

**Monday, July 19, 2010****[S139-1]: Special Session: Awareness and Cognition: Modeling and Applications I**

Monday, July 19, 8:40AM-10:00AM, Room: 123

Chair: Runhe Huang, Robert Kozma, Goutam Chakraborty, Qiangfu Zhao

**8:40AM** *A Fast Shape Retrieval using Dendrogram* [#92]. Michikazu Kikugawa, Won-Du Chang, Soonwook Hwang and Jungpil Shin

**9:00AM** *Content Aware Image Retrieval with Partition-Based Color Features* [#146]. Cheng-Hsiung Hsieh, Fang-Jung Chang and Qiangfu Zhao

**9:20AM** *Two Perspectives to Investigate the Intrinsic Organization of the Dynamic and Ongoing Spontaneous Brain Activity in Humans* [#147]. Zhijiang Wang, Jiming Liu, Ning Zhong, Haiyan Zhou and Yulin Qin

**9:40AM** *Data-Brain Driven Multi-aspect Mining Process Planning* [#180]. Ning Zhong and Jianhui Chen

**[ND-1]: Neural Dynamics I**

Monday, July 19, 8:40AM-10:00AM, Room: 124

Chair: Robert Kozma

**8:40AM** *Binding Sparse Spatiotemporal Patterns In Spiking Computation* [#54]. Steve Esser, Anthony Ndirango and Dharmendra Modha

**9:00AM** *Studying the Economy of Energy Expenditure in a Large Balanced Spiking Neuron Network* [#556]. Hiroyasu Ando, Krishnamurthy Karthik and Srinivasa Chakravarthy

**9:20AM** *Digital Spike Maps and Learning of Spike Signals* [#349]. Takashi Ogawa and Toshimichi Saito

**9:40AM** *Delay-Induced Order in Pulse-Coupled Bifurcating Neurons* [#232]. Kozo Hisamatsu and Toshimichi Saito

**[S131]: Special Session: Concept Drift and Learning in Nonstationary Environments**

Monday, July 19, 8:40AM-10:00AM, Room: 125

Chair: Robi Polikar

**8:40AM** *Change Detection Tests Using the ICI rule* [#525]. Cesare Alippi, Giacomo Boracchi and Manuel Roveri

**9:00AM** *MuSeRA: Multiple Selectively Recursive Approach towards Imbalanced Stream Data Mining* [#581]. Sheng Chen, Haibo He, Kang Li and Sachi Desai

**9:20AM** *Evolving Granular Neural Network for Semi-supervised Data Stream Classification* [#630]. Daniel Leite, Pyramo Costa Jr. and Fernando Gomide

**9:40AM** *An Ensemble Based Incremental Learning Framework for Concept Drift and Class Imbalance* [#761]. Gregory Ditzler and Robi Polikar

**[GAM]: Games**

Monday, July 19, 8:40AM-10:00AM, Room:127

Chair: Klaus Obermayer

**8:40AM** *Zero-sum Two-player Game Theoretic Formulation of Affine Nonlinear Discrete-time Systems Using Neural Networks* [#759]. Shahab Mehraeen, Travis Dierks, Sarangapani Jagannathan and Mariesa Crow

**9:00AM** *A Neural Network Method for Prediction of 2006 World Cup Football Game* [#499]. Kou-Yuan Huang and Wen-Lung Chang

**9:20AM** *Self-Organizing Neural Networks for Behavior Modeling in Games* [#328]. Shu Feng and Ah-Hwee Tan

**9:40AM** *A High Order Neural Network to Solve N-Queens Problem* [#721]. Yuxin Ding, Ye Li, Min Xiao, Qing Wang and Dong Lix

**[S002-1]: Special Session: Emerging Neuromorphic Hardware Architectures and Applications I**

Monday, July 19, 8:40AM-10:00AM, Room: Room 128,

Chair: Robinson.Pino, Partha S. Dutta

**8:40AM** *Affordable Emerging Computer Hardware for Neuromorphic Computing Applications* [#362]. Morgan Bishop, Michael Moore, Daniel Burns, Robinson Pino and Richard Linderman

**9:00AM** *Image Compression with Hardware Self-Organizing Map* [#326]. Hiroomi Hikawa, Kenji Doumoto, Seiji Miyoshi and Yutaka Maeda

**9:20AM** *Algorithm and Software for Simulation of Spiking Neural Networks on the Multi-Chip SpiNNaker System* [#113]. Xin Jin, Francesco Galluppi, Cameron Patterson, Alexander Rast, Sergio Davies, Steve Temple and Steve Furber

**9:40AM** *Neuromorphic Models on a GPGPU Cluster* [#808]. Bing Han and Tarek Taha

**[MMP]: Poster Session I**

Monday, July 19, 9:00AM-12:00PM, Room: Foyer 2

Chair: Ying Tan

**P101** *A Study of the switching function of Subthalamic Nucleus in Saccade Generation using a Computational Model of Basal Ganglia* [#538]. Maithreye Rengaswamy and Srinivasa Chakravarthy

**P102** *Cerebellar Spiking Engine: Towards Object Model Abstraction in Manipulation* [#299]. Niceto Rafael Luque Sola, Jesus Alberto Garrido Alcazar, Richard Rafael Carrillo Sanchez and Eduardo Ros Vidal

**P103** *An Genetic Approach to Support Vector Machines in classification problems* [#685]. Carlos Padilha, Naiyan Lima, Adriaio Neto and Jorge Melo

**P104** *An Improved Multi-label Classification Based on Label Ranking and Delicate Boundary SVM* [#97]. Benhui Chen, Weifeng Gu and Jinglu Hu

**P105** *Kernel Based Principal Component for Recognizing Handwritten Numbers* [#735]. Xiaoxiao Song, Songhua Xu and Willard Miranker

**P106** *Applying Support Vector Machines and Mutual Information to Book Losses Prediction* [#837]. Antonio Mora, Luis Javier Herrera, Jose Urquiza, Ignacio Rojas and J.J. Merelo

**P107** *Making Use of Damped Noisy Gradient in Training Neural Network* [#384]. Md. Asaduzzaman, Sultan Udiin Ahmed, Fazle Elahi Khan, Md. Shahjahan and Kazuyuki Murase

**P108** *Comparison of MLP Cost Functions to Dodge Mislabeled Training Data* [#669]. Paavo Nieminen and Tommi Karkkainen

**P109** *Intelligent Trading Using Support Vector Regression and Multilayer Perceptrons Optimized with Genetic Algorithms* [#570]. Ming Zhu and Lipo Wang

### [S139-2]: Special Session: Awareness and Cognition: Modeling and Applications II

Monday, July 19, 11:30AM-12:50PM, Room: 123

Chair: Runhe Huang, Robert Kozma, Goutam Chakraborty and Qiangfu Zhao

**11:30AM** *A Customer Intention Aware System for Document Analysis* [#218]. Jie Ji, Daichi Kunita and Qiangfu Zhao

**11:50AM** *e-Learning System to Support Teacher's Awareness for Misunderstandings in Quiz* [#393]. Taisuke Nakamura, Takuma Imai, Haruhiko Takase, Naoki Morita Hiroharu Kawanaka and Shiniji Tsuruoka

**12:10PM** *Agents based Approach for Smart Eco-home Environments* [#588]. Runhe Huang, Masahiro Itou, Toshihiro Tamura and Jianhua Ma

**12:30PM** *How Best to Restore Operations of a Damaged ANN?* [#844]. Goutam Chakraborty, Hideyuki Kurokawa, Basabi Chakraborty, Masafumi Matsuhara, Hiroshi Mabuchi and Yasuo Terayama

### [ND-2]: Neural Dynamics II

Monday, July 19, 11:30AM-12:50PM, Room: 124

Chair: Juyang Weng

**11:30AM** *Global Uniform Asymptotic Stability of Memristor-based Recurrent Neural Networks with Time Delays* [#103]. Jin Hu and Jun Wang

**11:50AM** *The Controlled Conjugate Gradient Type Trajectory-Following Neural Net for Minimization of Nonconvex Functions* [#412]. Amit Bhaya, Fernando Pazos and Eugenius Kaszkurewicz

**12:10PM** *A Quantified Sensitivity Measure of Radial Basis Function Neural Networks to Input Variation* [#67]. Xianming Chen, Xiaoqin Zeng, Rong Chu and Shuiming Zhong

**12:30PM** *Investigation of Generalized Hopfield Model by Statistical Physics Methods* [#239]. Boris Kryzhanovsky and Leonid Litinskii

### [S125-1]: Special Session: Advances in Learning and Application of Spiking Neural Networks I

Monday, July 19, 11:30AM-12:50PM, Room: 125

Chair: Krzysztof Gios, Liam McDaid, Ammar Belatreche and Arfan Ghani

**11:30AM** *The Leaky Integrate-and-Fire Neuron: A Platform for Synaptic Model Exploration on the SpiNNaker Chip* [#197]. Alexander Rast, Francesco Galluppi, Xin Jin and Steve Furber

**11:50AM** *Implementing Spike-Timing-Dependent Plasticity on SpiNNaker Neuromorphic Hardware* [#442]. Xin Jin, Alexander Rast, Francesco Galluppi, Sergio Davies and Steve Furber

**12:10PM** *Hardware System for Biologically Realistic, Plastic, and Real-time Spiking Neural Network Simulations* [#423]. Sylvain Saighi, Timothee Levi, Bilel Belhadj, Olivia Malot and Jean Tomas

**12:30PM** *A Spiking Neural Network Alternative for the Analog to Digital Converter* [#36]. Jeffrey Lovelace, John Rickard and Krzysztof Cios

### [MA-1]: Medical Applications I

Monday, July 19, 11:30AM-12:50PM, Room: 127

Chair: Alexandru Floares

**11:30AM** *Atrial Activity Estimation using Periodic Component Analysis* [#640]. Raul Llinares, Jorge Igual, Julio Miro-Borras and Andres Camacho

**11:50AM** *A High Performance SSVEP-BCI Without Gazing* [#207]. Miguel Lopez, Francisco Pelayo and Alberto Prieto

**12:10PM** *Intelligent System for Diagnosing Sleep Stages Using Wavelet Coefficients* [#608]. Maryam Vatankhah Mohammad Reza Akbarzadeh and Ali Moghimi

**12:30PM** *Configuring the Stochastic Helmholtz Machine for Subcortical Emotional Learning* [#81]. Chi-Yung Yau, Kevin Burn and Stefan Wermter

### [S002-2]: Special Session: Emerging Neuromorphic Hardware Architectures and Applications II

Monday, July 19, 11:30AM-12:50PM, Room: 128

Chair: Robinson Pino, Partha S. Dutta

**11:30AM** *Silver Chalcogenide Based Memristor Devices* [#777]. Antonio Oblea, Achyut Timilsina, David Moore and Kristy Campbell

**11:50AM** *Fabrication and Testing of Memristive Devices* [#754]. Chris Yakopcic, Eunsung Shin, Tarek Taha, Guru Subramanyam, P. Terrence Murray and Stanley Rogers

**12:10PM** *Analysis of Dynamic Linear and Non-linear Memristor Device Models for Emerging Neuromorphic Computing Hardware Design* [#142]. Nathan McDonald, Robinson Pino, Peter Rozwood and Bryant Wysocki

**12:30PM** *Neural Networks Recognition Rate as Index to Compare the Performance of Fuzzy Edge Detectors* [#796]. Olivia Mendoza, Patricia Melin and Oscar Castillo

### [S146-1]: Special Session: Neural Models of Creativity I

Monday, July 19, 2:30PM-3:30PM, Room: 123

Chair: Ali Minai, Daniel Levine

**2:30PM** *Drive for Creativity* [#255]. Leonid Perlovsky and Daniel Levine

**2:50PM** *Neurocognitive Spotlights: Configuring Domains for Ideation* [#805]. Laxmi Iyer, Vaidehi Venkatesan and Ali Minai

**3:10PM** *An Emergent Attractors Model for Idea Generation Process* [#755]. Simona Doboli and Vincent Brown

**[ND-3]: Neural Dynamics III**

Monday, July 19, 2:30PM-3:30PM, Room: 124

Chair: Toshimichi Saito

**2:30PM** *Exploring and Optimizing Dynamic Neural Fields Parameters Using Genetic Algorithms* [#387]. Jean-Charles Quinton

**2:50PM** *A New Delayed Projection Neural Network for Solving Quadratic Programming Problems* [#57]. Bonan Huang, Huaguang Zhang, Zhanshan Wang and Meng Dong

**3:10PM** *On Gaussian Random Neuronal Field Model: Moment Neuronal Network Approach* [#470]. Wenlian Lu and Jianfeng Feng

**[S125-2]: Special Session: Advances in Learning and Application of Spiking Neural Networks II**

Monday, July 19, 2:30PM-3:30PM, Room: 125

Chair: Krzysztof Cios, Liam McDaid, Ammar Belatreche, Arfan Ghani

**2:30PM** *Neural Behaviors and Nonlinear Dynamics of a Rotate-and-Fire Digital Spiking Neuron* [#560]. Tetsuya Hishiki and Hiroyuki Torikai

**2:50PM** *Integrate-and-Fire-Type Digital Spiking Neuron and its Learning for Spike-Pattern-Division Multiplex Communication* [#564]. Tetsuro Iguchi, Akira Hirata and Hiroyuki Torikai

**3:10PM** *Thalamocortical Circuitry and Alpha Rhythm Slowing: An Empirical Study based on a Classic Computational Model* [#702]. Basabdatta Bhattacharya, Damien Coyle and Liam Maguire

**[MA-2]: Medical Applications II**

Monday, July 19, 2:30PM-3:30PM, Room: 127

Chair: David G. Brown

**2:30PM** *Human Activity Detection using Spiking Neural Networks Regulated by A Gene Regulatory Network* [#202]. Yan Meng, Yaochu Jin, Jun Yin and Matthew Conforth

**2:50PM** *Development of a Virtual Agent Based Social Tutor for Children with Autism Spectrum Disorders* [#484]. Marissa Milne, Richard Leibbrandt, Martin Luerssen, Trent Lewis and David Powers

**3:10PM** *EEG Frequency Analysis for Dozing Detection System* [#330]. Yohei Tomita, Yasue Mitsukura, Toshihisa Tanaka and Jianting Cao

**[S002-3]: Special Session: Emerging Neuromorphic Hardware Architectures and Applications III**

Monday, July 19, 2:30PM-3:30PM, Room: 128

Chair: Robinson.Pino, Partha S. Dutta

**2:30PM** *Visual Spike-based Convolution Processing with a Cellular Automata Architecture* [#647]. Manuel Rivas-Perez, Alejandro Linares-Barranco, Joaquin Cerda, Nestor Ferrando, Gabriel Jimenez-Moreno and A. Civit

**2:50PM** *Comparison of Range Check Classifier and Hybrid Network Classifier for Hand Sign Recognition System* [#353]. Hiroomi Hikawa, Seito Yamazaki, Tatsuya Ando, Seiji Miyoshi and Yutaka Maeda

**3:10PM** *A Columnar Primary Visual Cortex (V1) Model Emulation Using a PS3 Cell-BE Array* [#35]. Michael J. Moore, Richard Linderman, Morgan Bishop and Robinson Pino

