

# IJCNN 2015 Program

## Sunday, July 12, 2015

### **Tutorial tut1: Tutorial 1: Forecasting with Recurrent Neural Networks: 12 Tricks**

*Sunday, July 12, 8:00AM-10:00AM, Room: Auditorium, Instructor: Hans-Georg Zimmermann, Christoph Tietz and Ralph Grothmann*

### **Tutorial tut2: Tutorial 2: The Mind-Brain, Big Data and Autonomous Learning**

*Sunday, July 12, 8:00AM-10:00AM, Room: Ballroom, Instructor: Leonid I. Perlovsky*

### **Tutorial tut3: Tutorial 3: Noninvasive Electroencephalogram-based Brain-Computer Interfaces**

*Sunday, July 12, 8:00AM-10:00AM, Room: Brehon, Instructor: Joao Luis Rosa*

### **Tutorial tut4a: Tutorial 4(a): Robust Model-based Learning: Methods, Algorithms and Applications**

*Sunday, July 12, 8:00AM-10:00AM, Room: Park Suite, Instructor: Yixin Chen and Xin Dang*

### **Tutorial tut4b: Tutorial 4(b): Simulating an entire nervous system? An exemplary Caenorhabditis elegans emulation case study**

*Sunday, July 12, 8:00AM-10:00AM, Room: Mangerton, Instructor: Axel Blau, Martin McGinnity, Fearghal Morgan, Andoni Mujika*

### **Tutorial tut5: Tutorial 5: Computational Intelligence for Wearable Physiological Sensing**

*Sunday, July 12, 10:30AM-12:30PM, Room: Auditorium, Instructor: Danilo Mandic and Valentin Goverdovsky*

### **Tutorial tut6: Tutorial 6: Compositionality and Self-Organization in Cognitive Minds: Lessons from Neuro-Robotics Experimental Studies**

*Sunday, July 12, 10:30AM-12:30PM, Room: Ballroom, Instructor: Jun Tani*

### **Tutorial tut7: Tutorial 7: Computational Neuroscience: Past - Present - Future**

*Sunday, July 12, 10:30AM-12:30PM, Room: Brehon, Instructor: Péter Érdi*

### **Tutorial tut8: Tutorial 8: Data visualization with dimensionality reduction and manifold learning**

*Sunday, July 12, 10:30AM-12:30PM, Room: Park Suite, Instructor: Michel Verleysen and John A. Lee*

### **Tutorial tut9: Tutorial 9: Dynamic Systems and Learning in the Model Space**

*Sunday, July 12, 10:30AM-12:30PM, Room: Mangerton, Instructor: Huanhuan Chen and Peter Tino*

### **Tutorial tut10: Tutorial 10: Use of Artificial Intelligence and Machine Learning in Quantum Computing**

*Sunday, July 12, 1:30PM-3:30PM, Room: Auditorium, Instructor: Elizabeth Behrman and James Steck*

### **Tutorial tut11: Tutorial 11: Multi-Task Learning Primer**

*Sunday, July 12, 1:30PM-3:30PM, Room: Ballroom, Instructor: Georgios Anagnostopoulos and Cong Li*

### **Tutorial tut12: Tutorial 12: Learning in indefinite proximity spaces: Mathematical foundations, representations, and models**

*Sunday, July 12, 1:30PM-3:30PM, Room: Brehon, Instructor: Peter Tino and Frank-Michael Schleif*

### **Tutorial tut13: Tutorial 13: Successful Applications of Neural Networks for Information Fusion**

*Sunday, July 12, 1:30PM-3:30PM, Room: Park Suite, Instructor: Stephen Stubberud and Kathleen Kramer*

### **Tutorial tut14: Tutorial 14: Conformal Prediction: A Valid Approach to Confidence Predictions**

*Sunday, July 12, 1:30PM-3:30PM, Room: Mangerton, Instructor: Henrik Boström, Alex Gammernan, Ulf Johansson, Lars Carlsson, Henrik Linusson*

### **Tutorial tut15: Tutorial 15: Advances in Universum Learning**

*Sunday, July 12, 4:00PM-6:00PM, Room: Auditorium, Instructor: Vladimir Cherkassky and Saptik Dhar*

### **Tutorial tut16: Tutorial 16: Learning Autonomously from Big Data Streams**

*Sunday, July 12, 4:00PM-6:00PM, Room: Ballroom, Instructor: Plamen Angelov and Asim Roy*

### **Tutorial tut17: Tutorial 17: Feature Selection Technique for Gene Expression Data Analysis**

*Sunday, July 12, 4:00PM-6:00PM, Room: Brehon, Instructor: B. Chandra*

### **Tutorial tut18: Tutorial 18: Spiking Neural Networks in Silicon: From Building Blocks to Architectures of Neuromorphic Systems**

*Sunday, July 12, 4:00PM-6:00PM, Room: Park Suite, Instructor: Arindam Basu*

### **Tutorial tut19: Tutorial 19: Learning architectures and training algorithms - comparative studies**

*Sunday, July 12, 4:00PM-6:00PM, Room: Mangerton, Instructor: Bigdan Wilamowski*

## Monday, July 13, 2015

### Plenary Talk Plenary1: Plenary session: Giacomo Rizzolatti

Monday, July 13, 8:00AM-9:00AM, Room: Auditorium, Chair: Morabito, Francesco Carlo

### Session Chaos: Nonlinear dynamics and chaos

Monday, July 13, 9:10AM-10:30AM, Room: Auditorium, Chair: Shanahan, Murray

- 9:10AM Local and Global Criticality within Oscillating Networks of Spiking Neurons [#15411]  
Filipe Peliz Pinto Teixeira and Murray Shanahan
- 9:30AM Reinforcement Learning with Internal-Dynamics-based Exploration Using a Chaotic Neural Network [#15231]  
Katsunari Shibata and Yuta Sakashita
- 9:50AM Chaotic Multidirectional Associative Memory with Adaptive Scaling Factor of Refractoriness [#15529]  
Hayashi Nagamasa and Osana Yuko
- 10:10AM Prediction Interval-based Neural Network Controller for Nonlinear Processes [#15155]  
Mohammad Anwar Hosen, Abbas Khosravi, Saeid Nahavandi, Douglas Creighton and Syed Moshfeq Salaken

### Special Session ss28: Clustering and Co-clustering

Monday, July 13, 9:10AM-10:30AM, Room: Ballroom, Chair: Lemaire, Vincent; Gisbrecht, Andrej

- 9:10AM Discriminative Dimensionality Reduction for Regression Problems using the Fisher Metric [#15656]  
Alexander Schulz and Barbara Hammer
- 9:30AM Automatic Discovery of Metagenomic Structure [#15327]  
Markus Lux, Alexander Sczyrba and Barbara Hammer
- 9:50AM An Initialization Scheme for Supervized K-means [#15404]  
Vincent Lemaire, Oumaima Alaoui Ismaili and Antoine Cornuejols
- 10:10AM A New Approach for Event Detection using k-means Clustering and Neural Networks [#15677]  
Muyiwa Olakanmi Oladimeji, Mikdam Turkey, Mohammad Ghavami and Sandra Dudley

### Session Graph: Graphs

Monday, July 13, 9:10AM-10:30AM, Room: Brehon, Chair: Doboli, Simona

- 9:10AM Generalized Label Propagation [#15672]  
Asher Hensley, Alex Doboli, Rami Mangoubi and Simona Doboli

9:30AM Robust Multi-class Graph Transduction with Higher Order Regularization [#15080]

Celso Sousa and Gustavo Batista

9:50AM An experimental analysis on time series transductive classification on graphs [#15081]

