, Room: 134

Chair: Vladimir Krasnopolsky, Dimitri Solomatine, Vladimir Cherkassky, Julio Valdes

- 3:30PM** *Probabilistic Robust Hyperbola Mixture Model for Interpreting Ground Penetrating Radar Data* [#565]. Huanhuan Chen and Anthony Cohn
- 3:50PM** *Context-dependent Environmental Sound Monitoring using SOM coupled with LEGION* [#271]. Damiano Oldoni, Bert De Coensel, Michael Rademaker, Bernard De Baets and Dick Botteldooren
- 4:10PM** *An Urban Traffic Speed Fusion Method Based on Principle Component Analysis and Neural Network* [#10]. Chenye Qiu, Xingquan Zuo, Chunlu Wang, Jianping Wu and Tianle Zhang

**[S200-4] Special Session: Computational Intelligence in Earth and Environmental Sciences IV**

Friday, July 23, 4:50PM-6:30PM, Room: 134

Chair: Vladimir Krasnopolsky, Dimitri Solomatine, Vladimir Cherkassky, Julio Valdes

- 4:50PM** *Inflow Forecasting Models based on Artificial Intelligence* [#66]. Ronaldo Aquino, Milde Lira, Manoel Marinho, Isabela Tavares and Luiz Cordeiro
- 5:10PM** *Application of artificial neural networks to the geochemical study of an impacted fluvial system* [#550]. Juan Lacassie and Javier Ruiz-Del-Solar
- 5:30PM** *Potential Support Vector Machines and Self-Organizing Maps for phytoplankton discrimination* [#632]. Ismael F. Aymerich, Jaume Piera and Aureli Soria-Frisch
- 5:50PM** *Identifying Causal Relationships in an Urban Information Modeling Framework* [#579]. Xiang Liu and Shaohua Tan