**[MAP]: Poster Session II**

Monday, July 19, 3:00PM-6:00PM, Room:Foyer 2,  
Chair: Ravi Rao

- P301** *A Neural Model Approach for Regularization in the Mean Estimation Case* [#306]. Sergio Decherchi, Mauro Parodi and Sandro Ridella
- P302** *An Improved Online quasi-Newton Method for Robust Training and its application to Microwave Neural Network Models* [#600]. Hiroshi Ninomiya
- P303** *A Complexity Based Silent Pruning Algorithm* [#385]. Sultan Uddin Ahmed, Md. Fazle Elahi Khan, Md. Shahjahan and Kazuyuki Murase
- P304** *Neural Network Architecture Selection Analysis With Application to Cryptography Location* [#467]. Jason Wright and Milos Manic
- P305** *Latent Learning in Deep Neural Nets* [#617]. Steven Gutstein, Olac Fuentes and Eric Freudenthal
- P306** *Learning Methods of Recurrent Spiking Neural Networks Based on Adjoint Equations Approach* [#546]. Yasuaki Kuroe and Tomokazu Ueyama
- P307** *Zip Nets: Efficient Associative Computation with Binary Synapses* [#169]. Andreas Knoblauch
- P308** *pRAM n-Tuple Classifier - a New Architecture of Probabilistic RAM Neurons for Classification Problems* [#781]. Paulo Adeodato and Rosalvo Oliveira Neto
- P309** *A Geometric Radial Basis Function Network for Tracking Variant 3D Transformations* [#488]. Eduardo Bayro-Corrochano and Eduardo Vazquez-Santacruz

**[S146-2]: Special Session: Neural Models of Creativity II**

Monday, July 19, 3:30PM-4:30PM, Room: 123  
Chair: Ali Minai, Daniel Levine

- 3:30PM** *Modeling the Beneficial Effects of Incubation in Creative Brainstorming* [#163]. Aydin Farajidavar, Daniel Levine, Nicholas Kohn and Paul Paulus
- 3:50PM** *Creative Problem Solving: A CLARION Theory* [#25]. Sebastien Helie and Ron Sun
- 4:10PM** *The Creativity Effect: Consciousness versus Attention* [#434]. John Taylor

**[ND-4]: Neural Dynamics IV**

Monday, July 19, 3:30PM-4:30PM, Room: 124  
Chair: Toshimichi Saito

- 3:30PM** *Space-Varying Cellular Neural Networks Designed by Hopfield Neural Network* [#515]. Yasuhiro Ueda, Masakazu Kawahara, Takashi Inoue, Yoko Uwate and Yoshifumi Nishio
- 3:50PM** *Interior Point Based Continuous Methods for Linear Programming* [#12]. Li-Zhi Liao
- 4:10PM** *Neural Assembly Generation by Selective Connection Weight Updating* [#725]. Yoshitsugu Kakemoto and Shinichi Nakasuka

**[S125-3]: Special Session: Advances in Learning and Application of Spiking Neural Networks III**

Monday, July 19, 3:30PM-4:30PM, Room: 125

Chair: Krzysztof Gios, Liam McDaid, Ammar Belatreche, Arfan Ghani

**3:30PM** *Feature Extraction from Spectro-temporal Signals using Dynamic Synapses, Recurrency, and Lateral Inhibition* [#377]. Cornelius Glackin, Liam Maguire and Liam McDaid

**3:50PM** *Application of Biologically Inspired Neural Oscillators to Colour Image Segmentation* [#811]. Ammar Belatreche, Liam Maguire, Martin McGinnity, Arfan Ghani and Liam McDaid

**4:10PM** *Find Synaptic Topology from Spike Trains* [#471]. Tian Ge, Wenlian Lu and Jianfeng Feng

**[LP-1]: Language Processing I**

Monday, July 19, 3:30PM-4:30PM, Room: 127

Chair: Soo-Young Lee

**3:30PM** *Evolutionary Neural Network Model of Universal Grammar* [#122]. Motohiro Saiki and Satoshi Matsuda

**3:50PM** *Natural Language Processing Neural Network for Analogical Inference* [#742]. Masahiro Saito and Masafumi Hagiwara

**4:10PM** *Biologically Plausible Connectionist Prediction of Natural Language Thematic Relations* [#314]. Joao Luis Garcia Rosa

**[R-1]: Robotics I**

Monday, July 19, 3:30PM-4:30PM, Room: 128

Chair: Zeng-Guang Hou

**3:30PM** *An Open-Source Real-Time System for Remote Robotic Control using Neuroblastoma Cultures* [#604]. Jose Manuel Ferrandez, Victor Lorente, Gabriela Diaz, Felix delaPaz and Eduardo Fernandez

**3:50PM** *Unsupervised and Adaptive Category Classification for a Vision-Based Mobile Robot* [#89]. Masahiro Tsukada, Hirokazu Madokoro and Kazuhito Sato

**[S120]: Special Session: Learning to Recognize Objects**

Monday, July 19, 4:50PM-6:30PM, Room: 123

Chair: Narayan Srinivasa

**4:50PM** *Learning to Recognize Objects Using Waves of Spikes and Spike Timing-Dependent Plasticity* [#60]. Timothee Masquelier and Simon Thorpe

**5:10PM** *Learning Objects on the Fly -- Object Recognition for the Here and Now* [#350]. Christian Faubel and Gregor Schoener

**5:30PM** *Where-What Network 3: Developmental Top-Down Attention for Multiple Foregrounds and Complex Backgrounds* [#792]. Matthew Luciw and Juyang Weng

**5:50PM** *A Hierarchical Group Method of Data Handling Polynomial Neural Network for Handwritten Numeral Recognition* [#756]. El-Sayed El-Alfy

**6:10PM** *Incremental Learning for Visual Classification using Neural Gas* [#370]. Ignazio Aleo, Paolo Arena and Luca Patane

**[ND-5]: Neural Dynamics V**

Monday, July 19, 4:50PM-6:30PM, Room: 124

Chair: Lipo Wang

**4:50PM** *A Neurodynamic Optimization Approach to Constrained Sparsity Maximization Based on Alternative Objective Functions* [#582]. Zhishan Guo and Jun Wang

**5:10PM** *Neurobiological Challenge on Visually Attentive Navigation: Who Triggers The Development of Hippocampal Place Fields? Who Responds for the Appearance of Motivational Status to Navigate?* [#264]. Renan Vitral

**5:30PM** *A Nonexclusive Task Decomposition Method for Modular Neural Networks* [#557]. Victor Alves and George Cavalcanti

**5:50PM** *Efficient Energy Landscape Transformation in the Problem of Binary Minimization* [#137]. Ya. M. Karandashev and Boris V. Kryzhanovsky

**6:10PM** *Bayesian Estimates from Heterogeneous Population Codes* [#135]. Brian Fischer

**[S125-4]: Special Session: Advances in Learning and Application of Spiking Neural Networks IV**

Monday, July 19, 4:50PM-6:30PM, Room: 125

Chair: Krzysztof Gios, Liam McDaid, Ammar Belatreche, Arfan Ghani

**4:50PM** *Analyzing the Dynamics of the Simultaneous Feature and Parameter Optimization of an Evolving Spiking Neural Network* [#494]. Stefan Schliebs, Michael Defoin-Platel and Nikola Kasabov

**5:10PM** *Classification of Musical Styles Using Liquid State Machines* [#327]. Han Ju, Jian-Xin Xu and Antonius M.J. VanDongen

**5:30PM** *A Spiking Neural Network Based on Temporal Encoding for Electricity Price Time Series Forecasting in Deregulated Markets* [#823]. Vishal Sharma and Dipti Srinivasan

**5:50PM** *Accelerated Simulation of Spiking Neural Networks Using GPUs* [#602]. Andreas Fidjeland and Murray Shanahan

**6:10PM** *Encoding Real Values into Polychronous Spiking Networks* [#458]. Cameron Johnson and Ganesh Kumar Venayagamoorthy

**[LP-2]: Language Processing II**

Monday, July 19, 4:50PM-6:30PM, Room: 127

Chair: Ali Minai

**4:50PM** *SVM - Neighbor Based Candidate Working Set Selection Applied on Text-Categorization* [#465]. Eduardo Kinto and Emilio Del-Moral-Hernandez

**5:10PM** *Density Estimation-Based Document Categorization using von Mises-Fisher Kernels* [#166]. Andrew Skabar and Shahmeer Memon

**5:30PM** *Recurrent Snap-Drift Neural Network for Phrase Recognition* [#461]. Dominic Palmer-Brown and Chrisina Draganova

**5:50PM** *Incremental Knowledge Acquisition and Self Learning from Text* [#691]. Daswin De Silva and Damminda Alahakoon

**6:10PM** *Occurrence of False Memories: A Neural Module Considering Context for Memorization of Words Lists* [#491]. Aluizio Araujo, Hansenclever Bassani and Pacheco Renato

**[IMPL]: Implementations**

Monday, July 19, 4:50PM-6:30PM, Room: 128

Chair: Marley Vellasco

**4:50PM** *Mapping the Diffusion Network into a Stochastic System in Very Large Scale Integration* [#172]. Chen-Han Chien, Chih-Chen Lu and Hsin Chen

**5:10PM** *Self-sustained activity in Attractor Networks using Neuromorphic VLSI* [#462]. Patrick Camilleri, Massimiliano Giulioni, Maurizio Mattia, Jochen Braun and Paolo Del Giudice

**5:30PM** *N2Cloud: Cloud Based Neural Network Simulation Application* [#552]. Altaf Ahmad Huqqani, Xin Li, Peter Beran and Erich Schikuta

**5:50PM** *Ternary Multiway Switch and its Implementation by Neuron-Like Element* [#15]. Takako Soma and Takashi Soma

**6:10PM** *Accelerating Neuro-Evolution by Compilation to Native Machine Code* [#83]. Nils T Siebel, Andreas Jordt and Gerald Sommer

**Tuesday, July 20, 2010****[S138]: Special Session: Autonomous Adaptive Systems**

Tuesday, July 20, 8:00AM-10:00AM, Room: 123

Chair: John G. Taylor

**8:00AM** *A Roadmap for Autonomous Adaptive Systems: The Brain-Guided Attention (BGA) System* [#435]. John Taylor

**8:20AM** *A Synergistic View of Autonomous Cognitive Systems* [#459]. Ali Minai, Mithun Perdoor, Kiran Byadarhaly, Suresh Vasa and Laxmi Iyer

**8:40AM** *The Knowledge Instinct of Autonomous Adaptation* [#724]. Leonid Perlovsky and Roman Ilin

**9:00AM** *On NSF "open questions," Some External Properties of the Brain as a Learning System and An Architecture for Autonomous Learning* [#768]. Asim Roy

**9:20AM** *Top-down Visual Selective Attention Model Combined with Bottom-up Saliency Map for Incremental Object Perception* [#562]. Sang-Woo Ban, Bumhwi Kim and Minhoo Lee

**[SVM-KM-1]: Support Vector Machines and Kernel Methods I**

Tuesday, July 20, 8:00AM-10:00AM, Room: 124

Chair: Andreu Català

**8:00AM** *Convergence Improvement of Active Set Support Vector Training* [#86]. Ryouyuke Yabuwaki and Shigeo Abe

**8:20AM** *Feature Selection and Fast Training of Subspace Based Support Vector Machines* [#490]. Takuya Kitamura, Syogo Takeuchi and Shigeo Abe

**8:40AM** *Multiobjective Multiclass Support Vector Machine Based on the One-against-all Method* [#597]. Keiji Tatsumi, Masato Tai and Tetsuzo Tanino

**9:00AM** *Efficient Resampling Methods for Training Support Vector Machines with Imbalanced Datasets* [#790]. Rukshan Batuwita and Vasile Palade

**9:20AM** *An Optimal Sphere and Two Large Margins Approach for Novelty Detection* [#497]. Trung Le, Dat Tran, Wanli Ma and Dharmendra Sharma

**9:40AM** *Binary Classification Based on SVDD Projection and Nearest Neighbors* [#472]. Daesung Kang, Jooyoung Park and Jose C. Principe

**[S033-1]: Special Session: Data Mining Ensemble Methods and Their Applications I**

Tuesday, July 20, 8:00AM-10:00AM, Room: 125

Chair: Wenjia Wang, Derek Partridge

**8:00AM** *Ensemble Particle Swarm Model Selection* [#650]. Hugo Jair Escalante, Manuel Montes and L. Enrique Sucar

**8:20AM** *Factors Affecting Boosting Ensemble Performance on DNA Microarray data.* [#374]. Geoffrey Guile and Wenjia Wang

**8:40AM** *Neural Predictor Ensemble for Accurate Forecasting of PM10 Pollution* [#31]. Krzysztof Siwek, Stanislaw Osowski and Mieczyslaw Sowinski

**9:00AM** *A Clustering Ensemble Method for Clustering Mixed Data* [#136]. Jamil Al-Shaqsi and Wenjia Wang

**9:20AM** *Mandarin Stress Detection Using Hierarchical Model Based Boosting classification and regression tree* [#9]. Chong-Jia Ni, Wen-Ju Liu and Bo Xu

**9:40AM** *Comparing Methods for Generating Diverse Ensembles of Artificial Neural Networks* [#760]. Tuve Lofstrom, Ulf Johansson and Henrik Boström

### [S004-1]: Special Session: Advances in Computational Intelligence for Brain-Computer Interfaces I

Tuesday, July 20, 8:00AM-10:00AM, Room: 127

Chair: Cuntai Guan, Chin-Teng Lin, Damien Coyle, Li-Wei Ko

**8:00AM** *Application of Rough Set-Based Neuro-Fuzzy System in NIRS-Based BCI for Assessing Numerical Cognition in Classroom* [#50]. Kai Keng Ang, Cuntai Guan, Kerry Lee, Jie Qi Lee, Shoko Nioka and Britton Chance

**8:20AM** *Rhythmic component extraction considering phase alignment and the application to motor imagery-based brain computer interfacing* [#504]. Hiroshi Higashi, Toshihisa Tanaka and Yasue Mitsukura

**8:40AM** *Predictive-Spectral-Spatial Preprocessing for a Multiclass Brain-Computer Interface* [#614]. Damien Coyle, Abdul Satti and Martin McGinnity

**9:00AM** *EEG Signal Separation for Multi-Class Motor Imagery using Common Spatial Patterns Based on Joint Approximate Diagonalization* [#417]. Sidath Ravindra Liyanage, Jianxin Xu, Cuntai Guan, Kai Keng Ang and Tong Heng Lee

**9:20AM** *An EEG-based Classification System of Passenger's Motion Sickness Level by using Feature Extraction/Selection Technologies* [#740]. Yi-Hsin Yu, Pei-Chen Lai, Li-Wei Ko, Chun-Hsiang Chuang, Bor-Chen Kuo and Chin-Teng Lin

**9:40AM** *Person Identification using VEP signals and SVM classifiers* [#591]. Antonio Ferreira, Carlos Almeida and Petia Georgieva

### [R-2]: Robotics II

Tuesday, July 20, 8:00AM-10:00AM, Room: 128

Chair: Richard J. Duro

**8:00AM** *Spacecraft Coordination Control in 6DOF Based on Neural Network* [#55]. Haibo Min, Fuchun Sun, Shicheng Wang, Zhiguo Liu and Jinsheng Zhang