Celso Sousa, Vinicius Souza and Gustavo Batista

10:10AM Two-Dimensional Multi-layer Factor Graphs in Reduced Normal Form [#15212]

Amedeo Buonanno and Francesco A.N. Palmieri

### **Special Session ss11-1: Emerging trends in Computational Intelligence methods for Biomedicine and Healthcare**

*Monday, July 13, 9:10AM-10:30AM, Room: Park Suite, Chair: Vellido, Alfredo*

9:10AM Selecting target concept in one-class classification for handling class imbalance problem [#15552]

Beatriz Perez-Sanchez, Oscar Fontenla-Romero and Noelia Sanchez-Marono

9:30AM Advanced Classification of Alzheimer's Disease and Healthy Subjects Based on EEG Markers [#15276]

Vitoantonio Bevilacqua, Angelo Antonio Salatino, Carlo Di Leo, Giacomo Tattoli, Domenico Buongiorno, Domenico Signorile, Claudio Babiloni, Claudio Del Percio, Antonio Ivano Triggiani and Loreto Gesualdo

9:50AM The Extracellular N-terminal Domain Suffices to Discriminate Class C G Protein-Coupled Receptor Subtypes from n-Grams of their Sequences [#15481]

Caroline Konig, Rene Alquezar, Alfredo Vellido and Jesus Giraldo

10:10AM A supervised CAD to support telemedicine in hematology [#15277]

Vitoantonio Bevilacqua, Domenico Buongiorno, Pierluigi Carlucci, Ferdinando Giglio, Giacomo Tattoli, Attilio Guarini, Giovanni Simone, Nicola Sgherza, Francesco Girardi, Giacoma De Tullio, Carla Minoia, Anna Scattone, Alfredo Zito and Loreto Gesualdo

### **Session Neurosc1: Neuroscience 1: behavioral modeling**

*Monday, July 13, 9:10AM-10:30AM, Room: Mangerton, Chair: Parker, Alice*

9:10AM Learning Human Motion Feedback with Neural Self-Organization [#15610]

German Ignacio Parisi, Florian Von Stosch, Sven Magg and Stefan Wermter

9:30AM On the utility of sparse neural representations in adaptive behaving agents [#15526]

Thusitha Chandrapala, Bertram Shi and Jochen Triesch

9:50AM Emergence of Tool Use in an Articulated Limb Controlled by Evolved Neural

Circuits [#15417]

Qinbo Li, Jaewook Yoo and Yoonsuck Choe

10:10AM Neural Circuits for Touch-Induced Locomotion in *Caenorhabditis Elegans* [#15201]

Sukanya Patil, Kaidi Zhou and Alice Parker

**Panel Session Invited1: Invited Speaker: Anders Sandberg**

*Monday, July 13, 10:50AM-11:30AM, Room: Auditorium, Chair: Choe, Yoonsuck*

**Special Session ss23-1: Complex and memristive networks 1**

*Monday, July 13, 10:50AM-12:10PM, Room: Ballroom, Chair: Corinto, Fernando*

10:50AM Class of memristors from cascade of static nonlinear two ports with dynamic one-ports [#15021]

Alon Ascoli, Fernando Corinto and Ronald Tetzlaff

11:10AM Behavioral Model for Simplified Identification of Memristor Parameters [#15336]

Zdenek Kolka, Viera Biolkova, Dalibor Biolek and Jiri Vavra

11:30AM Quantum-Inspired Complex-Valued Multidirectional Associative Memory [#15195]

Naoki Masuyama and ChuKiong Loo

11:50AM Complex-Valued Multilayer Perceptron Learning Using Singular Regions and Search Pruning [#15266]

Seiya Satoh and Ryohei Nakano

**Session Manif1: Manifold learning and dimensionality reduction 1**

*Monday, July 13, 10:50AM-12:10PM, Room: Brehon, Chair: Andras, Peter*

10:50AM High-Dimensional Function Approximation Using Local Linear Embedding [#15134]

Peter Andras

11:10AM Learning Orthogonal Sparse Representations by using Geodesic Flow Optimization [#15540]

Henry Schuetze, Erhardt Barth and Thomas Martinetz

11:30AM Stochastic Computation of Dominant Eigenvalue and the Law of Total Variance [#15661]

George Georgiou, Kerstin Voigt and Haiyan Qiao

11:50AM Sparsity Analysis of Learned Factors in Multilayer NMF [#15396]

Ievgen Redko and Younes Bennani

**Special Session ss11-2: SS: Biomedical applications**

*Monday, July 13, 10:50AM-12:10PM, Room: Park Suite, Chair: Ko, Li-Wei*

- 10:50AM Using Regional Homogeneity from Functional MRI for Diagnosis of ASD among Males [#15413]  
Vigneshwaran Subbaraju, Suresh Sundaram, Mahanand Belathur Suresh and Sundararajan Narasimhan
- 11:10AM An Empirical Mode Decomposition Based Filtering Method for Classification of Motor-Imagery EEG Signals for Enhancing Brain-Computer Interface [#15679]  
Pramod Gaur, Ram Bilas Pachori, Hui Wang and Girijesh Prasad
- 11:30AM Learning with Covariate Shift-Detection and Adaptation in Non-Stationary Environments: Application to Brain-Computer Interface [#15664]  
Haider Raza, Hubert Cecotti, Yuhua Li and Girijesh Prasad
- 11:50AM Single Channel Wireless EEG Device for Real-Time Fatigue Level Detection [#15767]  
Li-Wei Ko, Wei-Kai Lai, Wei-Gang Liang, Chun-Hsiang Chuang, Shao-Wei Lu, Yi-Chen Lu, Tien-Yang Hsiung, Hsu-Hsuan Wu and Chin-Teng Lin

### **Session Dyn1: Neurodynamics 1**

*Monday, July 13, 10:50AM-12:10PM, Room: Mangerton, Chair: Guo, Wentao*

- 10:50AM Parallel Algorithms for a Neurodynamic Optimization System Realized on GPU and Applied to Recovering Compressively Sensed Signals [#15462]  
Xiaodan Zhu and Chengan Guo
- 11:10AM Effect of Associative Rules on the Dynamics of Conceptual Combination in a Neurodynamical Model [#15832]  
Sarjoun Doumit and Ali Minai
- 11:30AM Error Bound Analysis of Policy Iteration Based Approximate Dynamic Programming for Deterministic Discrete-time Nonlinear Systems [#15717]  
Wentao Guo, Feng Liu, Jennie Si, Shengwei Mei and Rui Li
- 11:50AM Predictive Event-Triggered Control based on Heuristic Dynamic Programming for Nonlinear Continuous-Time Systems [#15812]  
Lu Dong, Xiangnan Zhong, Changyin Sun and Haibo He

### **Session Emotion: Emotion and motivation**

*Monday, July 13, 11:30AM-12:10PM, Room: Auditorium, Chair: Perlovsky, Leonid*

- 11:30AM Artificial Motivations based on Drive-Reduction Theory in Self-Referential Model-Building Control Systems [#15499]  
Moritz Schneider and Juergen Adamy
- 11:50AM Towards a Neural Model of Bonding in Self-Attachment [#15393]  
David Cittern and Abbas Edalat

### **Session Finance1: Financial and commercial applications**

*Monday, July 13, 1:30PM-2:30PM, Room: Auditorium, Chair: Gashler, Michael*

1:30PM Investing in Emerging Markets Using Neural Networks and Particle Swarm Optimisation [#15710]