**8:20AM** *Improvement in Service Robot's Interaction through Case Based Reasoning* [#592]. Catalina Roncancio, Jose Luis Rodriguez, Eduardo Zalama and Jaime Gomez

**8:40AM** *Self-Organized Executive Control Functions* [#441]. Michail Maniadakis, Panos Trahanias and Jun Tani

**9:00AM** *Acquisition of adaptive walking behaviors using machine learning with Central Pattern Generator* [#506]. Takahiro Sato, Kota Watanabe and Hajime Igarashi

**9:20AM** *A T-S Fuzzy Logic Controller for Biped Robot Walking based on Adaptive Network Fuzzy Inference System* [#707]. Selene L. Cardenas-Maciel, Oscar Castillo, Luis T. Aguilar and Juan R. Castro

**9:40AM** *A Robotic Eye Controller Based on Cooperative Neural Agents* [#447]. Oscar Chang, Pascual Campoy, Carol Martinez and Miguel A. Olivares-Mendez

**[TuMP]: Poster Session III**

Tuesday, July 20, 9:00AM-12:00PM, Room: Foyer 2

Chair: Cesare Alippi

**P501** *Hardware Implementation of Stochastic-Based Neural Networks* [#381]. Josep L Rossello, Vincent Canals and Antoni Morro

**P502** *An Improved SOM-based Visualization Technique for DNA Microarray Data Analysis* [#222]. Jagdish Patra, Jacob Abraham, Pramod Meher and Goutam Chakraborty

**P503** *Hypoglycaemia Detection for Type 1 Diabetic Patients Based on ECG Parameters Using Fuzzy Support Vector Machine* [#46]. Nuryani Nuryani, Steve Ling and Hung T. Nguyen

**P504** *A Scalable Reference-Point Based Algorithm to Efficiently Search Large Chemical Databases* [#810]. Francesco Napolitano, Roberto Tagliaferri and Pierre Baldi

**P505** *Investigation of Mel Frequency Cepstrum Coefficients Parameters for Classification of Infant Cries with Hypothyroidism using MLP Classifier* [#280]. Azlee Zabidi, Wahidah Mansor, Lee Khuan, Ihsan Yassin and Rohilah Sahak

**P506** *Ambient Living Activity Recognition based on Feature-set Ranking Using Intelligent Systems* [#818]. Oresti Banos, Hector Pomares and Ignacio Rojas

**P507** *Personalized Facial Expression Recognition in Indoor Environments* [#571]. Chuan-Yu Chang and Yan-Chiang Huang

**P508** *Gradient-based SOM Clustering and Visualisation Methods* [#813]. Jose Alfredo F. Costa and Hujun Yin

**P509** *A Classifier with Clustered Sub Classes for the Classification of Suspicious Areas in Digital Mammograms* [#287]. Peter McLeod and Brijesh Verma

**P510** *Adaptive Clustering of Production State based on Kernel Entropy Component Analysis* [#243]. Fei He, Min Li, Jian-hong Yang and Jin-wu Xu

**P511** *A Kernel K-means Clustering Method for Symbolic Interval Data* [#189]. Anderson Costa, Bruno Pimentel and Renata Souza

**P512** *A Neuronal Multisensory Processing Simulator* [#109]. Hun Ki Lim, Les Keniston, Joo Heon Shin, Cao Nguyen, M. Alex Meredith and Krzysztof J. Cios

**P513** *Training a Spiking Neural Network to Control a 4-DoF Robotic Arm based on Spike Timing-Dependent Plasticity* [#303]. Alexandros Bouganis and Murray Shanahan

**P514** *Possibility of Synchronization in Hopfield like Chaotic Neural Networks with just adding a Single Neuron* [#533]. Nariman Mahdavi, Mohammad Bagher Menhaj and Ahmad Afshar

**P515** *Robust Stability Analysis of Linsker-Type Hebbian Learning Multi-Time Scale Neural Networks under Parametric Uncertainties* [#76]. Anke Meyer-Baese, Sylvain Lespinats, Ingo Keck and Elmar Lang

**P516** *Complex ICA-R* [#340]. Jagath Rajapakse and Wenda Chen

**P517** *Modifying the Learning Rate of FLNG Dealing with Imbalanced Datasets* [#80]. Ivan Machon-Gonzalez, Hilario Lopez-Garcia and Jose Luis Calvo-Rolle

**[S149:Special Session]: Mental Architecture and Representation**

Tuesday, July 20, 11:30AM-12:50PM, Room: 123

Chair: Juyang Weng, Asim Roy

**11:30AM** *A 5-Chunk Developmental Brain-Mind Network Model for Multiple Events in Complex Backgrounds* [#741]. Juyang Weng

**11:50AM** *Is the Connectionist Notion of Subconcepts Flawed?* [#69]. Asim Roy

**12:10PM** *A Cognitive Developmental Robotics Architecture for Lifelong Learning by Evolution in Real Robots* [#616]. Francisco Bellas, Andres Faina, Gervasio Varela and Richard J. Duro

**12:30PM** *Mental Development and Representation Building through Motivated Learning* [#853]. Janusz Starzyk, Pawel Raif and Ah-Hwee Tan

**[SVM-KM-2]: Support Vector Machines and Kernel Methods II**

Tuesday, July 20, 11:30AM-12:50PM, Room: 124

Chair: Leif Peterson

**11:30AM** *Support Feature Machines: Support Vectors are not enough* [#624]. Tomasz Maszczyk and Wlodzislaw Duch

**11:50AM** *Nonlinear Regularization Path for the Modified Huber loss Support Vector Machines* [#236]. Masayuki Karasuyama and Ichiro Takeuchi

**12:10PM** *Model Selection for Support Vector Machines: Advantages and Disadvantages of the Machine Learning Theory* [#341]. Davide Anguita, Alessandro Ghio, Noemi Greco, Luca Oneto and Sandro Ridella

**12:30PM** *Efficient SVM Training with Reduced Weighted Samples* [#745]. Giang Hoang Nguyen, Son Lam Phung and Abdesselam Bouzerdoum

**[S033-2]: Special Session: Data Mining Ensemble Methods and Their Applications II**

Tuesday, July 20, 11:30AM-12:50PM, Room: 125

Chair: Wenjia Wang, Derek Partridge

**11:30AM** *Heterogeneous Bayesian Ensembles for Classifying Spam Emails* [#344]. Wenjia Wang

**11:50AM** *Combining Probabilistic Neural Networks and Decision Trees for Maximally Accurate and Efficient Accident Prediction* [#164]. Tatiana Tambouratzis, Dora Souliou, Miltiadis Chalikias and Andreas Gregoriades

**12:10PM** *Transferred Correlation Learning: An Incremental Scheme for Neural Network Ensembles* [#694]. Lei Jiang, Jian Zhang and Gabrielle Allen

**[S004-2]: Special Session: Advances in Computational Intelligence for Brain-Computer Interfaces II**

Tuesday, July 20, 11:30AM-12:50PM, Room: 127

Chair: Cuntai Guan, Chin-Teng Lin, Damien Coyle, Li-Wei Ko

**11:30AM** *Analyzing Effect of Distraction Caused by Dual-Tasks on Sharing of Brain Resources Using SOM* [#554]. Yu-Kai Wang, Nikhil R. Pal, Chin-Teng Lin and Shi-An Chen

**11:50AM** *Driver's Cognitive State Classification toward Brain Computer Interface via using a Generalized and Supervised Technology* [#635]. Chun-Hsiang Chuang, Pei-Chen Lai, Li-Wei Ko, Bor-Chen Kuo and Chin-Teng Lin

**12:10PM** *Spatio-Spectral Sufficient Statistic for Mental Imagery EEG Signals* [#502]. Mohammad Shahin Mahanta, Amirhossein S. Aghaei, Konstantinos N. Plataniotis and Subbarayan Pasupathy

**12:30PM** *EEG-based Absence Seizure Detection Methods* [#673]. Sheng-Fu Liang, Wan-Lin Chang and Herming Chiueh

### [R-3]: Robotics III

Tuesday, July 20, 11:30AM-12:50PM, Room: 128

Chair: Marios M. Polycarpou

**11:30AM** *Robot Planning by Cooperation of Hopfield Networks – A Case of Warehouse Keeper Puzzle (sokoban)* – [#124]. Kairi Miyazaki and Satoshi Matsuda

**11:50AM** *Spatio-Temporal Sequence Learning of Visual Place Cells for Robotic Navigation* [#70]. Vu Anh Nguyen, Janusz A. Starzyk, Alex Leng Phuan Tay and Wooi Boon Goh

**12:10PM** *Comparison of the Bayesian and Neural Network Algorithms in Nonlinear Navigation Estimation Problems* [#229]. Oleg Stepanov and Vladimir Vasiliev

**12:30PM** *SARSA-based Reinforcement Learning for Motion Planning in Serial Manipulators* [#382]. Ignazio Aleo, Paolo Arena and Luca Patane

### [IJCNN / IT-1]: Invited Talk 1: Marley Maria Bernardes Rebuszi Vellasco

“Quantum-Inspired Neuro-Evolutionary Models”

Tuesday, July 20, 2:30PM-3:30PM, Room: 117

Chair: Ian Cloete

### [TuAP]: Poster Session IV

Tuesday, July 20, 3:00PM-6:00PM, Room: Foyer 2

Chair: Yaochu Jin

**P701** *Controlling a Robot with a Brain-Computer Interface based on Steady State Visual Evoked Potentials* [#840]. Robert Prueckl and Christoph Guger

**P702** *A New Approach for Fuzzy Feature Extraction based on Pixel's Brightness* [#117]. Miguel Lopez, Patricia Melin and Oscar Castillo

**P703** *A Force Field Driven SOM for Boundary Detection* [#215]. Yu He, Songhua Xu and Willard Miranker

**P704** *Unconstrained Offline Handwriting Recognition using Connectionist Character N-grams* [#398]. F. Zamora-Martinez, M.J. Castro-Bleda, S. Espana-Boquera and J. Gorbe-Moya

**P705** *Automatic Extraction of Face Contours* [#367]. Chih-Yu Hsu, Hao-Feng Wang, Hui-Ching Wang, Kuo-Kun Tseng and Yih-Jing Tang

**P706** *A Competitive Network for Multi-object Selection* [#606]. Drazen Domijan

**P707** *A Component Based Approach Improves Classification of Discrete Facial Expressions Over a Holistic Approach* [#530]. Kenny Hong, Stephan Chalup and Robert King

**P708** *FBWN: an Architecture of Fast Beta Wavelet Networks for Image Classification* [#19]. Olfa Jemai, Mourad Zaied, Chokri Ben Amar and Adel M. Alimi

**P709** *Statistical Spiking Model for Real World Pattern Recognition Applications* [#773]. Alireza A. Dibazar, Sageev George and Theodore W. Berger

**P710** *Quantum Morphogenetic System In View-Invariant Recognition* [#263]. Germano Resconi, Chu Kiong Loo and Nuo Wi Tay

**P711** *Over-Segmentation and Neural Binary Validation for Cursive Handwriting Recognition* [#486]. Hong Lee and Brijesh Verma

### [S144]: Special Session: Chaotic Neural Networks and Neurocomputing Models with Rich Dynamics

Tuesday, July 20, 3:30PM-4:30PM, Room: 123

Chair: Emilio del Moral Hernandez, Robert Kozma

**3:30PM** *Chaotic Behavior in Probabilistic Cellular Neural* [#852]. Robert Kozma and Marko Puljic

**3:50PM** *Impulsive Hybrid Synchronization of Chaotic Discrete-Time Delayed Neural Networks* [#282]. Eva Kaslik and Seenith Sivasundaram

**4:10PM** *Robust Pattern Recognition Using Chaotic Dynamics in Attractor Recurrent Neural Network* [#82]. Masoumeh Azarpour, Seyyed Seyedsalehi Ali and Abouzar Taherkhani

### [SVM-KM-3]: Support Vector Machines and Kernel Methods III

Tuesday, July 20, 3:30PM-4:30PM, Room: 124

Chair: Johan Suykens

**3:30PM** *A Parallel Perceptron network for classification with direct calculation of the weights optimizing error and margin* [#262]. M. Fernandez-Delgado, J. Ribeiro, E. Cernadas and S. Barro

**3:50PM** *Metric Representations of Data via the Kernel-based Sammon Mapping* [#847]. Mingbo Ma, Ryan Gonet, RuiZhi Yu and Georgios Anagnostopoulos

### [L-1]: Learning I

Tuesday, July 20, 3:30PM-4:30PM, Room: 125

Chair: Liang Zhao

**3:30PM** *Augmented Efficient Backprop for Backpropagation Learning in Deep Autoassociative Neural Networks* [#228]. Mark Embrechts, Blake Hargis and Jonathan Linton

**3:50PM** *Selective Attention Improves Self-Organization of Cortical Maps with Multiple Inputs* [#160]. Thomas Trappenberg, Aya Saito and Pitoyo Hartono

**4:10PM** *A Rebuilt Clone Elastic Net Algorithm for Traveling Salesman Problem* [#161]. Gang Yang, Junyan Yi and Xiaofeng Meng

### [S093-1]: Special Session: Ensembles & Evolutionary Algorithms for Forecasting

Tuesday, July 20, 3:30PM-4:30PM, Room: 127

Chair: Juan Peralta Donate, Martin Stepnicka, Sven Crone

**3:30PM** *An Evaluation of Neural Network Ensembles and Model Selection for Time Series Prediction* [#839]. Devon K. Barrow, Sven F. Crone and Nikolaos Kourentzes

**3:50PM** *Neural Expert Weighing* [#664]. Rafael Valle dos Santos and Marley Vellasco

**4:10PM** *Time series forecasting by evolving artificial neural networks using genetic algorithms and differential evolution* [#653]. Juan Peralta Donate, Xiaodong Li, German Gutierrez and Araceli Sanchis.