Pascal Khoury and Denise Gorse

1:50PM Meta-Learning to Choose the Level of Analysis in Nested Data: A Case Study on Error Detection in Foreign Trade Statistics [#15546]

Mohammad Nozari Zarmehri and Carlos Soares

2:10PM A Hybrid Latent Variable Neural Network Model for Item Recommendation [#15058]

Michael Smith, Michael Gashler and Tony Martinez

### **Session EEGMEG1: EEG/MEG analysis and applications 1**

*Monday, July 13, 1:30PM-2:30PM, Room: Ballroom, Chair: Diwakar, Shyam*

1:30PM Adaptive Parameterized AdaBoost Algorithm with Application in EEG Motor Imagery Classification [#15801]

Pratyusha Das, Arup Kumar Sadhu, Amit Konar, Basabdatta Sen Bhattacharya and Atulya K. Nagar

1:50PM Exploiting Point Source Approximation on Detailed Neuronal Models to Reconstruct Single Neuron Electric Field and Population LFP [#15474]

Harilal Parasuram, Bipin Nair, Giovanni Naldi, Egidio D'Angelo and Shyam Diwakar

2:10PM EEG Signal Analysis for BCI Application using Fuzzy System [#15455]

Thanh Nguyen, Saeid Nahavandi, Abbas Khosravi, Douglas Creighton and Imali Hettiarachchi

### **Session Manif2: Manifold learning and dimensionality reduction 2**

*Monday, July 13, 1:30PM-2:30PM, Room: Brehon, Chair: Wang, Xiaoping*

1:30PM Improved Manifold Learning with Competitive Hebbian Rule [#15798]

Qiang Gan, Furao Shen and Jinxi Zhao

1:50PM Robust Semi-supervised Nonnegative Matrix Factorization [#15222]

Jing Wang, Feng Tian, Chang Hong Liu and Xiao Wang

2:10PM Correntropy Supervised Non-negative Matrix Factorization [#15508]

Zhang Wenju, Guan Naiyang, Tao Dacheng, Mao Bin, Huang Xuhui and Luo Zhigang

### **Session Sampling: Sampling**

*Monday, July 13, 1:30PM-2:30PM, Room: Park Suite, Chair: Carvalho, Andre*

1:30PM From Cutting Planes Algorithms to Compression Schemes and Active Learning [#15601]

Ugo Louche and Liva Ralaivola

1:50PM An Evolutionary Sampling Approach for Classification with Imbalanced Data [#15687]

Everlandio Fernandes, Andre Carvalho and Andre Coelho

2:10PM Lattice point sets for efficient kernel smoothing models [#15285]

Cristiano Cervellera, Mauro Gaggero, Danilo Maccio' and Roberto Marcialis

### **Session Dyn2: Neurodynamics 2**

*Monday, July 13, 1:30PM-2:30PM, Room: Mangerton, Chair: Guo, Chengan; Guo, Wentao*

1:30PM Neural network observer-based optimal control for unknown nonlinear systems with control constraints [#15459]

Yuzhu Huang and Hongde Jiang

1:50PM A Neurodynamic Optimization Approach to Synthesis of Linear Systems with Fault Detection via Robust Pole Assignment [#15159]

Xinyi Le and Jun Wang

2:10PM Spatio-temporal Map Formation Based on a Potential Function [#15187]

Prayag Gowgi and Shayan Garani

### **Session Finance2: Financial and commercial applications**

*Monday, July 13, 2:40PM-4:20PM, Room: Auditorium, Chair: Quek, Chai*

2:40PM Financial Data Analysis Using The Informational Energy Unilateral Dependency Measure [#15653]

Angel Cataron, Razvan Andonie and Yvonne Chueh

3:00PM Three-MLP Ensemble Re-RX Algorithm and Recent Classifiers for Credit-Risk Evaluation [#15166]

Yoichi Hayashi, Yuki Tanaka, Shonosuke Yukita, Satoshi Nakano and Guido Bologna

3:20PM Case-based Reasoning Combined with Neural Networks for Credit Risk Analysis [#15660]

Cesar Silva, Germano Vasconcelos, Gabriel Silva and Hadautho Barros

3:40PM A PAA-PSO technique for investment strategies in the financial market [#15580]

Victor Souza, Rodrigo Brasileiro and Adriano Oliveira

4:00PM trading model: Self Reorganizing Fuzzy Associative Machine - forecasted MACD-Historgram (SeroFAM-fMACDH) [#15426]

Javan Tan, WeiGui jair Zhou and Chai Quek

### **Special Session ss23-2: Complex and memristive networks 2**

*Monday, July 13, 2:40PM-4:20PM, Room: Ballroom, Chair: Hardy, Leon*

2:40PM Controllability of Multi-level States in Memristive Device Models using a Transistor as Current Compliance during SET Operation [#15667]

Anne Siemon, Stephan Menzel, Rainer Waser and Eike Linn

3:00PM Architecture and Simulation of a Hybrid Memristive Multiplier Network using Redundant Number Representation [#15725]

Dietmar Fey and Jonathan Martschinke

3:20PM An application of neurohydrodynamics to a Hopfield neural network [#15121]

Leon Hardy

3:40PM Gradient-descent-based learning in memristive crossbar arrays [#15548]

Manu V Nair and Piotr Dudek

4:00PM Mode-Locking in a Network of Kuramoto-like Oscillators [#15645]

Eugene Koskin, Dimitri Galayko, Orla Feely and Elena Blokhina

### **Session DeepNN1: Deep neural networks 1**

*Monday, July 13, 2:40PM-4:20PM, Room: Brehon, Chair: Louis, Sushil*

2:40PM Deep Convolutional Neural Networks as Generic Feature Extractors [#15583]

Lars Hertel, Erhardt Barth, Thomas Kaester and Thomas Martinetz

3:00PM DeepSign: Deep Learning for Automatic Malware Signature Generation and Classification [#15763]

Omid E. David and Nathan S. Netanyahu

3:20PM Deep Learning Using Partitioned Data Vectors [#15301]

Ben Mitchell, Hasari Tosun and John Sheppard

3:40PM Face Recognition in Unconstrained Environments A Deep Architecture on A Small Training Set [#15744]

Mohammad Taghi Saffar, Banafsheh Rekabdar, Sushil Louis and Mircea Nicolescu

4:00PM Exploring Autoencoders for Unsupervised Feature Selection [#15172]

Chandra B. and Rajesh K. Sharma

### **Special Session ss13: Emerging Methodologies for Big Data Integration**

*Monday, July 13, 2:40PM-4:20PM, Room: Park Suite, Chair: Tagliaferri, Roberto*

2:40PM An Automated String-Based Approach to White Matter Fiber-Bundles Clustering [#15386]

Francesco Cauteruccio, Claudio Stamile, Giorgio Terracina, Domenico Ursino and Dominique Sappey-Marinier

3:00PM Modelling Absence Epilepsy Seizure Data in the NeuCube Evolving Spiking Neural Network Architecture [#15691]

Elisa Capecci, Josafath I. Espinosa Ramos, Nadia Mammone, Nikola Kasabov, Jonas Duun-Henriksen, Troels Wesenberg Kjaer, Maurizio Campolo, Fabio La



Foresta and Francesco C. Morabito

3:20PM Learning Vector Quantization and Permutation Entropy to Analyse Epileptic Electroencephalography [#15483]

Nadia Mammone, Jonas Duun-Henriksen, Troels W. Kjaer, Maurizio Campolo, Fabio La Foresta and Francesco C. Morabito

3:40PM Biomedical data integration and ontology-driven multi-facets visualization [#15182]

Carmen De Maio, Giuseppe Fenza, Vincenzo Loia and Mimmo Parente

4:00PM Multi omic oscillations in bacterial pathways [#15831]

Francesco Bardozzo, Pietro Lio and Roberto Tagliaferri

### **Session Neurosc2: Neuroscience 2: neurons, synapses, and circuits**

*Monday, July 13, 2:40PM-4:20PM, Room: Mangerton, Chair: Salles Chevitaese, Daniel*

2:40PM Influence of the refractory period on neural networks based on the recognition of neural signatures [#15067]

Jose Luis Carrillo\_Medina and Roberto Latorre

3:00PM Synaptic amplification by axo-shaft synapses in a pyramidal neuron model [#15114]

Youwei Zheng and Lars Schwabe

3:20PM Connectivity estimation of neural networks using a spike train kernel [#15245]

Taro Tezuka and Christophe Claramunt

3:40PM Introduction to CircuitML: Modeling Local Processing Units in the Drosophila Brain [#15153]

Daniel Salles Chevitaese, Dilza Szwarcman and Marley Vellasco

4:00PM Modulation Ratio of Layer 2/3 Cells in Primary Visual Cortex: A Model Based Study [#15161]

Dhanaraj Kakkanattu Jagalchandran and Basabi Bhaumik

### **Session Temporal: Time and temporal processes**

*Monday, July 13, 4:40PM-6:20PM, Room: Auditorium, Chair: Maniadakis, Michail*

4:40PM Distal Dendrite Feedback in Hierarchical Temporal Memory [#15102]

Adam Kneller and John Thornton

5:00PM Artificial Agents Perceiving and Processing Time [#15644]

Michail Maniadakis and Panos Trahanias

5:20PM Learning Joint Representations for Order and Timing of Perceptual-Motor Sequences: a Dynamic Neural Field Approach [#15631]

Weronika Wojtak, Flora Ferreira, Wolfram Erlhagen and Estela Bicho

5:40PM Duration and Interval Hidden Markov Model for Sequential Data Analysis [#15752]

Hiromi Narimatsu and Hiroyuki Kasai

6:00PM Product Reservoir Computing: Time-Series Computation with Multiplicative Neurons [#15261]

Alireza Goudarzi, Shabani Alireza and Stefanovic Darko

### **Session EEGMEG2: EEG/MEG analysis and applications 2**

*Monday, July 13, 4:40PM-6:20PM, Room: Ballroom, Chair: Prasad, Girijesh*

4:40PM Single-trial detection of realistic images with magnetoencephalography [#15711]

Hubert Cecotti and Girijesh Prasad

5:00PM A Hands Free Browser Using EEG and Voice Inputs [#15148]

Joy Bose, Singhai Amit, Trisal Ankur, Keshav Vinod and Dubey Utkarsh

5:20PM Reliable Seizure Prediction from EEG Data [#15062]

Vladimir Cherkassky, Brandon Veber, Jieun Lee, Gregory Worrell, Benjamin Brinkmann, Ned Patterson and Shiao Han-Tai

5:40PM Reward-based online learning in non-stationary environments: adapting a P300-speller with a "Backspace" key [#15588]

Emmanuel Dauce, Timothee Proix and Liva Ralaivola

6:00PM EEG-based Biometric Identification Using Local Probability Centers [#15093]

Chengsheng Mao, Bin Hu, Manman Wang and Moore Philip

### **Session DeepNN2: Deep neural networks 2**

*Monday, July 13, 4:40PM-6:20PM, Room: Brehon, Chair: Lee, Minho*

4:40PM Deep Convolutional Network Neocognitron: Improved Interpolating-Vector [#15345]

Kunihiko Fukushima and Hayaru Shouno

5:00PM A novel deep learning by combining discriminative model with generative model [#15449]

Sangwook Kim, Jixiang Shen and Minho Lee

5:20PM Direct Conversion from Facial Myoelectric Signals to Speech using Deep Neural Networks [#15196]

Lorenz Diener, Matthias Janke and Tanja Schultz

5:40PM Resource-Constrained Classification Using a Cascade of Neural Network Layers [#15467]

Sam Leroux, Steven Bohez, Tim Verbelen, Bert Vankeirsbilck, Pieter Simoens and Bart Dhoedt

6:00PM Multi-Column Deep Neural Networks for Offline Handwritten Chinese Character Classification [#15350]

Dan Ciresan and Ueli Meier

**Special Session ss26: Optimizing Neural Networks Using Evolutionary Computation and Swarm Intelligence**

*Monday, July 13, 4:40PM-6:20PM, Room: Park Suite, Chair: Yeh, Wei-Chang*

4:40PM Solving reliability redundancy allocation problems with orthogonal simplified swarm optimization [#15220]

Wei-Chang Yeh, Yun-Zhi Jiang\*, Vera Yuk Ying Chung and Xiangjian He

5:00PM Analysis and Evaluation of Smartphone-based Human Activity Recognition Using a Neural Network Approach [#15315]

Yongjin Kwon, Kyuchang Kang and Changseok Bae

5:20PM A Probability-Dynamic Particle Swarm Optimization for Object Tracking [#15348]

Feng Sha, Changseok Bae, Guang Liu, XiMeng Zhao, Yuk Ying Chung, WeiChang Yeh and Xiangjian He

5:40PM Competitive Two-Island Cooperative Co-evolution for Training Feedforward Neural Networks for Pattern Classification Problems [#15103]

Rohitash Chandra and Gary Wong

6:00PM Design Static Var Compensator Controller Using Artificial Neural Network Optimized By Modify Grey Wolf Optimization [#15614]

Al-Attar Mohamed, Ahmed El-Gaafary, Yahia Mohamed and Ashraf Hemeida

**Session Neurosc3: Neuroscience 3: behavior, memory, and motivation**

*Monday, July 13, 4:40PM-6:20PM, Room: Mangerton, Chair: Mandali, Alekhya*

4:40PM Spike-Timing Neuronal Modelling of Forgetting in Immediate Serial Recall [#15441]

Panagiotis Ioannou, Matthew Casey and Andre Gruning

5:00PM A computational basal ganglia model to assess the role of STN-DBS on Impulsivity in Parkinson's disease [#15029]

Alekhya Mandali and Srinivasa Chakravarthy V

5:20PM A Mushroom Bodies inspired spiking network for classification and sequence learning [#15288]

Paolo Arena, Marco Cali', Luca Patane', Agnese Portera and Roland Strauss

5:40PM Modeling pavlovian conditioning with multiple neuronal populations [#15630]

Maxime Carrere and Frederic Alexandre

6:00PM Comparison of meta-analysis approaches for neuroimaging studies of reward processing: A case study [#15237]

Manisha Chawla and Krishna P. Miyapuram

**Plenary Poster Session Poster1: Poster session 1**

*Monday, July 13, 7:30PM-9:30PM, Room: \* Poster hall, Chair: Yu, Xiao-Hua (Helen)*