#### [R-4]: Robotics IV

Tuesday, July 20, 3:30PM-4:30PM, Room: 128

Chair: Derong Liu

**3:30PM** *An Iterative Approach to local-PCA* [#677]. Samuel John, Heiko Wersing and Helge Ritter

**3:50PM** *Modified Neural Network Aided EKF based SLAM for Improving an accuracy of the Feature Map* [#684]. Jeong-Gwan Kang, Su-Yong An and Se-Young Oh

**4:10PM** *L-SLAM: Reduced Dimensionality FastSLAM Algorithms* [#403]. Vasilios Petridis and Nikos Zikos

#### [SVM-KM-4]: Self-Organizing Networks

Tuesday, July 20, 4:50PM-6:30PM, Room: 124

Chair: Stanislaw Osowski

**4:50PM** *Compositional Generative Mapping of Structured Data* [#809]. Davide Bacciu, Alessio Micheli and Alessandro Sperduti

**5:10PM** *A Hybrid Batch SOM-NG Algorithm* [#79]. Ivan Machon-Gonzalez, Hilario Lopez-Garcia and Jose Luis Calvo-Rolle

**5:30PM** *Stability Analysis of Self-Organizing Maps and Vector Quantization Algorithms* [#62]. Mauro Tucci and Marco Raugi

**5:50PM** *Topographic Under-Sampling for Unbalanced Distributions* [#85]. Fatma Hamdi, Mustapha Lebbah and Younes Bennani

**6:10PM** *A Self-Organizing Approach to Episodic Memory Modeling* [#736]. Wenwen Wang, Budhitama Subagdja, Ah-Hwee Tan and Janusz Starzyk

#### [S033-3]: Special Session: Data Mining Ensemble Methods and Their Applications III

Tuesday, July 20, 4:50PM-6:30PM, Room: 125

Chair: Wenjia Wang, Derek Partridge

**4:50PM** *Improving Boosting Performance with a Local Combination of Learners* [#395]. Efrain Mayhua-Lopez, Vanessa Gomez-Verdejo and Anibal R. Figueiras-Vidal

**5:10PM** *An Ensemble Classifier For Offline Cursive Character Recognition Using Multiple Feature Extraction Techniques* [#322]. Rafael Cruz, George Cavalcanti and Tsang Ren

**5:30PM** *Negative Correlation Learning for Classification Ensembles* [#130]. Shuo Wang, Huanhuan Chen and Xin Yao

**5:50PM** *A Novel Ensemble Classifier Approach using Weak Classifier Learning on Overlapping Clusters* [#95]. Ashfaqur Rahman and Brijesh Verma

**6:10PM** *Unsupervised Learning via Iteratively Constructed Clustering Ensemble* [#170]. Yun Yang and Ke Chen

**[S100]: Special Session: Convergence of Computational Intelligence and Emotional Intelligence**

Tuesday, July 20, 4:50PM-6:30PM, Room: 127

Chair: Pau-Choo (Julia) Chung, Jeen-Shing Wang

**4:50PM** *Emotional Quality Level Recognition Based on HRV* [#495]. Ming-Han Wu, Chih-Jen Wang, Yen-Kuang Yang, Jeen-Shing Wang and Pau-Choo Chung

**5:10PM** *Negative Emotion Detection Using the Heart Rate Recovery and Time for Twelve-Beats Heart Rate Decay after Exercise Stress Test* [#162]. Chun-Han Yang, Jue-Long Wang, Ko-Long Lin, Yau-Hwang Kuo and Kuo-Sheng Cheng

**5:30PM** *Emotion Recognition Based on a Novel Triangular Facial Feature Extraction Method* [#383]. Kuan-Chieh Huang, Sheng-Yu Huang and Yau-Hwang Kuo

**5:50PM** *Fuzzy-GIST for 4-Emotion Recognition in Natural Scene Images* [#451]. Qing Zhang and Minhoo Lee

**6:10PM** *Based on Support Vector Regression for Emotion Recognition using Physiological Signals* [#551]. Chuan-Yu Chang, Jun-Ying Zheng and Chi-Jane Wang

**[S140]: Special Session: Perception Algorithms and Systems for Autonomous Driving**

Tuesday, July 20, 4:50PM-6:30PM, Room: 128

Chair: Yi L. Murphey, Ishwa Sethi, Nelish Patel, Michael Del Rose, Robert Karlsen, Dimitar Filev, Yun Luo, Jungme Park

**4:50PM** *Vehicle Detection using Bayesian Network Enhanced Cascades Classification (BNECC)* [#496]. Shen Xu and YiLu Murphey

**5:10PM** *Illumination Invariant Lane Color Recognition by using Road Color Reference and Neural Networks* [#216]. Hyun-Chul Choi and Se-Young Oh

**5:30PM** *Terrain Identification in Grayscale Images with Recurrent Neural Networks* [#807]. Mahmoud Abou-Nasr

**5:50PM** *Robot Guiding with Obstacle Avoidance Algorithm for Uncertain Enviroments based on DTCNN* [#836]. Jordi Albo-Canals, Jose A. Villasante-Bembibre, Sergi Consul-Pacareu, Jordi Riera-Babures and Xavier Vilasis-Cardona

**6:10PM** *Classifying Means of Transportation Using Mobile Sensor Data* [#346]. Theresa Nick, Edmund Coersmeier, Jan Geldmacher and Juergen Goetze

**Panel Session P4: Autonomous Machine Learning**

Tuesday, July 20, 4:50PM-6:30PM, Room: 117

Chair: Asim Roy

Panel Members: John Taylor, Edgar Koerner, Klaus Obermayer, Jose Principe, Danil Prokhorov, Carlo Morabito, Wlodzislaw Duch, Pascal Campoy, John Weng, DeLiang Wang, Fred Ham, Nik Kasabov, Khan M. Iftekharruddin, Plamen Angelov, Asim Roy

**Wednesday, July 21, 2010****[S091]: Special Session: Autonomous Dimensionality Reduction**

Wednesday, July 21, 8:00AM-10:00AM, Room: 123

Chair: Pascual Campoy, A. Ravishankar Rao

**8:00AM** *Unsupervised Dimensionality Reduction: Overview and Recent Advances* [#864]. John A. Lee and Michel Verleysen

**8:20AM** *Dimensionality reduction by rank preservation* [#406]. Victor Onclinx, John Aldo Lee, Vincent Wertz and Michel Verleysen

**8:40AM** *Manifold Regularization for Structured Outputs via the Joint Kernel* [#68]. Chonghai Hu and James Kwok

**9:00AM** *Dimensionality Reduction Based on Minimax Risk Criterion for Face Recognition* [#440]. Lei Tang, Ying-Ke Lei, Lin Zhu and De-Shuang Huang

**9:20AM** *Extending Self-Organizing Maps with Uncertainty Information of Probabilistic PCA* [#363]. Dusan Sovilj, Tapani Raiko and Erkki Oja

**[ICA]: Independent Component Analysis**

Wednesday, July 21, 8:00AM-10:00AM, Room: 124

Chair: David G. Brown

**8:00AM** *Identical Fits of Nonnegative Matrix/Tensor Factorization May Correspond to Different Extracted Event-related Potentials* [#634]. Fengyu Cong, Anh Huy Phan, Andrzej Cichocki, Heikki Lyytinen and Tapani Ristaniemi

**8:20AM** *Evolutionary Approach to ICA-R* [#211]. Swathi Sri Kavuri, Jacek Zurada and Jagath Rajapakse

**8:40AM** *An Efficient ICA Approach Based on Neural Network Framework for Biomedical Applications* [#125]. Yue-Der Lin, Chih-Yu Hsu, Hung-Yun Chen and Kuo-Kun Tseng

**9:00AM** *A Probabilistic Framework for Joint Approximate Diagonalization* [#224]. Yoshitatsu Matsuda and Kazunori Yamaguchi

**9:20AM** *Multiple Kernel Learning with ICA: Local Discriminative Image Descriptors for Recognition* [#358]. Si-Yao Fu, Guo-Sheng Yang and Zeng-Guang Hou

**9:40AM** *Yet Rapid ICA: Applications to Un-Indexed Image-to-Image Retrieval* [#27]. Ryota Yokote and Yasuo Matsuyama

**[S031-1]: Special Session: Advances in Kernel Methods: Theory and Applications I**

Wednesday, July 21, 8:00AM-10:00AM, Room: 125

Chair: Ignacio Rojas, Héctor Pomares

**8:00AM** *Locally Linear Support Vector Machines and Other Local Models* [#48]. Vojislav Kecman and J. Paul Brooks

**8:20AM** *Polynomial componentwise LS-SVM: fast variable selection using low rank updates* [#829]. Fabian Ojeda, Tillmann Falck, Bart De Moor and Johan A.K. Suykens

**8:40AM** *Multi-scale Support Vector Regression* [#815]. Stefano Ferrari, Francesco Bellocchio, Vincenzo Piuri and N. Alberto Borghese

**9:00AM** *Modified Support Vector Regression in Outlier Detection* [#436]. Junya Nishiguchi, Chosei Kaseda, Hirotaka Nakayama, Masao Arakawa and Yeboon Yun

**9:20AM** *Feature Selection for Support Vector Regression via Kernel Penalization* [#319]. Sebastian Maldonado and Richard Weber

**9:40AM** *Incomplete Cholesky Decomposition Based Kernel Principal Component Analysis for Large-scale Data set* [#104]. Weiya Shi and Yue-Fei Guo

### [S112-1]: Special Session: Computational Intelligence for Artificial Sensing: Olfaction and Touch I

Wednesday, July 21, 8:00AM-10:00AM, Room: 127

Chair: Santiago Marco, Tony Prescott

**8:00AM** *A Biologically Inspired Associative Memory for Artificial Olfaction* [#620]. Miquel Tarzan-Lorente, Agustin Gutierrez-Galvez, Dominique Martinez and Santiago Marco Colas

**8:20AM** *A Unified Framework for Volatile Organic Compound Classification and Regression* [#143]. Mehmet Muezzinoglu, Alexander Vergara and Ramon Huerta

**8:40AM** *Parallel Implementation of a Spiking Neuronal Network Model of Unsupervised Olfactory Learning on NVidia CUDA* [#198]. Thomas Nowotny

**9:00AM** *The role of neural synchrony and rate in high-dimensional input systems. The Antennal Lobe: a case study* [#750]. Miguel Lechon, Dominique Martinez, Paul Verschure and Sergi Bermudez i Badia

**9:20AM** *Artificial Immune Systems for Artificial Olfaction Data Analysis: Comparison between AIRS and ANN models* [#373]. Saverio De Vito, Eugenio Martinelli, Raffaele Di Fuccio, Francesco Tortorella, Girolamo Di Francia, Arnaldo D'Amico and Corrado Di Natale

**9:40AM** *Naive Bayes texture classification applied to whisker data from a moving robot* [#408]. Nathan Lepora, Mat Evans, Charles Fox, Mathew Diamond, Kevin Gurney and Tony Prescott

### [S152]: Special Session: Machine Learning for Renewable Energy Applications

Wednesday, July 21, 8:00AM-10:00AM, Room: Room 128,

Chair: Anthony Kuh, Danilo Mandic

**8:00AM** *Information Theoretic Learning Applied to Wind Power Modeling* [#409]. Ricardo Bessa, Vladimiro Miranda, Jose Principe, Audun Botterud and Jianhui Wang

**8:20AM** *Quaternion-Valued Short Term Forecasting of Wind Profile* [#132]. Clive Cheong Took, Danilo Mandic and K. Aihara

**8:40AM** *Damage Detection in Wind Turbine Blades Using Time-Frequency Analysis of Vibration Signals* [#793]. Breiffni Fitzgerald, John Arrigan and Biswajit Basu

**9:00AM** *Micro-scale Smart Grid Optimization* [#121]. Nathan Kowahl and Anthony Kuh

**9:20AM** *Toward a Smart Grid: Integration of Computational Intelligence into Power Grid* [#729]. Haibo He

**9:40AM** *On HR Calculus, Quaternion Valued Stochastic Gradient, and Adaptive Three Dimensional Wind Forecasting* [#814]. Cyrus Jahanchahi, Clive Cheong-Took and Danilo Mandic

**[WMP]: Poster Session V**

Wednesday, July 21, 9:00AM-12:00PM, Room: Foyer 2

Chair: Leonid Perlovsky

- P901** *Evolutionary Classifier Ensembles for Semi-supervised Learning* [#28]. Qingjiu Zhang and Shiliang Sun
- P902** *Rule-Based Classification Approach for Railway Wagon Health Monitoring* [#843]. G. M. Shafiullah, Ali Shawkat, Adam Thompson and Peter Wolfs
- P903** *Algorithm of Partition based Network Boosting for Imbalanced Data Classification* [#427]. Shuiping Gou, Hui Yang, Licheng Jiao and Xiong Zhuang
- P904** *Neural Network with Ensembles* [#175]. Tatiana Baidyk and Daniel Calderon Reyes
- P905** *An Intelligent Perturbative Approach for the Time Series Forecasting Problem* [#716]. Paulo Mattos Neto, Aranildo Lima Junior, Tiago Ferreira and George Cavalcanti
- P906** *Machine Learning Approach for Crude Oil Price Prediction with Artificial Neural Networks-Quantitative (ANN-Q) Model* [#478]. Siti Norbaiti Abdullah and Xiao-Jun Zeng
- P907** *On Autocorrelation Based on Hermann Weyl's Discrepancy Norm for Time Series Analysis* [#230]. Jean-Luc Bouchot, Johannes Himmelbauer and Bernhard Moser
- P908** *Improving Financial Time Series Prediction Using Exogenous Series and Neural Networks Committees* [#547]. Manoel Amorim Neto, Gustavo Tavares, Victor Alves, George Cavalcanti and Tsang Ing Ren
- P909** *Forecasting electricity prices using a RBF neural network with GARCH errors* [#589]. Andre Santos, Leandro Coelho and Carlos Klein
- P910** *Efficient Clustering Approach using Incremental and Hierarchical Clustering Methods* [#851]. Mettu Srinivas and Chalavadi Krishna Mohan
- P911** *Neural Classifier for Larvae Recognition* [#199]. Tatiana Baidyk, Ernst Kussul, Marco Rodriguez Flores and Alehandro Vega
- P912** *Optimizing subclass Discriminant Error Correcting Output Codes using Particle Swarm Optimization* [#480]. Dimitrios Bouzas, Nikolaos Arvanitopoulos and Anastasios Tefas
- P913** *Towards Estimating Selective Auditory Attention From EEG Using A Novel Time-Frequency-Synchronisation Framework* [#695]. David Looney, Cheolsoo Park, Yili Xia, Preben Kidmose, Michael Ungstrup and Danilo Mandic
- P914** *Fuzzy neural network based RFID indoor location sensing technique* [#575]. Y. J. Huang, C. Y. Chen, B. W. Hong, T. C. Kuo and H. H. Yu

**[S110-1]: Special Session: Toward an Insect Brain Computational Model I**

Wednesday, July 21, 11:30AM-12:50PM, Room: 123

Chair: Paolo Arena

- 11:30AM** *The Central Control of Oriented Locomotion in Insects - Towards a Neurobiological Model* [#331]. Roland Strauss and Christian Berg
- 11:50AM** *An insect brain computational model inspired by Drosophila melanogaster: architecture description* [#272]. Paolo Arena, Christian Berg, Luca Patane, Ronald Strauss and Pietro Savio Termini

**11:10PM** *An Insect Brain Computational Model Inspired by Drosophila Melanogaster: Simulation Results* [#308]. Paolo Arena, Luca Patane and Pietro Savio Termini

**[BM&SMLM-1]: Bayesian Models and Statistical Machine Learning Methods I**

Wednesday, July 21, 11:30AM-12:50PM, Room: 124

Chair: Katsuyuki Hagiwara

**11:30AM** *Optimal Synaptic Learning in Non-Linear Associative Memory* [#167]. Andreas Knoblauch

**11:50AM** *Learning Mixtures of Experts with a Hybrid Generative-Discriminative Algorithm* [#826]. Ya Xue, Xiao Hu, Weizhong Yan and Hai Qiu

**12:10PM** *Alpha-EM Gives Fast Hidden Markov Model Estimation: Derivation and Evaluation of Alpha-HMM* [#267]. Yasuo Matsuyama and Ryunosuke Hayashi

**12:30PM** *Novel Algorithm for Bayesian Network Parameter Learning with Informative Prior Constraints* [#26]. Rui Chang and Wei Wang

**[S096]: Special Session: Reservoir Computation**

Wednesday, July 21, 11:30AM-12:50PM, Room: 125

Chair: Pedro A. Gutierrez, Peter Tino, Ali Rodan

**11:30AM** *Unifying Quality Metrics for Reservoir Networks* [#214]. Thomas Gibbons

**11:50AM** *Memory in Reservoirs for High Dimensional Input* [#244]. Michiel Hermans and Benjamin Schrauwen

**12:10PM** *Graph Echo State Networks* [#799]. Claudio Gallicchio and Alessio Micheli

**12:30PM** *Memory versus Non-Linearity in Reservoirs* [#508]. David Verstraeten, Joni Dambre, Xavier Dutoit and Benjamin Schrauwen

**[S112-2]: Special Session: Computational Intelligence for Artificial Sensing: Olfaction and Touch II**

Wednesday, July 21, 11:30AM-12:50PM, Room: 127

Chair: Agustín Gutierrez, Santiago Marco

**11:30AM** *Testing Olfactory Models with an Artificial Experimental Platform* [#347]. Eugenio Martinelli, Davide Polese, Francesca Dini, Roberto Paolesse, Daniel Filippini, Arnaldo D' Amico, Detlev Schild, Ingemar Lundstrom and Corrado Di Natale

**11:50AM** *Fault detection, identification, and reconstruction of faulty chemical gas sensors under drift conditions, using Principal Component Analysis and Multiscale-PCA* [#681]. Marta Padilla, Alexandre Perera, Ivan Montoliu, A. Chaudry, Krishna Persaud and S. Marco

**12:10PM** *Early Detection of Diseases in Tomato Crops: An Electronic Nose and Intelligent Systems Approach* [#580]. Reza Ghaffari, Fu Zhang, Daciana Iliescu, Evor Hines, Mark Leeson, Richard Napier and John Clarkson

**12:30PM** *The real-world localization and classification of multiple odours using a biologically based neurorobotics approach* [#655]. Jose Maria Blanco Calvo, Sergi Bermudez i Badia, Hector Tapia Simo and Paul Verschure

**[SI]: System Identification**

Wednesday, July 21, 11:30AM-12:50PM, Room: 128

Chair: Marley Vellasco

**11:30AM** *Quadratic Neural Unit and its Network in Validation of Process Data of Steam Turbine Loop and Energetic Boiler* [#692]. Ivo Bukovsky, Martin Lepold and Jiri Bila

**11:50AM** *Discrete Time Recurrent Neural Network Sliding Mode Observer* [#659]. Ivan Salgado, Isaac Chairez and Alejandro Garcia

**12:10PM** *Discrete Synapse Recurrent Neural Network for Nonlinear System Modeling and Its Application on Seismic Signal Classification* [#752]. Hyung O. Park, Alireza A. Dibazar and Theodore W. Berger

**12:30PM** *Nonlinear Dynamic System Identification Using Legendre Neural Network* [#34]. Jagdish C. Patra and Cedric Bornand

**[S110-2]: Special Session: Toward an Insect Brain Computational Model II**

Wednesday, July 21, 2:30PM-3:30PM, Room: 123

Chair: Paolo Arena

**2:30PM** *Insect Inspired Unsupervised Learning for Tactic and Phobic Behavior Enhancement in a Hybrid Robot* [#294]. Paolo Arena, Sebastiano De Fiore, Luca Patané, Massimo Pollino and Cristina Ventura

**2:50PM** *Learning and Retrieval of Hierarchically Organized Information in a Simple, One-Layered RNN* [#192]. Holk Cruse and Malte Schilling

**3:10PM** *Biological Neural Network Based Chemotaxis Behaviors Modeling of C. elegans* [#416]. Jian-Xin Xu and Xin Deng

**[L-2]: Learning II**

Wednesday, July 21, 2:30PM-3:30PM, Room: 124

Chair: Haibo He

**2:30PM** *Batch-Learning Self-Organizing Map with Weighted Connections Avoiding False-Neighbor Effects* [#302]. Haruna Matsushita and Yoshifumi Nishio

**2:50PM** *An Integrated Incremental Self-organizing Map and Hierarchical Neural Network Approach for Cognitive Radio Learning* [#574]. Qiao Cai, Sheng Chen, Xiaochen Li, Nansai Hu, Haibo He, Yu-Dong Yao and Joseph Mitola

**3:10PM** *Projection Vector Machine: One-Stage Learning Algorithm from High-Dimension Small-Sample Data* [#176]. Wanyu Deng, Qinghua Zheng, Shiguo Lian, Lin Chen and xin Wang

**[S031-2]: Special Session: Advances in Kernel Methods: Theory and Applications II**

Wednesday, July 21, 2:30PM-3:30PM, Room: 125

Chair: Ignacio Rojas, Héctor Pomares

**2:30PM** *A new approach for History Matching of Oil and Gas Reservoir* [#619]. Simone Miyoshi, Dilza Szwarcman and Marley Vellasco

**2:50PM** *Fast Weight Calculation for Kernel-Based Perceptron in Two-Class Classification Problems* [#75]. M. Fernandez-Delgado, J. Ribeiro, E. Cernadas and S. Barro

**3:10PM** *An MDM Solver for the Nearest Point Problem in Scaled Convex Hulls* [#450]. Jorge Lopez, Alvaro Barbero and Jose R. Dorronsoro

**[C&C-1]: Classification and Clustering I**

Wednesday, July 21, 2:30PM-3:30PM, Room: 127

Chair: Derong Liu

**2:30PM** *Relational Topological Clustering* [#257]. Lazhar Labiod, Nistor Grozavu and Younes Bennani**2:50PM** *A Projection Transform for Non-Euclidean Relational Clustering* [#734]. Isaac Sledge**3:10PM** *Multi-task Learning for One-class Classification* [#240]. Haiqin Yang, Irwin King and Michael R. Lyu**[IP-1]: Image Processing I**

Wednesday, July 21, 2:30PM-3:30PM, Room: 128

Chair: Akira Hirose

**2:30PM** *Topological Features in Locally Connected RBMs* [#766]. Andreas Müller, Hannes Schulz and Sven Behnke**2:50PM** *Dynamic Segmentation using Fuzzy Oscillatory Networks* [#352]. Lester Solbakken**3:10PM** *A Probabilistic Method for Hierarchical 2D-3D Tracking* [#402]. Chen Zhang and Julian Eggert**[WAP]: Poster Session VI**

Wednesday, July 21, 3:00PM-6:00PM, Room: Foyer 2

Chair: Michel Verleysen

**P1101** *Critical Branching Neural Computation* [#223]. Christopher Kello and Marshall Mayberry**P1102** *Evolutionary Strategy for Simultaneous Optimization of Parameters, Topology and Reservoir Weights in Echo State Networks* [#38]. Aida A. Ferreira and Teresa B. Ludermir**P1103** *Application of NNT in Wind Speed Forecasting* [#313]. J. C. Palomares Salas, J. J. G. de la Rosa, J. G. Ramiro and A. Agüera Pérez**P1104** *Recurrent Neural Networks Solving a Real Large Scale Mid-term Scheduling for Power Plants* [#40]. Ronaldo R. B. Aquino, Manoel A. Carvalho Jr, Otoni Nobrega Neto, Milde M. S. Lira, Givanildo J. de Almeida and Solange N. N. Tiburcio**P1105** *Neuronet's Method of Weighted Residuals for Computer Simulation of Hydrodynamics Problems* [#369]. Alexander Kretinin, Yuriy Bulygin, Michail Kirpichev and Tamara Darneva**P1106** *Rolling Element Bearing Diagnosis using Convex Hull* [#368]. Sara Lioba Volpi, Marco Cococcioni, Beatrice Lazzerini and Dan Stefanescu**P1107** *Automated Texture Classification of Marble Shades with Real-Time PLC Neural Network Implementation* [#509]. Irina Topalova and Alexander Tzokev**P1108** *Modelling of Temperature in the Aluminium Smelting Process using Neural Networks* [#701]. Fabio Soares and Roberto Oliveira**P1109** *Photovoltaic Plants Predictive Model by means of ANN trained by a Hybrid Evolutionary Algorithm* [#787]. Davide Caputo, Francesco Grimaccia, Marco Mussetta and Riccardo E. Zich**P1110** *Intelligent Integral Backstepping Sliding Mode Control Using Recurrent Neural Network for Magnetic Levitation System* [#32]. Faa-Jeng Lin and Syuan-Yi Chen

**P1111** *Dynamic System Eigenvalue Extraction using a Linear Echo State Network for Small-Signal Stability Analysis - a Novel Application* [#311]. Jiaqi Liang, Jing Dai, Ganesh Venayagamoorthy and Ronald Harley

**P1112** *Effect of Pre-processing Methods on Microarray-based SVM classifiers in Affymetrix Genechips* [#392]. Javier P. Florido, Hector Pomares, Ignacio Rojas, Jose-Miguel Urquiza, Luis-Javier Herrera and Manuel-Gonzalo Claros

**[IJCNN / IT-2] Invited Talk 2: Jose C. Principe**

Wednesday, July 21, 3:30PM-4:30PM, Room: 117

Chair: Alberto Prieto

**Panel Session P3: Between Bottom-Up and Top-Down What Is 'the Much in-between'?**

Wednesday, July 21, 4:50PM-6:30PM, Room: 123

Chair: Juyang Weng, Asim Roy

**[BM&SMLM-2]: Bayesian Models and Statistical Machine Learning Methods II**

Wednesday, July 21, 4:50PM-6:30PM, Room: 124

Chair: Li-Wei Ko

**4:50PM** *Parallel Tempering is Efficient for Learning Restricted Boltzmann Machines* [#558]. KyungHyun Cho, Tapani Raiko and Alexander Ilin

**5:10PM** *The Effect of Finite Sample Size on the Holdout Error Probability Estimator of Homoscedastic Multi-class Gaussian Classification Problems* [#657]. Moataz El Ayadi and Konstantinos Plataniotis

**5:30PM** *Temporally Coupled Principal Component Analysis: A Probabilistic Autoregression Method* [#238]. Jacqueline Christmas and Richard Everson

**5:50PM** *On a Training Scheme based on Orthogonalization and Thresholding for a Nonparametric Regression Problem* [#145]. Katsuyuki Hagiwara

**6:10PM** *Robust Relevance Vector Machine with Noise Variance Coefficient* [#275]. Min Han and Yao Zhao

**[S142]: Special Session: Organic Computing**

Wednesday, July 21, 4:50PM-6:30PM, Room: 125

Chair: Rolf P. Würtz

**4:50PM** *Possibilities and Limitations of Decentralised Traffic Control Systems* [#23]. Sven Tomforde, Holger Prothmann, Jürgen Branke, Jörg Hähner, Christian Müller-Schloer and Hartmut Schmeck

**5:10PM** *Gesture Recognition on Few Training Data using Slow Feature Analysis and Parametric Bootstrap* [#284]. Patrick Koch, Wolfgang Konen and Kristine Hein

**5:30PM** *Self-organization of Two Interacting Winner-take-all Systems* [#464]. Junmei Zhu

**5:50PM** *Off-Line Memory Reprocessing Following on-Line Unsupervised Learning Strongly Improves Recognition Performance in a Hierarchical Visual Memory* [#110]. Jenia Jitsev and Christoph von der Malsburg

**6:10PM** *Evolutionary Optimization of Growing Neural Gas Parameters for Object Categorization and Recognition* [#827]. Guillermo S. Donatti, Oliver Lomp and Rolf P. Wurtz

**[S093-2]: Special Session: Advances in Fuzzy Logic for Time Series Forecasting**

Wednesday, July 21, 4:50PM-6:30PM, Room: 127

Chair: Martin Stepnicka, Juan Peralta Donate, Sven Crone

**4:50PM** *Time Series Analysis by Discrete F-Transform* [#4343]. Irina Perfilieva, Nadezhda Yarushkina and Tatjana Afanasieva

**5:10PM** *Time Series Forecasting Using a TSK Fuzzy System tuned with Simulated Annealing* [#4026]. Majid Almaraashi, Robert John, Simon Coupland and Adrian Hopgood

**5:30PM** *Recurrent Fuzzy Neural Computation: Modeling, Learning and Application* [#4329]. Rosangela Ballini and Fernando Gomide

**5:50PM** *Time Series Forecasting With Appetitive Reward-based Pseudo-Outer-Product Fuzzy Neural Network* [#120]. Eng Yeow Cheu, Chai Quek and See Kiong Ng

**6:10PM** *Linguistic Approach to Time Series Analysis and Forecasts* [#4369]. Martin Štěpnička, Antonín Dvořák, Viktor Pavliška and Lenka Vavříčková

**[S141]: Special Session: Intelligent Systems in Automotive Applications**

Wednesday, July 21, 4:50PM-6:30PM, Room: 128

Chair: Dimitar Filev, William Grosky, Nelish Patel, Abul Masrur, Robert Karlsen, Jinhua Guo, Yi L. Murphey and Zhihang Chen

**4:50PM** *Intelligent Vehicle Power Management through Neural Learning* [#730]. Jungme Park, Zhihang Chen and Yi Murphey

**5:10PM** *Sliding Mode Online Learning for Flight Control Applications in Unmanned Aerial Systems* [#298]. Thomas Krueger, Michael Mößner, Andreas Kuhn, Joachim Axmann and Peter Vörsmann

**5:30PM** *Nonlinear Adaptive Neuro-PID Controller Design for Greenhouse Environment Based on RBF Network* [#424]. Haigen Hu, Lihong Xu and Ruihua Wei

**5:50PM** *A Generalized Markov Chain Modeling Approach for On Board Applications* [#723]. Dimitar Filev and Ilya Kolmanovskiy

**6:10PM** *Time-series Temporal Classification using Feature Ensemble Learning* [#683]. Ruoqian Liu and YiLu Murphey

**Thursday, July 22, 2010**

**[S030]: Special Session: Biologically Inspired Computational Vision**

Thursday, July 22, 8:00AM-10:00AM, Room: 123

Chair: Khan M. Iftekharruddin

**8:00AM** *Improved Learning in Grid-to-Grid Neural Network via Clustering*. [#305]. William White, Khan Iftekharruddin and Abdesselam Bouzerdoum

**8:20AM** *Investigating the Variation of Orientation Tuning in a Computational Model of the Visual Cortex* [#212]. A. Ravishankar Rao and Guillermo Cecchi

**8:40AM** *Dimensionality Reduction using Compressed Sensing and its application to a Large-Scale Visual Recognition Task* [#325]. Jie Yang, Abdesselam Bouzerdoum, Fok Tivive and Son Lam Phung

**9:00AM** *WWN-2: A Biologically Inspired Neural Network for Concurrent Visual Attention and Recognition* [#779]. Zhengping Ji and Juyang Weng

**9:20AM** *Towards Optical Flow-based Robotic Homing* [#812]. Sotirios Diamantas, Anastasios Oikonomidis and Richard Crowder

**9:40AM** *An Image Recognition Based on Neural Oscillator Network* [#542]. Kenta Hoshino and Hajime Igarashi

**[RL-1]: Reinforcement Learning I**

Thursday, July 22, 8:00AM-10:00AM, Room: 124

Chair: Wlodzislaw Duch

**8:00AM** *A Robust Reinforcement based Self Constructing Neural Network* [#112]. Andreas Huemer, Mario Gongora and David Elizondo