- P101 Random-Forest-Based Automated Cell Detection in Knife-Edge Scanning Microscope Rat Nissl Data [#15830]  
Shashwat Lal Das, John Keyser and Yoonsuck Choe
- P102 A Modular Mixed-Signal CVNS Neural Network Architecture [#15609]  
Farinoush Saffar, Mitra Mirhassani and Majid Ahmadi
- P103 A New Terminating Condition to Identify the Convergence of the Learning Process in Multi-Layer Feed-Forward Neural Networks [#15238]  
Sean Shensheng Xu and Chi-Chung Cheung
- P104 Negotiation process for bi-objective multi-agent flexible neural tree model [#15670]  
Marwa Ammar, Souhir Bouaziz, Adel M. Alimi and Ajith Abraham
- P105 Strategic Approach for Multiple-MLP Ensemble Re-RX Algorithm [#15165]  
Yoichi Hayashi and Shota Fujisawa
- P106 Hierarchical Extreme Learning Machine for Unsupervised Representation Learning [#15562]  
Wentao Zhu, Jun Miao, Laiyun Qing and Guang-Bin Huang
- P107 Comparison of Auto-encoders with Different Sparsity Regularizers [#15127]  
Li Zhang and Yaping Lu
- P108 Enhanced Recurrent Network Training [#15197]  
Amir Jafari and Martin Hagan
- P109 On the Dynamics of a Recurrent Hopfield Network [#15332]  
Rama Garimella, Berkay Kicanaoglu and Moncef Gabbouj
- P110 Hopfield networks: from optimization to adaptive control [#15132]  
Miguel Atencia and Gonzalo Joya
- P111 Deep Self-Organizing Map for Visual Classification [#15115]  
Nan Liu, Jinjun Wang and Yihong Gong
- P112 Time Series Prediction via Two-step Clustering [#15443]  
Clayton Smith and Donald Wunsch
- P113 Particle Swarm Optimization in an Adaptive Resonance Framework [#15442]

Clayton Smith and Donald Wunsch

- P114 A Novel Diversity-Guided Ensemble of Neural Network Based on Attractive And Repulsive Particle Swarm Optimization [#15167]  
Fei Han, Dan Yang, Qing-Hua Ling and De-Shuang Huang
- P115 Image Segmentation using Fast Linking SCM [#15434]  
Kun Zhan, Jinhui Shi, Qiaoqiao Li, Jicai Teng and Mingying Wang
- P116 Automatic Model Redundancy Reduction for Fast Back-Propagation for Deep Neural Networks in Speech Recognition [#15075]  
Yanmin Qian, Tianxing He, Wei Deng and Kai Yu
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- P206 Adaptive Approaches for Keystroke Dynamics [#15283]  
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- P207 Cryptography using Artificial Intelligence [#15376]  
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- P208 MAS-DEWS: A Multi-Agent System for Predicting Africa's Drought [#15804]  
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- P209 Consistency Driven Opinion Formation Modelling in Presence of External Sources [#15814]  
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P215 Prediction of Electronic Parameters of Compensated Multi-crystalline Solar-grade Silicon using Artificial Neural Networks [#15227]

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P217 An Efficient Hybrid Algorithm for Fire Flame Detection [#15451]

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P218 Enhancing ANN-guided MOPSO through Active Learning [#15356]

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P219 Interactive Image Segmentation using Particle Competition and Cooperation [#15425]

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P220 Intruder Recognition Using ECG Signal [#15662]

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P221 Short-term Rainfall Time Series Prediction with incomplete data [#15042]

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## Tuesday, July 14, 2015

### Plenary Talk Plenary2: Plenary session: Mario Polycarpou

Tuesday, July 14, 8:00AM-9:00AM, Room: Auditorium, Chair: Wunsch, Donald C.

### **Session Social: Social media analysis**

*Tuesday, July 14, 9:10AM-10:30AM, Room: Auditorium, Chair: King, Irwin*

9:10AM Discovery of Localized Spatio-Temporal Patterns from Location-based SNS by Clustering Users [#15460]

Ken-ichiro Nishioka, Yoshitatsu Matsuda and Kazunori Yamaguchi

9:30AM Online Diffusion Source Detection in Social Networks [#15263]

Haishuai Wang, Peng Zhang, Ling Chen, Huan Liu and Chengqi Zhang

9:50AM Collaborative Filtering via Co-Factorization of Individuals and Groups [#15435]

Yihai Huang and James Kwok

10:10AM Group Buying in Social Coupon: Myths or Facts [#15827]

Yuanyuan Man, Mantian Hu and Irwin King

### **Special Session ss32-1: Autonomous Machine Learning for Cyber-Physical Systems 1**

*Tuesday, July 14, 9:10AM-10:30AM, Room: Ballroom, Chair: Ozawa, Seiichi*

9:10AM A Federated Network Online Network Traffics Analysis Engine for Cybersecurity [#15415]

Shaoning Pang, Yiming Peng, Tao Ban, Daisuke Inoue and Abdolhossein Sarrafzadeh

9:30AM Interactive Online Learning for Obstacle Classification on a Mobile Robot [#15478]

Viktor Losing, Barbara Hammer and Heiko Wersing

9:50AM A Study on Association Rule Mining of Darknet Big Data [#15768]

Tao Ban, Masashi Eto, Shanqing Guo, Daisuke Inoue, Koji Nakao and Runhe Huang

10:10AM Human Intention Understanding Based On Object Affordance and Action Classification [#15445]

Zhibin Yu, Sangwook Kim, Rammohan Mallipeddi and Minhoo Lee

### **Special Session ss17: Autonomous Learning from Big Data**

*Tuesday, July 14, 9:10AM-10:30AM, Room: Brehon, Chair: Angelov, Plamen*

9:10AM Typicality Distribution Function - A New Densitybased Data Analytics Tool [#15244]

Plamen Angelov

9:30AM Evolving Clustering, Classification and Regression with TEDA [#15366]

Dmitry Kangin and Plamen Angelov

9:50AM Data Mapping by Restricted Boltzmann Machines for Social Circles Detection [#15542]

Jesus Alonso, Roberto Paredes and Paolo Rosso

10:10AM Automated online feature selection and learning from high-dimensional streaming data using an ensemble of Kohonen neurons [#15001]

Asim Roy

**Session Theory1: Neural networks theory 1**

*Tuesday, July 14, 9:10AM-10:30AM, Room: Park Suite, Chair: Siegelmann, Hava*

9:10AM Lie Algebra-Valued Neural Networks [#15723]

Calin-Adrian Popa

9:30AM Implementation of Universal Turing Machines via Fixed-precision Neurons [#15833]

Nicholas Hobbs and Hava Siegelmann

9:50AM An Analysis of Dynamic Cortex Memory Networks [#15678]

Sebastian Otte, Marcus Liwicki and Andreas Zell

10:10AM The MC-ELM: Learning an ELM-like network with Minimum VC dimension [#15555]

Jayadeva Dr, Sumit Soman and Amit Bhaya

**Session Predict: Prediction and forecasting**

*Tuesday, July 14, 9:10AM-10:30AM, Room: Mangerton, Chair: Blumenstein, Michael*

9:10AM Forecasting Solar Power Generated by Grid Connected PV Systems Using Ensembles of Neural Networks [#15429]

Mashud Rana, Irena Koprinska and Vassilios Agelidis

9:30AM Towards robust flood forecasts using neural networks [#15464]

Seyyed Adel Alavi Fazel, Hamid Mirfenderesk, Tomlinson Rodger and Michael Blumenstein

9:50AM On the Method for Data Streams Aggregation to Predict Shoppers Loyalty [#15311]

Vladimir Nikulin

10:10AM A Configurable Deep Network for High-Dimensional Clinical Trial Analysis [#15811]

James O' Donoghue, Mark Roantree and Martin Van Boxtel

**Panel Session Invited2: Invited Speaker: Vladimir Cherkassky**

*Tuesday, July 14, 10:50AM-11:30AM, Room: Auditorium, Chair: Morabito, Francesco Carlo*

**Special Session ss32-2: Autonomous Machine Learning for Cyber-Physical Systems 2**

*Tuesday, July 14, 10:50AM-12:10PM, Room: Ballroom, Chair: Liu, Derong*

10:50AM Incremental learning on a budget and a quick calculation method using a

tree-search algorithm [#15746]

Akihisa Kato, Hirohito Kawahara and Yamauchi Koichiro

11:10AM An Autonomous Online Malicious Spam Mail Detection System Using Extended RBF Network [#15785]

Aminah Ali Siti Hajar, Seiichi Ozawa, Junji Nakazato, Tao Ban and Jumpei Shimamura

11:30AM A Neural Path Integration Mechanism for Adaptive Vector Navigation in Autonomous Agents [#15190]

Dennis Goldschmidt, Sakyasingha Dasgupta, Florentin Woergoetter and Poramate Manoonpong

11:50AM Data-driven Virtual Reference Controller Design for High-order Nonlinear Systems via Neural Network [#15111]

Pengfei Yan, Derong Liu and Ding Wang

**Special Session ss25: Computational Intelligence Applications to Environmental Sustainability and Sustainable Development: Theory and Applications**

*Tuesday, July 14, 10:50AM-12:10PM, Room: Brehon, Chair: Tambouratzis, Tatiana; Grozavu, Nistor*

10:50AM Adaptive Memetic Algorithm for the Job Shop Scheduling Problem [#15205]

Jakub Nalepa, Marcin Cwiek and Michal Kawulok

11:10AM How reliable is the Environmental Sustainability Index 2005? [#15742]

Tatiana Tambouratzis

11:30AM Approximate Dynamic Programming for Control of a Residential Water Heater [#15654]

Matthew Motoki, Monica Umeda, Matthias Fripp and Tony Kuh

11:50AM A RBF Neural Network applied to predict soil Field Capacity and Permanent Wilting Point at Brazilian Coast [#15507]

Giorgia Carvalho, Diego Brandao, Diego Haddad, Vinicius Forte and Marcos Ceddia

**Session Theory2: Neural networks theory 2**

*Tuesday, July 14, 10:50AM-12:10PM, Room: Park Suite, Chair: Farkas, Igor*

10:50AM A Method for Finding Similarity between Multi-Layer Perceptrons by Forward Bipartite Alignment [#15698]

Stephen Ashmore and Michael Gashler

11:10AM Regularity and Randomness in Modular Network Structures for Neural Associative Memories [#15792]

Gouhei Tanaka, Toshiyuki Yamane, Daiju Nakano, Ryosho Nakane and Yasunao Katayama

11:30AM On the Performance of Quaternionic Bidirectional Auto-Associative Memory



[#15594]

Toshifumi Minemoto, Teijiro Isokawa, Masaki Kobayashi, Haruhiko Nishimura and Nobuyuki Matsui

11:50AM Computational Analysis of the Bidirectional Activation-based Learning in Autoencoder Task [#15322]

Peter Csiba and Igor Farkas

### **Session Ensemble: Ensemble learning**

*Tuesday, July 14, 10:50AM-12:10PM, Room: Mangerton, Chair: Cavalcanti, George*

10:50AM Adaptive Skew-Sensitive Fusion of Ensembles and their Application to Face Re-Identification [#15234]

Miguel De-la-Torre, Eric Granger and Robert Sabourin

11:10AM A Bootstrap-Based Iterative Selection for Ensemble Generation [#15602]

Dayvid Oliveira, Thyago Porpino, George Cavalcanti and Tsang Ren

11:30AM An Analysis of Diversity Measures for the dynamic design of ensemble of classifiers [#15823]

Jose Lustosa-Filho, Anne Canuto and Joao Carlo Xavier Junior

11:50AM A Binary Ensemble Classifier for High-Frequency Trading [#15468]

Everton Silva, Humberto Brandao, Douglas Castilho and Adriano Pereira

### **Session SVM1: Support Vector Machines 1**

*Tuesday, July 14, 11:30AM-12:10PM, Room: Auditorium, Chair: Anguita, Davide*

11:30AM Shrinkage Learning to Improve SVM with Hints [#15209]

Luca Oneto, Alessandro Ghio, Sandro Ridella and Davide Anguita

11:50AM A Transductive SVM with Quasi-linear Kernel Based on Cluster Assumption for Semi-Supervised Classification [#15302]

Bo Zhou, Di Fu, Chao Dong and Jinglu Hu

### **Plenary Talk Plenary3: Plenary session: Vincenzo Piuri**

*Tuesday, July 14, 1:30PM-2:30PM, Room: Auditorium, Chair: Prokhorov, Danil*

### **Session SVM2 : Support Vector Machines 2**

*Tuesday, July 14, 2:40PM-4:20PM, Room: Auditorium, Chair: Carvalho, Andre*

2:40PM Optimizing Working Sets for Training Support Vector Regressors by Newton's Method [#15028]

Shigeo Abe

3:00PM Graph-based Semi-supervised Support Vector Data Description for Novelty Detection [#15419]

Phuong Duong, Van Nguyen, Mi Dinh, Trung Le, Dat Tran and Wanli Ma

3:20PM To tune or not to tune: recommending when to adjust SVM hyper-parameters

via Meta-learning [#15531]

Rafael G. Mantovani, Andre L. D. Rossi, Bernd Bischl, Joaquin Vanschoren and Andre C. P. L. F. Carvalho

3:40PM Multiple SVM-RFE for Multi-class Gene Selection on DNA Microarray Data [#15216]

Li Zhang and XiaoJuan Huang

4:00PM Improving ESVM with Generalized Cross-Validation [#15053]

Tianshu Feng, Fuzhen Zhuang and Qing He

### **Session RNN: Recurrent neural networks**

*Tuesday, July 14, 2:40PM-4:20PM, Room: Ballroom, Chair: Hussain, Abir*

2:40PM Transient Phenomena Prediction Using Recurrent Neural Networks [#15578]

Jonathan Guerra, Patricia Klotz, Beatrice Laurent and Fabrice Gamboa

3:00PM Computational Capabilities of Recurrent Neural Networks Based on their Attractor Dynamics [#15536]

Jeremie Cabessa and Alessandro Villa

3:20PM Recurrent Convolutional Neural Networks for Object-Class Segmentation of RGB-D Video [#15773]

Mircea Serban Pavel, Hannes Schulz and Sven Behnke

3:40PM Discriminative Learning and Inference in the Recurrent Temporal RBM for Melody Modelling [#15593]

Srikanth Cherla, Son Tran, Artur d'Avila Garcez and Tillman Weyde

4:00PM On the Existence of Hopfield Neural Networks: Synthesis of Hopfield Type Associative Memories [#15010]

Garimella Rama Murthy and Moncef Gabbouj

### **Special Session ss03: Cognition and Development**

*Tuesday, July 14, 2:40PM-4:20PM, Room: Brehon, Chair: Di Nuovo, Alessandro*

2:40PM Deterministic chaos in mobile robots [#15740]

Federico Da Rold

3:00PM Neural-Symbolic Monitoring and Adaptation [#15627]

Alan Perotti, Artur d'Avila Garcez and Guido Boella

3:20PM Symbolic associations in neural network activations: representations in the emergence of communication [#15616]

Emerson Oliveira and Angelo Loula

3:40PM Brains as Naturally Emerging Turing Machines [#15807]

Juyang Weng

4:00PM Data-point and Feature Selection of Motor Imagery EEG Signals for Neural Classification of Cognitive Tasks in Car-Driving [#15797]

Anuradha Saha, Amit Konar, Pratyusha Das, Basabdatta Sen Bhattacharya and Atulya K. Nagar