**8:20AM** *Reinforcement Learning with a Gaussian Mixture Model* [#390]. Alejandro Agostini and Enric Celaya

**8:40AM** *Reinforcement Learning using Associative Memory Networks* [#709]. Ricardo Salmon, Alireza Sadeghian and Sylvain Chartier

**9:00AM** *Deep Auto-Encoder Neural Networks in Reinforcement Learning* [#329]. Sascha Lange and Martin Riedmiller

**9:20AM** *Simulating Probability Learning and Probabilistic Reversal Learning Using the Attention-Gated Reinforcement Learning (AGREL) Model* [#106]. Burak Erdeniz and Nart Bedin Atalay

**9:40AM** *Fixed Point Method of Step-Size Estimation for On-Line Neural Network Training* [#371]. Pawel Wawrzynski

**[S039]: Special Session: Complex-Valued Neural Networks**

Thursday, July 22, 8:00AM-10:00AM, Room: 125

Chair: Akira Hirose, Igor Aizenberg, Jacek M. Zurada

**8:00AM** *A Self-Regulated Learning in Fully Complex Radial Basis Function Networks* [#785]. Ramasamy Savitha, Sundaram Suresh and Narasimhan Sundararajan

**8:20AM** *Complex-valued self-organizing map clustering using complex inner product in active millimeter-wave imaging* [#233]. Takashi Aoyagi, Damri Radenamad, Yukimasa Nakano and Akira Hirose

**8:40AM** *Learning Nonlinearly Separable mod  $k$  Addition Problem Using a Single Multi-Valued Neuron With a Periodic Activation Function* [#309]. Igor Aizenberg, Matthew Caudill, Jacob Jackson and Shane Alexander

**9:00AM** *Commutative Quaternion and Multistate Hopfield Neural Networks* [#737]. Teijiro Isokawa, Haruhiko Nishimura and Nobuyuki Matsui

**9:20AM** *Identification of Improper Processes by Variable Tap-Length Complex-Valued Adaptive Filters* [#165]. Bukhari Che Ujang, Clive Cheong Took and Danilo Mandic

**9:40AM** *Functional Mapping with Complex Higher Order Compensatory Neuron Model* [#213]. Bipin Tripathi and Prem Kalra

### [S093-3]: Special Session: 1st Neural Network Grand Competition in Time Series Forecasting

Thursday, July 22, 8:00AM-10:00AM, Room: 127

Chair: Juan Peralta Donate, Martin Stepnicka, Sven Crone

**8:00AM** *Award Presentation of the 1st Neural Network Grand Competition in Time Series Forecasting.* Organizer Sven Crone

**8:20AM** *Naive Support Vector Regression and Multilayer Perceptron Benchmarks for the 2010 Neural Network Grand Competition (NNGC) on Time Series Prediction* [#820]. Sven F. Crone and Nikolaos Kourentzes

**8:40AM** *Meta-learning for time series forecasting in the NN GC1 competition* [#4269]. Christiane Lemko and Bogdan Gabrys

**9:00AM** *Forecasting time-series for NN GC1 using Evolving Takagi-Sugeno (eTS) Fuzzy Systems with On-line Inputs Selection* [#4604]. Javier Andreu and Plamen Angelov

**9:20AM** *Boot.EXPOS in NNGC Competition* [#194]. Clara Cordeiro and M. Manuela Neves

**9:40AM** *Integrated Time Series Forecasting Approaches Using Moving Average, Grey Prediction, Support Vector Regression and Bagging for NNGC* [#191]. Chihli Hung, Xin-Yi Huang, Hao-Kai Lin and Yen-Hsu Hou

### [S147]: Special Session: Approximate Dynamic Programming with Feedback Control Applications

Thursday, July 22, 8:00AM-10:00AM, Room: 128

Chair: Draguna Vrabie, Silvia Ferrari

**8:00AM** *Decentralized Nearly Optimal Control of a Class of Interconnected Nonlinear Discrete-time Systems by Using Online Hamilton-Bellman-Jacobi Formulation* [#720]. Shahab Mehraeen and Sarangapani Jagannathan

**8:20AM** *Adaptive Dynamic Programming for a Class of Discrete-Time Non-Affine Nonlinear Systems with Time-Delays* [#316]. Derong Liu and Qinglai Wei

**8:40AM** *Adaptive Dynamic Programming Algorithm for Finding Online the Equilibrium Solution of the Two-Player Zero-Sum Differential Game* [#753]. Draguna Vrabie and Frank Lewis

**9:00AM** *A Comparative Study of Urban Traffic Signal Control with Reinforcement Learning and Adaptive Dynamic Programming* [#324]. Yujie Dai, Dongbin Zhao and Jianqiang Yi

**[ThMP]: Poster Session VII**

Thursday, July 22, 9:00AM-12:00PM, Room: Foyer 2

Chair: Cecilio Angulo

**P1301** *An Anomaly Detection System using a GHSOM-1* [#437]. Esteban J. Palomo, Juan M. Ortiz-de-Lazcano-Lobato, Enrique Dominguez and Rafael M. Luque

**P1302** *Game Theory and Data Mining Model for Price Dynamics in Financial Institutions* [#675]. Cristian Bravo, Nicolas Figueroa and Richard Weber

**P1303** *Nonlinear Adaptive Control using a Fuzzy Switching Mechanism Based on Improved Quasi-ARX Neural Network* [#561]. Lan Wang, Yu Cheng and Jinglu Hu

**P1304** *Model Predictive Control by Differential Neural Networks Approach* [#519]. Isaac Chairez, Alejandro Garcia, Alexander Poznyak and Tatyana Poznyak

**P1305** *A Robust Wind Turbine Control using a Neural Network Based Wind Speed Estimator* [#6]. Oscar Barambones

**P1306** *Direct Current Motor Control based on High Order Neural Networks using Stochastic Estimation* [#206]. Carlos Castaneda and Pedro Esquivel

**P1307** *A Neurocontrol for Automatic Reconstruction of Facial Displays* [#803]. Max H. Garzon and Buvaneshwari Sivakumar

**P1308** *Pruning Population Size in XCS for Complex Problems* [#448]. Barbara Rakitsch, Andreas Bernauer, Oliver Bringmann and Wolfgang Rosenstiel

**P1309** *A Novel Constraint Satisfaction Problem Solver for Self-Configuring Distributed Systems with Highly Dynamic Behavior* [#248]. Benjamin Satzger, Faruk Bagci and Theo Ungerer

**[IJCNN / IT-3]: Invited Talk 3: Erkki Oja**

**“Linear Expansions with Nonlinear Cost Functions: Modeling, Representation, and Partitioning”**

Thursday, July 22, 11:30AM-12:50PM, Room: 117

Chair: Danil Prokhorov

**[S111-1]: Special Session: Active and Autonomous Learning I**

Thursday, July 22, 2:30PM-3:30PM, Room: 123

Chair: Isabelle Guyon, Anastassia Angelopoulou, José García-Rodríguez, Vincent Lemaire

**2:30PM** *Design and Analysis of the WCCI 2010 Active Learning Challenge* [#310]. Isabelle Guyon, Gavin Cawley, Gideon Dror and Vincent Lemaire

**2:50PM** *Active Learning Strategies using SVMs* [#865]. Ming-Hen Tsai, Chia-Hua Ho and Chih-Jen Lin

**3:10PM** *Study of Active Learning in the Challenge* [#778]. Yukun Chen and Subramani Mani

**[RL-2]: Reinforcement Learning II**

Thursday, July 22, 2:30PM-3:30PM, Room: 124

Chair: Naoyuki Kubota

**2:30PM** *Self-Organizing Agents for Reinforcement Learning in Virtual Worlds* [#410]. Yilin Kang and Ah-Hwee Tan

**2:50PM** *Multiagent Reinforcement Learning in the Iterated Prisoner's Dilemma: Fast Cooperation through Evolved Payoffs* [#644]. Vassilis Vassiliades and Chris Christodoulou

**3:10PM** *Reinforcement Learning Based Adaptive Rate Control for Delay-Constrained Communications over Fading Channels* [#711]. Xiaochen Li, Haibo He and Yu-Dong Yao

### [S130-1]: Special Session: Neural Modeling Fields: Foundations and Applications I

Thursday, July 22, 2:30PM-3:30PM, Room: 125

Chair: José Fernando Fontanari, Leonid I. Perlovsky

**2:30PM** *Curiosity and Pleasure* [#11]. Leonid Perlovsky Marie-Claude Bonniot-Cabanac and Michel Cabanac

**2:50PM** *Grounded Symbols in the Brain* [#254]. Leonid Perlovsky and Roman Ilin

**3:10PM** *An Island-Model Framework for Evolving Neuro-Controllers for Planetary Rover Control* [#642]. Martin Peniak, Barry Bentley, Davide Marocco, Angelo Cangelosi, Christos Ampatzis, Dario Izzo and Francesco Biscani

### [IP-2]: Image Processing II

Thursday, July 22, 2:30PM-3:30PM, Room: 128

Chair: Khan M Iftekharuddin

**2:30PM** *Modular Neural Network Integrator for Human Recognition from Ear Images* [#817]. Lizette Gutierrez, Patricia Melin and Miguel Lopez

**2:50PM** *Orthogonal Linear Local Spline Discriminant Embedding for Face Recognition* [#247]. Ying-Ke Lei, Rong-Xiang Hu, Lei Tang, Shan-Wen Zhang and De-Shuang Huang

**3:10PM** *Fusing Bottom-up and Top-down Pathways in Neural Networks for Visual Object Recognition* [#315]. Yuhua Zheng, Yan Meng and Yaochu Jin

### [ThAP]: Poster Session VIII

Thursday, July 22, 3:00PM-6:00PM, Room: Foyer 2

Chair: Joan Cabestany

**P1501** *Classifying Motor Imagery in Presence of Speech* [#429]. Hayrettin Gurkok, Mannes Poel and Job Zwiers

**P1502** *Design of Dynamic Petri Recurrent-Fuzzy-Neural-Network for Robust Path Tracking Control of Mobile Robot* [#7]. Rong-Jong Wai and Chia-Ming Liu

**P1503** *WIPs Real-Time Control using RIBTC* [#221]. Chih-Hui Chiu, Ya-Fu Peng and You-Wei Lin

**P1504** *Robust Recurrent Wavelet-based CMAC Control for Uncertain Nonlinear Systems with Hinf Tracking Performance* [#651]. Ya-Fu Peng, Hsiang-Wei Lai, Chih-Hui Chiu and Rong-Jong Wai

**P1505** *Prediction and Identification Using Recurrent Wavelet-based Cerebellar Model Articulation Controller Neural Networks* [#577]. Yu-Lin Liao, Che-Cheng Kuo and Ya-Fu Peng

**P1506** *Maximizing Pattern Separation in Discretizing Continuous Features for Classification Purposes* [#286]. Enrico Ferrari and Marco Muselli

**P1507** *DCPE Co-Training: Co-Training Based on Diversity of Class Probability Estimation* [#717]. Jin Xu, Haibo He and Hong Man

**P1508** *Virtual Organization for Computational Intelligence (VOCI): Architecture and Realization* [#845]. Wajeeha Khalil, Juergen Mangler and Erich Schikuta

**P1509** *Topology Optimization for Artificial Neural Networks using Differential Evolution* [#631]. Nicole Mineu, Teresa Ludermir and Leandro Almeida

**P1510** *Comparison between Different Methods for Developing Neural Network Topology Applied to a Complex Polymerization Process* [#168]. Silvia Curteanu, Florin Leon, Renata Furtuna, Elena Niculina Dragoi and Neculai Curteanu

**P1511** *Learning Artificial Neural Networks Multiclassifiers by Evolutionary Multiobjective Differential Evolution Guided by Statistical Distributions* [#338]. Manuel Cruz-Ramirez, Cesar Hervás-Martinez, Juan Carlos Fernandez and Javier Sanchez-Monedero

**P1512** *Dynamic Binary Neural Networks and Evolutionary Learning* [#414]. Ryo Ito, Toshimichi Saito and Shutaro Kabeya

**P1513** *A Recurrent S-CMAC-GBF Based Estimation for Global Solar Radiation from Environmental Information* [#439]. Chih-Wei Lu, Chia-Yen Hsieh and Ching-Tsan Chiang

**P1514** *A Novel Frequency Band Selection Method for Common Spatial Pattern in Motor Imagery Based Brain Computer Interface* [#503]. Gufei Sun, Jinglu Hu and Gengfeng Wu

**P1515** *A distributed Model of Memory for the McGurk Effect* [#544]. Ioana Sporea and Andre Gruning

**P1516** *Correlation Detection with Firing Rate Estimation Based on Temporal Coincidence Coding* [#333]. Xu Wang, Zhi-Qiang Cao, Zeng-Guang Hou, Long Cheng and Min Tan

### [S111-2]: Special Session: Active and Autonomous Learning II

Thursday, July 22, 3:30PM-4:30PM, Room: 123

Chair: Isabelle Guyon, Anastassia Angelopoulou, José García-Rodríguez, Vincent Lemaire

**3:30PM** *Active Learning Support Vector Machines to Classify Imbalanced Reservoir Simulation Data* [#690]. Tina Yu

**3:50PM** *A Bayesian Framework for Active Learning* [#250]. Richard Fredlund, Richard Everson and Jonathan Fieldsend

**4:10PM** *Exploration vs. Exploitation in Active Learning: a Bayesian Approach* [#379]. Alexis Bondu, Vincent Lemaire and Marc Boulle

### [L-3]: Learning III

Thursday, July 22, 3:30PM-4:30PM, Room: 124

Chair: Erkki Oja

**3:30PM** *Virtual k-fold Cross Validation: an Effective Method for Accuracy Assessment* [#246]. Cesare Alippi and Manuel Roveri

**3:50PM** *Region Enhanced Neural Q-learning for Solving Model-Based POMDPs* [#380]. Marco Wiering and Thijs Kooi

**4:10PM** *An Associative Memory System for Incremental Learning and Temporal Sequence* [#107]. Furao Shen, Hui Yu, Wataru Kasai and Osamu Hasegawa

**[S130-2]: Special Session: Neural Modeling Fields: Foundations and Applications II**

Thursday, July 22, 3:30PM-4:30PM, Room: 125

Chair: José Fernando Fontanari, Leonid I. Perlovsky

**3:30PM** *An Evolutionary Robotics 3D Model for Autonomous MAVs Navigation, Target Tracking and Group Coordination* [#572]. Fabio Ruini and Angelo Cangelosi

**3:50PM** *Probabilistic dynamic logic of phenomena and cognition* [#528]. Evgenii Vityaev, Boris Kovalerchuk, Leonid Perlovsky and Stanislav Smerdov

**4:10PM** *A Computational Model of Adults' Performance in Naming Objects using Cross-Situational Learning* [#449]. Jose Fontanari and Leonid Perlovsky

**[FA]: Financial Applications**

Thursday, July 22, 3:30PM-4:30PM, Room: 127

Chair: John G. Taylor

**3:30PM** *Financial Distress Model Prediction using SVM+* [#607]. Bernardete Ribeiro, Catarina Silva, Armando Vieira, Antonio Gaspar-Cunha and Joao Carvalho das Neves