**Session Theory3: Neural networks theory 3**

*Tuesday, July 14, 2:40PM-4:20PM, Room: Park Suite, Chair: Battiti, Roberto*

2:40PM Stochastic Local Search for Direct Training of Threshold Networks [#15699]

Mauro Brunato and Roberto Battiti

3:00PM Reliable estimation of a neural network's domain of validity through interval analysis based inversion [#15734]

Stavros Adam, Dimitrios Karras, George Magoulas and Michael Vrahatis

3:20PM A Bounded Neural Network for Open Set Recognition [#15579]

Douglas Cardoso, Felipe Franca and Joao Gama

3:40PM The Generalized Group Lasso [#15480]

Carlos M. Alaiz and Jose R. Dorronsoro

4:00PM Quasi-Newton Learning Methods for Complex-Valued Neural Networks [#15258]

Calin-Adrian Popa

**Special Session ss36: Ensemble Systems and Machine Learning**

*Tuesday, July 14, 2:40PM-4:20PM, Room: Mangerton, Chair: Ludermir, Teresa*

2:40PM META-DES.H: a dynamic ensemble selection technique using meta-learning and a dynamic weighting approach [#15456]

Rafael M. O. Cruz, Robert Sabourin and George D. C. Cavalcanti

3:00PM Differential Evolution and Meta-Learning for Dynamic Ensemble of Neural Network Classifiers [#15400]

Tiago Lima and Teresa Ludermir

3:20PM Multi-Privacy Biometric Protection Scheme using Ensemble Systems [#15547]

Damasceno Marcelo, Canuto Anne and Poh Norman

3:40PM Growing Hierarchical Trees for Data Stream Clustering and Visualization [#15185]

Nhat-Quang Doan, Mohammed Ghesmoune, Hanane Azzag and Mustapha Lebbah

4:00PM Probabilistic Relational Models with Clustering Uncertainty [#15113]

Anthony Coutant, Philippe Leray and Hoel Le Capitaine

### **Session SVM3: Support Vector Machines 3**

*Tuesday, July 14, 4:40PM-6:20PM, Room: Auditorium, Chair: Zhang, Li*

- 4:40PM L3-SVM: a LifeLong Learning Method for SVM [#15149]  
Youlu Xing, Furao Shen, Chaomin Luo and Jinxi Zhao
- 5:00PM A fast approximation algorithm for 1-norm SVM with squared loss [#15061]  
Li Zhang, Weida Zhou, Zhao Zhang and Jiwen Yang
- 5:20PM A PARTAN-Accelerated Frank-Wolfe Algorithm for Large-Scale SVM Classification [#15193]  
Emanuele Frandi, Ricardo Nanculef and Johan A. K. Suykens
- 5:40PM Least Square Support Vector Machine for Large-scale Dataset [#15430]  
Khanh Nguyen, Trung Le, Vinh Lai, Duy Nguyen, Dat Tran and Wanli Ma
- 6:00PM Support Vector Machines and Strictly Positive Definite Kernel: The Regularization Hyperparameter is More Important than the Kernel Hyperparameters [#15210]  
Luca Oneto, Alessandro Ghio, Sandro Ridella and Davide Anguita

### **Special Session ss29: Modeling and Forecasting Financial and Commodity Markets by Neural Networks**

*Tuesday, July 14, 4:40PM-6:20PM, Room: Ballroom, Chair: Panella, Massimo; Girijesh, Prasad*

- 4:40PM A Graphical Model Framework for Stock Portfolio Construction with Application to a Neural Network Based Trading Strategy [#15124]  
Mininder Sethi and Philip Treleaven
- 5:00PM Maximum Length Weighted Nearest Neighbor Approach for Electricity Load Forecasting [#15753]  
Tommaso Colombo, Irena Koprinska and Massimo Panella
- 5:20PM A Prediction Model for High-Frequency Financial Time Series [#15304]  
Ricardo de A. Araujo, Adriano L. I. Oliveira and Silvio R. de L. Meira
- 5:40PM Kanban Cell Neuron Network: Stock Trading System (KCNSTS) [#15130]  
Colin James III
- 6:00PM Prediction of Solar Cycle 24 Using a Connectionist Model of the Emotional System [#15808]  
Mahboobeh Parsapoor, Mahboobeh Parsapoor, Urban Blistrup and Bertil Svensson

### **Special Session ss27: Models of Cognitive-Emotional Interactions**

*Tuesday, July 14, 4:40PM-6:20PM, Room: Brehon, Chair: Levine, Daniel*

- 4:40PM Modelling Emotional Attachment: an Integrative Framework for Architectures and Scenarios. [#15232]

Dean Petters and Everett Waters

5:00PM Mystery in Experimental Psychology, Aesthetic Emotions [#15296]

Leonid Perlovsky

5:20PM A Minimal Architecture for General Cognition [#15673]

Michael S. Gashler, Zachariah Kindle and Michael R. Smith

5:40PM Introduction to Self-attachment and its Neural Basis [#15714]

Abbas Edalat

6:00PM A Neural Network Model of Decisions on the Asian Disease Problem [#15292]

Bakur AlQaudi, Daniel Levine and Frank Lewis

**Session Language: Natural language processing**

*Tuesday, July 14, 4:40PM-6:20PM, Room: Park Suite, Chair: Hagiwara, Masafumi*

4:40PM A Cascade of Linguistic CMAC Neural Networks for Decision Making [#15198]

Hongmei He, Zhenhuan Zhu, Ashutosh Tiwari and Mills Andrew

5:00PM Integrating Word Embeddings and Traditional NLP Features to Measure Textual Entailment and Semantic Relatedness of Sentence Pairs [#15275]

Jiang Zhao, Man Lan, Zheng-Yu Niu and Yue Lu

5:20PM Is Learning by Reading a Book Better Than Watching a Movie? A Computational Analysis of Semantic Concept Network Growth During Text and Multimedia Comprehension [#15688]

Naser Al Madi and Javed Khan

5:40PM A Natural Language Processing Neural Network Comprehending English [#15309]

Yuanzhi Ke and Masafumi Hagiwara

6:00PM Generating Image Description by Modeling Spatial Context of an Image [#15541]

Kan Li and Lin Bai

**Session BioApp: Biomedical applications**

*Tuesday, July 14, 4:40PM-6:20PM, Room: Mangerton, Chair: Li, Kan*

4:40PM Hierarchical Classification of Gene Ontology-based Protein Functions with Neural Networks [#15290]

Ricardo Cerri, Rodrigo Barros and Andre Carvalho

5:00PM Hierarchical Dirichlet Process Hidden Markov Model for Unsupervised Bioacoustic Analysis [#15663]

Marius Bartcus, Faicel Chamroukhi and Herv'e Glotin

- 5:20PM New Insights into The Landscape Relationships of Host Response to Bacterial Pathogens [#15206]  
Xiaoyao Yin, Lu Han, Naiyang Guan, Yun Bai, Cong Niu, Hui Bai, Xiaochen Bo and Zhigang Luo
- 5:40PM Diagnosis of Pneumonia From Sounds Collected Using Low Cost Cell Phones [#15044]  
Insu Song
- 6:00PM An insight on complexity measures and classification in microarray data [#15018]  
Veronica Bolon-Canedo, Laura Moran-Fernandez and Amparo Alonso-Betanzos

**Plenary Poster Session Poster2: Poster session 2**

*Tuesday, July 14, 7:30PM-9:30PM, Room: \* Poster hall, Chair: Yu, Xiao-Hua (Helen)*