**3:50PM** *Building the Knowledge Base of a Buyer Agent Using Reinforcement Learning Techniques* [#590]. George Boulougaris, Kostas Kolomvatsos and Stathes Hadjiefthymiades

**4:10PM** *Credit Default Swap Pricing using Artificial Neural Networks* [#456]. Khaled Shaban, Abdunnaser Younes, Robert Lam, Michael Allison, and Shajeehan Kathirgamanathan

**[S006-1]: Special Session: Computational Intelligence for Privacy and Security I**

Thursday, July 22, 3:30PM-4:30PM, Room: 128

Chair: Antoni Martínez-Balleste, Agusti Solanas, David A. Elizondo

**3:30PM** *Application of Artificial Neural Networks and Related Techniques to Intrusion Detection* [#183]. Christian Bitter, David Elizondo and Timothy Watson

**3:50PM** *A Privacy Attack That Removes the Majority of the Noise From Perturbed Data* [#301]. Michal Sramka

**4:10PM** *GNG Based Surveillance System* [#453]. Jose Garcia-Rodriguez, Anastassia Angelopoulou, Juan Manuel Garcia-Chamizo and Alexandra Psarrou

**[S111-3]: Special Session: Active and Autonomous Learning III**

Thursday, July 22, 4:50PM-6:30PM, Room: 123

Chair: Isabelle Guyon, Anastassia Angelopoulou, José García-Rodríguez, Vincent Lemaire

**4:50PM** *Towards Autonomous Bootstrapping for Life-long Learning Categorization Tasks* [#404]. Stephan Kirstein, Heiko Wersing and Edgar Koerner

**5:10PM** *Hand Gesture Modelling and Tracking using a Self-Organising Network* [#473]. Anastassia Angelopoulou, Jose Garcia-Rodriguez, Alexandra Psarrou and Gaurav Gupta

**5:30PM** *Incremental Learning and Model Selection under Virtual Concept Drifting Environments* [#601]. Koichiro Yamauchi

**5:50PM** *An Autonomous Incremental Learning Algorithm of Resource Allocating Network for Online Pattern Recognition* [#727]. Seiichi Ozawa, Sho Nakasaka and Asim Roy

**6:10PM** *Incremental and Decremental LDA Learning with Applications* [#731]. Shaoning Pang, Tao Ban, Youki Kadobayashi and Nikola Kasabov

#### [L-4]: Learning IV

Thursday, July 22, 4:50PM-6:30PM, Room: 124

Chair: Max Garzon

**4:50PM** *A Generic Approach for Learning Performance Assessment Functions* [#375]. Toni Palau, Simon Sigl, Andreas Kuhn and Helmut A. Mayer

**5:10PM** *Learning Long-Term Dependencies Using Layered Graph Neural Networks* [#593]. Niccolo Bandinelli, Monica Bianchini and Franco Scarselli

**5:30PM** *Cost-Sensitive Learning Methods for Imbalanced Data* [#321]. Nguyen Thai-Nghe, Zeno Gantner and Lars Schmidt-Thieme

**5:50PM** *Improving ANN Performance for Imbalanced Data Sets by Means of the NTIL Technique* [#24]. Carlos Vivaracho-Pascual and Arancha Simon-Hurtado

**6:10PM** *Neural-network Based Regression Model with Prior from Ranking Information* [#59]. Yajun Qu, Bo Dai and Baogang Hu

#### [S114]: Special Session: Radial Basis Function Networks: New Trends in Design and Applications

Thursday, July 22, 4:50PM-6:30PM, Room: 125

Chair: Victor Rivas Santos, Antonio J. Rivera Rivas, Alberto Guillén Perales

**4:50PM** *An Adaptive Normalized Gaussian Network and Its Application to Online Category Learning* [#71]. Claudius Glaeser and Frank Joublin

**5:10PM** *LMI Formulation for Multiobjective Learning in Radial Basis Function Neural Networks* [#455]. Gladston J.P. Moreira, Elizabeth F. Wanner, Frederico G. Guimaraes, Luiz H. Duczmal and Ricardo H. C. Takahashi

**5:30PM** *A Preliminary Study on Mutation Operators in Cooperative Competitive Algorithms for RBFN Design* [#627]. Maria Dolores Perez-Godoy, Antonio Jesus Rivera, Cristobal Jose Carmona and Maria Jose del Jesus

**5:50PM** *Time Series Forecasting: Automatic Determination of Lags and Radial Basis Neural Networks for a Changing Horizon Environment* [#800]. Elisabet Parras-Gutierrez and Victor M. Rivas

**6:10PM** *Predicting Marital Dissolutions applying Radial Basis Function Neural Networks* [#833]. Alberto Guillen, Carlos Tovar, L.J. Herrera, H. Pomares, J.F. Guillén, and I. Rojas

#### [S093-4]: Special Session: Preprocessing & Feature Selection for Time Series Forecasting

Thursday, July 22, 4:50PM-6:30PM, Room: 127

Chair: Juan Peralta Donate, Martin Stepnicka, Sven Crone

**4:50PM** *Frequency Independent Automatic Input Variable Selection for Neural Networks for Forecasting* [#596]. Nikolaos Kourentzes and Sven F. Crone

**5:10PM** *Period Detection in Light Curves from Astronomical Objects Using Correntropy* [#492]. Pablo A. Estevez, Pablo Huijse, Pablo Zegers, Jose C. Principe and Pavlos Protopapas

**5:30PM** *Effect of Different Detrending Approaches on Computational Intelligence Models of Time Series* [#628]. Federico Montesino Pouzols and Amaury Lendasse

**5:50PM** *Adaptive Normalization: A Novel Data Normalization Approach for Non-Stationary Time Series* [#748]. Eduardo Ogasawara, Leonardo Martinez, Daniel Oliveira, Geraldo Zimbrão, Gisele Pappa and Marta Mattoso

**6:10PM** *A Hybrid Method for Novelty Detection in Time Series Based on States Transitions and Swarm Intelligence* [#460]. George Cabral and Adriano Oliveira

**[S006-2]: Special Session: Computational Intelligence for Privacy and Security II**

Thursday, July 22, 4:50PM-6:30PM, Room: 128

Chair: Antoni Martínez-Balleste, Agustí Solanas, David A. Elizondo

**4:50PM** *Topological chaos and chaotic iterations Application to Hash functions* [#516]. Christophe Guyeux and Jacques M. Bahi

**5:10PM** *A Variable-MDAV-Based Partitioning Strategy to Continuous Multivariate Microaggregation with Genetic Algorithms* [#846]. Agustí Solanas, Ursula Gonzalez-Nicolas and Antoni Martínez-Balleste

**5:30PM** *Kernel Machines for Malware Classification and Similarity Analysis* [#93]. M. Shankarapani, K. Kancharla, S. Ramammoorthy, R. Movaa, and S. Mukkamala

**5:50PM** *Ethical and Legal Issues of the Use of Computational Intelligence Techniques in Computer Security and Computer Forensics* [#345]. Bernd Stahl, David Elizondo, Moira Carroll-Mayer, Yingqin Zheng and Kutoma Wakunuma

**6:10PM** *Content-Based Spam Filtering* [#356]. Tiago Almeida and Akebo Yamakami

**Friday, July 23, 2010****[S108]: Special Session: Image Understanding: An Important Step Toward Visual Cognition**

Friday, July 23, 8:00AM-10:00AM, Room: 123

Chair: Chao-Hui Huang, Daniel Racoceanu

**8:00AM** *Bio-inspired Computer Visual System using GPU and Visual Pattern Assessment Language (ViPAL): Application on Breast Cancer Prognosis* [#446]. Chao-Hui Huang, Daniel Racoceanu, Ludovic Roux and Thomas Putti

**8:40AM** *Asymmetric-margin support vector machines for lung tissue classification* [#201]. Jimison lavindrasana, Adrien Depeursinge, Gilles Cohen, Antoine Geissbuhler and Henning Mueller

**9:00AM** *Collaborative Pedestrian Tracking with Multiple Cameras: Data Fusion and Visualization* [#227]. Daw-Tung Lin and Kai-Yung Huang

**9:20AM** *Reasoning with Spatial Relations over High-Content Images* [#422]. Nicolas Lomenie

**9:40AM** *Hybrid World Object Tracking For A Virtual Teaching Agent* [#514]. William Newman, David Franzel, Takeshi Matsumoto, Richard Leibbrandt, Trent Lewis, Martin Luerssen and David Powers

**[L-5]: Learning V**

Friday, July 23, 8:00AM-10:00AM, Room: 124

Chair: Alessandro Sperduti

**8:00AM** *Combination of Supervised and Unsupervised Algorithms for Communication Systems with Linear Precoding* [#37]. Adriana Dapena, Paula M. Castro and Josmary Labrador

**8:20AM** *Semi-Supervised Learning for Weighted LS-SVM* [#53]. Mathias Adankon and Mohamed Cheriet

**8:40AM** *Semi-Supervised Learning from Imperfect Data through Particle Cooperation and Competition* [#686]. Fabricio Breve, Liang Zhao and Marcos Quiles

**9:00AM** *Label Propagation Through Neuronal Synchrony* [#476]. Marcos Quiles, Liang Zhao, Fabricio Breve and Anderson Rocha

**9:20AM** *A Method to build a Representation using a Classifier and its use in a K Nearest Neighbors-based Deployment* [#342]. Vincent Lemaire, Marc Boulle, Fabrice Clerot and Pascal Gouzien

**9:40AM** *Euclidean Distance and Second Derivative based Widths Optimization of Radial Basis Function Neural Networks* [#520]. Wen Yao, Xiaoqian Chen, Michel van Tooren and Yuexing Wei

**[S119]: Special Session: Empirical Mode Decomposition: Theory and Applications**

Friday, July 23, 8:00AM-10:00AM, Room: 125

Chair: Ana Maria Tomé, Ingo R. Keck, Elmar W. Lang

**8:00AM** *Empirical Mode Decomposition - An Introduction* [#293]. Angela Zeiler, Rupert Faltermeier, Ingo Keck, Ana Maria Tomé, Carlos Puntonet and Elmar Lang

**8:20AM** *Quadrivariate Empirical Mode Decomposition* [#108]. Naveed ur Rehman and Danilo Mandic

**8:40AM** *Sliding Empirical Mode Decomposition* [#295]. Rupert Faltermeier, Angela Zeiler, Ingo Keck, Ana Maria Tomé, Alexander Brawanski and Elmar Lang

**9:00AM** *Brain Status Data Analyzed by Empirical Mode Decomposition* [#296]. Angela Zeiler, Rupert Faltermeier, Ingo Keck, Ana Maria Tomé, Alexander Brawanski, Carlos Puntonet and Elmar Lang

**9:20AM** *Concatenated Trial based Hilbert-Huang Transformation on Event-Related Potentials* [#645]. Fengyu Cong, Tuomo Sipola, Xiaonan Xu, Tiina Huttunen-Scott, Heikki Lyytinen and T.

### [S093-5]: Special Session: Time Series Forecasting in Financial Applications

Friday, July 23, 8:00AM-10:00AM, Room: 127

Chair: Juan Peralta Donate, Martin Stepnicka, Sven Crone

**8:00AM** *On Utilizing the Self-Organizing Fuzzy Neural Network for Financial Forecasts in the NN5 Forecasting Competition* [#639]. Damien Coyle, Girijesh Prasad and Martin McGinnity

**8:20AM** *Stock Price Prediction using Generic Self-Evolving Takagi-Sugeno-Kang (GSETSK) Fuzzy Neural Network* [#98]. Ngoc Nam Nguyen and Hiok Chai Quek

**8:40AM** *An Increasing Hybrid Morphological-Linear Perceptron with Pseudo-Gradient-Based Learning and Phase Adjustment for Financial Time Series Prediction* [#274]. Ricardo de A. Araujo and Peter Sussner

**9:00AM** *A Quantum-Inspired Hybrid Methodology for Financial Time Series Prediction* [#114]. Ricardo de A. Araujo, Adriano Oliveira and Sergio C. B. Soares

**9:20AM** *Time series forecasting by evolving artificial neural networks using genetic algorithms and estimation of distribution algorithms* [#656]. Juan Peralta Donate, German Gutierrez and Araceli Sanchis

### [IA-1]: Industrial Applications I

Friday, July 23, 8:00AM-10:00AM, Room: 128

Chair: Ivo Bukovsky

**8:00AM** *Electricity Load Forecasting Based on Autocorrelation Analysis* [#16]. Rohen Sood, Irena Koprinska and Vassilios G. Agelidis

**8:20AM** *Short Term Load Forecasting Using Echo State Networks* [#541]. Hemen Showkati, Amir H. Hejazi and Sajad Elyasi

**8:40AM** *Computational Model for Estimation of Refractory Wear and Skull Deposition in Blast Furnace Hearth Wall* [#758]. Abhinav Mithal and Toma Hentea

**9:00AM** *An Information Theoretic Approach for In-Situ Underwater Target Classification* [#407]. Mahmood Azimi-Sadjadi and Neil Wachowski

**9:20AM** *Robust Neural Network RISE Observer based Fault Diagnostics and Prediction* [#641]. James Fonda, S. Jagannathan and Steve Watkins

**9:40AM** *Identification of Twin-Tanks Dynamics Using Adaptive Wavelet Differential Neural Networks* [#200]. Fatemeh Jahangiri, Ali Doustmohammadi and Mohammad B. Menhaj

**[PL-5]: Plenary Talk 5: Shiro Usui****“PLATO: Platform for Collaborative Brain System Modeling”**

Friday, July 23, 10:30AM-11:30PM, Room: 117

Chair: Vizenzo Piuri

**[DM&KE]: Data Mining and Knowledge Extraction**

Friday, July 23, 11:30AM-12:50PM, Room: 123

Chair: Stefanos Kollias

**11:30AM** *Multi-Label Classification by ART-based Neural Networks and Hierarchy Extraction* [#133]. Fernando Benites, Florian Brucker and Elena Sapozhnikova

**11:50AM** *Semantic Description of Multimedia Contents for the Optimization of the Advertising Impact on TV Program Grids* [#72]. Teresa Garcia-Valverde, Alberto Caballero, Juan A. Botia and Antonio Gomez-Skarmeta

**12:10PM** *Multi-Facet Exploration of Image Collections with an Adaptive Multi-Focus Zoomable Interface* [#611]. Sebastian Stober, Christian Hentschel and Andreas Nuernberger

**12:30PM** *Semantic Subspace Learning with Conditional Significance Vectors* [#158]. Nandita Tripathi, Stefan Wermter, Chihli Hung and Michael Oakes

**[L-6]: Learning VI**

Friday, July 23, 11:30AM-12:50PM, Room: 124

Chair: Pablo Estevez

**11:30AM** *An experimental comparison of linear non-Gaussian causal discovery methods and their variants* [#738]. Yasuhiro Sogawa, Shohei Shimizu, Yoshinobu Kawahara and Takashi Washio

**11:50PM** *First-order Logic Learning in Artificial Neural Networks* [#318]. Mathieu Guillame-Bert, Krysia Broda and Artur d'Avila Garcez

**12:10PM** *Enhanced Two-Phase Method in Fast Learning Algorithms* [#517]. Chi Chung Cheung, Sin-Chun Ng, Andrew K Lui and Sean Shensheng Xu

**[S010-1]: Special Session: Hybrid Neural Intelligent Systems I**

Friday, July 23, 11:30AM-12:50PM, Room: 125

Chair: Oscar Castillo, Patricia Melin

**11:30AM** *Hybrid System for Cardiac Arrhythmia Classification with Fuzzy K-Nearest Neighbors and Multi Layer Perceptrons combined by a Fuzzy Inference System* [#278]. Eduardo Ramirez, Oscar Castillo and Jose Soria

**11:50AM** *Modular Neural Networks for Person Recognition using Segmentation and the Iris Biometric Measurement with Image Pre-Processing* [#116]. Fernando Gaxiola, Patricia Melin and Miguel Lopez

**12:10PM** *A Fuzzy Associative Memory Based on Kosko's Subsethood Measure* [#405]. Estevao Esmi and Peter Sussner

**12:30PM** *Tracking Gestures using a Probabilistic Self-Organising Network* [#636]. Anastassia Angelopoulou, Alexandra Psarrou, Jose Garcia-Rodriguez and Gupta Gaurav

**[S093-6]: Special Session: Advances in Algorithms for Time Series Forecasting**

Friday, July 23, 11:30AM-12:50PM, Room: 127

Chair: Juan Peralta Donate, Martin Stepnicka, Sven Crone

**11:30AM** *Fully Automatic Bayesian Neural Forecaster - NN GC1* [#671]. Vitor Hugo Ferreira and Alexandre Pinto Alves da Silva

**11:50AM** *Advances in Structural Modeling Robust to Outliers in Explanatory and Response Variables* [#378]. Vladyslav Shaposhnyk, Alessandro E.P. Villa and Tetiana Aksenova

**12:10PM** *Unscented Grid Filtering and Elman Recurrent Networks* [#77]. Nikolay Nikolaev, Derrick Mirikitani and Evgueni Smirnov

**12:30PM** *Sensitivity Analysis for Time Lag Selection to Forecast Seasonal Time Series using Neural Networks and Support Vector Machines* [#245]. Paulo Cortez

**[SC]: System Control**

Friday, July 23, 11:30AM-12:50PM, Room: 128

Chair: Ivo Bukovsky

**11:30AM** *Direct Torque Adaptive Vector Neural Control of a Three-Phase Induction Motor* [#320]. Ieroham Baruch, Carlos Mariaca-Gaspar, Irving De La Cruz and Oscar Castillo

**11:50AM** *State-Space Control of Nonlinear Systems Identified by ANARX and Neural Network based SANARX Models* [#364]. Kristina Vassiljeva, Eduard Petlenkov and Juri Belikov

**12:10PM** *Robust Predictive Controller Based on an Uncertain Neural Networks Model* [#431]. Ahmed Mnasser, Faouzi Bouani and Mekki Ksouri

**12:30PM** *Power System Controller Design: A Comparison between Breeder Genetic Algorithm and Population Based Incremental Learning* [#304]. Severus Sheetekela and Komla Folly

**[CN-1]: Computational Neuroscience I**

Friday, July 23, 2:30PM-3:30PM, Room: 123

Chair: Matthew Casey

**2:30PM** *A Bidirectional Associative Memory Based on Cortical Spiking Neurons Using Temporal Coding* [#474]. Masood Zamani, Alireza Sadeghian and Sylvain Chartier

**2:50PM** *Neuromimetic Encoding/Decoding of Spatiotemporal Spiking Signals from an Artificial Touch Sensor* [#231]. Luca Leonardo Bologna, Romain Brasselet, Marco Maggiali and Angelo Arleo

**3:10PM** *Reaction-Diffusion Based Model to Develop Binocular Simple Cells in Visual Cortex along with Cortical Maps* [#184]. M Sultan M Siddiqui and Basabi Bhaumik

**[L-7]: Learning VII**

Friday, July 23, 2:30PM-3:30PM, Room: 124

Chair: Irwin King

**2:30PM** *An Incremental Learning Method for Neural Networks in Adaptive Environments* [#401]. Beatriz Perez-Sanchez, Oscar Fontenla-Romero and Bertha Guijarro-Berdinas

**2:50PM** *Two-Dimensional Neighborhoodhood Discriminant Projection* [#234]. Shan-Wen Zhang, Ying-Ke Lei and De-Shuang Huang

**3:10PM** *A Strategy for Dealing With Missing Values by Using Selective Activation Neurons in a Multi-Topology Framework* [#612]. Noel Lopes and Bernardete Ribeiro

### [HS-1]: Hybrid Systems I

Friday, July 23, 2:30PM-3:30PM, Room: 125

Chair: Patricia Melin

**2:30PM** *An Online Approach towards Self-generating Fuzzy Neural Networks with Applications* [#61]. Fan Liu, Meng Joo Er and Leszek Rutkowski

**2:50PM** *Automatic Optimization of Pruning in Evolving Fuzzy Neural Networks Using an Entropy Measure* [#732]. Brendon Woodford

**3:10PM** *Choice of Initial Bias in Max-min Fuzzy Neural Networks* [#115]. Jie Yang, Long Li, Liu Yan, Jing Wang and Wei Wu

### [C&C-2]: Classification and Clustering II

Friday, July 23, 2:30PM-3:30PM, Room: 127

Chair: José Alfredo F. Costa

**2:30PM** *Radial Basis Function Classifier Construction Using Particle Swarm Optimisation Aided Orthogonal Forward Regression* [#1]. Sheng Chen, Xia Hong and Chris J. Harris

**2:50PM** *A Loss Function for Classification Based on a Robust Similarity Metric* [#507]. Abhishek Singh and Jose Principe

**3:10PM** *Feature selection using ROC curves on classification problems* [#834]. Antonio J. Serrano, Emilio Soria, Jose D. Martin, Rafael Magdalena and Juan Gomez

### [IA-2]: Industrial Applications II

Friday, July 23, 2:30PM-3:30PM, Room: 128

Chair: Carlo Francesco Morabito

**2:30PM** *Time Receiver Operating Characteristic (tROC) Curves: A New Tool for Evaluating the Performance of Diagnostic Systems* [#821]. Ya Xue, Neil Eklund, Xiao Hu and Weizhong Yan

**2:50PM** *Software Defect Prediction Using Static Code Metrics Underestimates Defect-Proneness* [#705]. David Gray, David Bowes, Neil Davey, Yi Sun and Bruce Christianson

**3:10PM** *Proactive Reputation-Based Defense for MANETs Using Radial Basis Function Neural Networks* [#63]. Eyosias Y. Imana, Fredric M. Ham, William Allen and Richard Ford

### [CN-2]: Computational Neuroscience II

Friday, July 23, 3:30PM-4:30PM, Room: 123

Chair: Nikola Kasabov

**3:30PM** *Identifying Fiber Bundles with Regularised k-Means Clustering Applied to the Grid-Based Data* [#178]. Vladimir Nikulin and Geoffrey McLachlan

**3:50PM** *Simulating the Effects of Cortical Feedback in the Superior Colliculus with Topographic Maps* [#74]. Athanasios Pavlou and Matthew Casey

**4:10PM** *Autonomous cognition and reinforcement learning for mobile robots* [#722]. Rodrigo Calvo, Mauricio Figueiredo and Roseli Ap. Francelin Romero

**[L-8]: Learning VIII**

Friday, July 23, 3:30PM-4:30PM, Room: 124

Chair: Kazuhito Sato

**3:30PM** *Visualizing Support Vectors and Topological Data Mapping for Improved Generalization Capabilities* [#217]. Hirokazu Madokoro and Kazuhito Sato

**3:50PM** *Recurrent wavelets neural networks learning vida dead-zone Kalman filter* [#816]. Juan Jose Cordova and Wen Yu

**[HS-2]: Hybrid Systems II**

Friday, July 23, 3:30PM-4:30PM, Room: 125

Chair: Oscar Castillo

**3:30PM** *A new domain decomposition for B-spline Neural Networks* [#703]. Cristiano Cabrita, Antonio Ruano and Laszlo Koczy

**3:50PM** *A Hybrid Grey-Fuzzy-Neural Networks Model for Enterprises' Bankruptcy* [#188]. Emil Scarlat and Camelia Delcea

**4:10PM** *Opposition-Based Particle Swarm Optimization for the Design of Beta Basis Function Neural Network* [#513]. Habib Dhahri and Adel.M Alimi

**[C&C-3]: Classification and Clustering III**

Friday, July 23, 3:30PM-4:30PM, Room: 127

Chair: Francesco Masulli

**3:30PM** *Discriminative Feature Extraction with Deep Neural Networks* [#463]. Andre Stuhlsatz, Jens Lippel and Thomas Zielke

**3:50PM** *Compressing a Neural Network Classifier using a Volterra-Neural Network model* [#713]. Mariano Rubiolo, Georgina Stegmayer and Diego Milone

**[IA-3]: Industrial Applications III**

Friday, July 23, 3:30PM-4:30PM, Room: 128

Chair: Carlo Francesco Morabito

**3:30PM** *Exploit of Online Social Networks with Semi-Supervised Learning* [#587]. Mingzhen Mo, Dingyan Wang, Baichuan Li, Dan Hong and Irwin King

**3:50PM** *A Framework for Developing Neural Networks Based Mobile Appliances* [#225]. Paolo Motto Ros and Eros Pasero

**4:10PM** *SMART: Simultaneous Indoor Localization and Map Construction Using Smartphones* [#493]. Peng Zhuang, Dan Wang and Yi Shang

**[CN-3]: Computational Neuroscience III**

Friday, July 23, 4:50PM-6:30PM, Room: 123

Chair: Tony Prescott

**4:50PM** *Hippocampus as Unitary Coherent Particle Filter* [#138]. Charles Fox and Tony Prescott

**5:10PM** *An Integrated Computational Model of the Two Phase Theory of Classical Conditioning* [#665]. Martin Inderbitzin, Ivan Herreros-Alonso and Paul F.M.J. Verschure

**5:30PM** *The neuronal substrate underlying order and interval representations in sequential tasks: a biologically based robot study* [#649]. Encarni Marcos, Armin Duff, Marti Sanchez-Fibla and Paul Verschure

**5:50PM** *Dual-Network Memory Model Using a Chaotic Neural Network* [#548]. Motonobu Hattori

**6:10PM** *An Instruction Language for the Explicit Programming of Axonal Growth Patterns* [#689]. Frederic Zubler and Rodney Douglas

### [L-9]: Learning IX

Friday, July 23, 4:50PM-6:30PM, Room: 124

Chair: Cecilio Angulo

**4:50PM** *Learning Process of Affordable Neural Network for Backpropagation Algorithm* [#576]. Yoko Uwate and Yoshifumi Nishio

**5:10PM** *Stochastic Weight Update in The Backpropagation Algorithm on Feed-Forward Neural Networks* [#666]. Juraj Koscak, Rudolf Jaksa and Peter Sincak

**5:30PM** *Evidence-Based Mixture of MLP-Experts* [#646]. Saeed Masoudnia, Mohammad Rostami, Mahdi Tabassian, Atena Sajedin and Reza Ebrahimpour

**5:50PM** *Opposition Based Computing - A Survey* [#652]. Fares Al-Qunaieer, Hamid Tizhoosh and Shahryar Rahnamayan

**6:10PM** *A Mixed Self-Organizing Map with a Dynamic Structure* [#527]. Wei-Shen Tai, Chung-Chian Hsu and Jong-Chen Chen

### [S010-2]: Special Session: Hybrid Neural Intelligent Systems II

Friday, July 23, 4:50PM-6:30PM, Room: 124

Chair: Oscar Castillo, Patricia Melin

**4:50PM** *Learning in Polynomial Cellular Neural Networks using Quadratic Programming* [#838]. Eduardo Gomez-Ramirez, Anna Rubi-Velez and Giovanni Pazienza

**5:10PM** *Neural Networks to Improve Mathematical Model Adaptation in the Flat Steel Cold Rolling Process* [#797]. Antonio Luiz dos Santos Filho and Francisco Javier Ramirez-Fernandez

**5:30PM** *A Comparative Study of Machine Learning Techniques in Blog Comments Spam Filtering* [#824]. Christian Romero, Mario Garcia and Arnulfo Alanis

**5:50PM** *Neuro Sliding Mode Based Chatter Free Control For an Artificial Muscles Robot Arm* [#789]. Syrine Boudoua, Faiza Hamerlain and Mustapha Hamerlain

**6:10PM** *Optimization of Type-2 Fuzzy Systems Based on the Level of Uncertainty, Applied To Response Integration in Modular Neural Networks with Multimodal Biometry* [#317]. Denisse Hidalgo, Patricia Melin, Oscar Castillo and Guillermo Licea

### [C&C-4]: Classification and Clustering IV

Friday, July 23, 4:50PM-6:30PM, Room: 127

Chair: Vojislav Kecman

**4:50PM** *A Hierarchical Predictive Scheme for Incremental Time-Series Classification* [#718]. Vassilis Syrris and Vassilios Petridis

**5:10PM** *Using Multiple Measures to Predict Confidence in Instance Classification* [#179]. Kristine Monteith and Tony Martinez

**5:30PM** *Multiclass Classifiers vs Multiple Binary Classifiers using Filters for Feature Selection* [#355]. Noelia Sanchez-Marono, Amparo Alonso-Betanzos, Pablo Garcia-Gonzalez and Veronica Bolon-Canedo

**5:50PM** *Testing Adaptive Local Hyperplane for Multi-class Classification by Double Cross-Validation* [#8]. Tao Yang, Vojislav Kecman, Longbing Cao and Chengqi Zhang

**6:10PM** *New Top-Down Methods Using SVMs for Hierarchical Multilabel Classification Problems* [#479]. Ricardo Cerri and Andre Carlos P. L. F. Carvalho

### [SP]: Signal Processing

Friday, July 23, 4:50PM-6:30PM, Room: 128

Chair: Ramin Pichevar

**4:50PM** *Building Blocks for Spike-based Signal Processing* [#532]. Angel Jimenez-Fernandez, Alejandro Linares-Barranco, Rafael Paz-Vicente, Gabriel Jimenez and Anton Civit

**5:10PM** *High Performance Spike Detection and Sorting using Neural Waveform Phase Information and SOM Clustering* [#249]. Chenhui Yang, Yuan Yuan and Jennie Si

**5:30PM** *Neural-Based Approach to Perceptual Sparse Coding of Audio Signals* [#39]. Ramin Pichevar, Hossein Najaf-Zadeh and Frederic Mustiere

**5:50PM** *A Low-Power, High-Resolution WTA Utilizing Translinear-Loop Pre-Amplifier* [#181]. Hung-Yi Hsieh, Kea-Tiong Tang, Zen-Huan Tsai and Hsin Chen

**6:10PM** *Non-Destructive Classification of Watermelon Ripeness using Mel-Frequency Cepstrum Coefficients and Multilayer Perceptrons* [#359]. Shah Rizam M. Shah Baki, Mohd Z. M. Annuar, Ihsan M. Yassin, Hasliza A. Hassan and Azlee Zabidi