- P301 sEMG-Based Torque Estimation for Robot-Assisted Lower Limb Rehabilitation [#15257]  
Long Peng, Zeng-Guang Hou, Nikola Kasabov, Jin Hu, Liang Peng and Wei-Qun Wang
- P302 Simplified and Gradual Information Control for Improving Generalization Performance of Multi-Layered Neural Networks [#15294]  
Ryotaro Kamimura
- P303 State Preserving Extreme Learning Machine for Face Recognition [#15724]  
Md. Zahangir Alom, Paheding Sidike, Vijayan Asari and Tarek Taha
- P304 A Non-Sigmoidal Activation Function for Feedforward Artificial Neural Networks [#15247]  
Pravin Chandra, Udayan Ghose and Apoorvi Sood
- P305 A Memetic Algorithm Based Extreme Learning Machine for Classification [#15157]  
Yongshan Zhang, Zhihua Cai, Jia Wu, Xinxin Wang and Xiaobo Liu
- P306 A Pragmatic Approach to Multi-Class Classification [#15697]  
Thomas Kopinski, Stephane Magand, Uwe Handmann and Alexander Gepperth
- P307 The Neural-SIFT Feature Descriptor for Visual Vocabulary Object Recognition [#15551]  
Sybren Jansen, Amirhosein Shantia and Marco Wiering
- P308 Morphological Extreme Learning Machines Applied to Detect and Classify Masses in Mammograms [#15705]  
Washington Azevedo, Sidney Lima, Isabela Fernandes, Arthur Rocha, Filipe Cordeiro, Abel Silva-Filho and Wellington Santos

- P309 Proof of Hidden Node Number in MLP and Experiments on Well Log Data Inversion [#15255]  
Kou-Yuan Huang, Liang-Chi Shen and Jiun-Der You
- P310 Fast Convergence of Extended Rademacher Complexity Bounds [#15211]  
Luca Oneto, Alessandro Ghio, Sandro Ridella and Davide Anguita
- P311 Learning Rule for Associative Memory in Recurrent Neural Networks [#15372]  
Theju Jacob and Wesley Snyder
- P312 Application of Cooperative Neuro-evolution of Elman Recurrent Networks for a Two-Dimensional Cyclone Track Prediction for the South Pacific Region [#15180]  
Rohitash Chandra, Kavina Dayal and Nicholas Rollings
- P313 Selective Potentiality Maximization for Input Neuron Selection in Self-Organizing Maps [#15382]  
Ryotaro Kamimura and Ryoza Kitajima
- P314 Sensor Signal Clustering with Self-Organizing Maps [#15431]  
Razvan Popovici and Razvan Andonie
- P315 EEG Classification to Determine the Degree of Pleasure Levels in Touch-Perception of Human Subjects [#15642]  
Anuradha Saha, Amit Konar, Basabdatta Sen Bhattacharya and Atulya K. Nagar
- P316 Generalized Constraint Neural Network Regression Model Subject to Equality Function Constraints [#15335]  
Linlin Cao and Baogang Hu
- P317 An Efficient Learning Method for RBF Neural Networks [#15685]  
Maryam Pazouki, Zijun Wu, Zhixing Yang and Dietmar Moeller
- P318 Local Radial Basis Function Network Regressor with Feature Importance Optimization [#15094]  
Yu-Ann Chen and Pau-Choo Chung
- P319 FIE-FCMAC: A Fuzzy CMAC using Fuzzy Interpolation and Extrapolation [#15265]  
WeiGui jair Zhou, Chai Quek and Douglas Leslie Maskell
- P320 Bio-inspired hierarchical framework for multi-view face detection and pose estimation [#15570]  
Niall McCarroll, Ammar Belatreche, Jim Harkin and Yuhua Li
- P321 Arithmetic Computing via Rate Coding in Neural Circuits with Spike-triggered

Adaptive Synapses [#15776]

Sushrut Thorat and Bipin Rajendran

P322 Knowledge Extraction Using Probabilistic Reasoning: An Artificial Neural Network Approach [#15364]

Chelsea Dobbins and Paul Fergus

P323 Face Recognition Using Special Neural Networks [#15191]

Ernst Kussul and Tetyana Baydyk

P324 A Label Compression Coding Approach through Maximizing Dependence between Features and Labels for Multi-label Classification [#15226]

Lei Cao and Jianhua Xu

P325 Using Classifier Diversity to Handle Label Noise [#15043]

Michael Smith and Tony Martinez

P326 In-Training and Post-Training Generalization Methods: the case of ppar alpha and ppar gamma agonists [#15410]

Babak Keshavarz-Hedayati, Pan Guangyuan, Ali Jooya and Nikitas Dimopoulos

P327 A Constrained Recursive Least Squares Algorithm For Adaptive Combination of Multiple Models [#15008]

Xia Hong and Yu Gong

P328 Efficient Conformal Regressors using Bagged Neural Nets [#15690]

Ulf Johansson, Cecilia Sonstrod and Henrik Linusson

P329 Learning from Neighborhood for Classification with Local Distribution Characteristics [#15473]

Chengsheng Mao, Bin Hu, Manman Wang and Moore Philip

P330 Real-time occupancy estimation using environmental parameters [#15715]

Mustafa Khalid Masood, Soh Yeng Chai and Victor Chang

P331 Class-Preserving Manifold Learning for Detection and Classification [#15775]

Puoya Tabaghi and Mahmood R. Azimi-Sadjadi

P332 Incremental Probabilistic Classification Vector Machine with linear costs [#15145]

Frank-Michael Schleif, Huanhuan Chen and Peter Tino

P333 Epidemiological Time Series Forecasted with a Time Varying Auto-Adaptive Neural Network [#15387]

Antonio Ballarin, Simona Gervasi, Kristian A. Gervasi Vidal, Marco M. Ballarin, Marco Di Francesco, Roberto Tonelli and Giovanni Ballarin



- P334 A Learning Scheme Based on Similarity Functions for Affective Common-Sense Reasoning. [#15517]  
Federica Bisio, Paolo Gastaldo, Rodolfo Zunino and Erik Cambria
- P335 Some Further Evidence about Magnification and Shape in Neural Gas [#15395]  
Giacomo Parigi, Andrea Pedrini and Marco Piastra
- P336 Stock Price Prediction based on Stock-Specific and Sub-Industry-Specific News Articles [#15353]  
Yauheniya Shynkevich, T. M. McGinnity, Sonya Coleman and Ammar Belatreche
- P337 Low Rank Sequential Subspace Clustering [#15063]  
Yi Guo, Junbin Gao, Feng Li, Stephen Tierney and Ming Yin
- P338 Meta-Path based Nonnegative Matrix Factorization for Clustering on Multi-type Relational Data [#15371]  
Yangyang Zhao, Zhengya Sun, Changsheng Xu and Hongwei Hao
- P339 Applying the Coral Reefs Optimization Algorithm to Clustering Problems [#15815]  
Inacio Medeiros, Joao-Carlos Xavier-Junior and Canuto Anne
- P340 Online Detection and Modeling of Safety Boundaries for Aerospace Applications using Active Learning and Bayesian Statistics [#15458]  
Yuning He
- P341 Geometric Approach of Quasi-Linear Kernel Composition for Support Vector Machine [#15158]  
Weite Li and Jinglu Hu
- P342 Filtering SAR imagery for edge detection using support value transform [#15298]  
Li Zhang, Weida Zhou and Bangjun Wang
- P343 Using Support Vector Machines and Two Dimensional Discrete Cosine Transform in Speech Automatic Recognition [#15200]  
Gracieth Gracieth Cavalcanti Batista and Washington Silva
- P344 Multi-Kernel Probability Distribution Regressions [#15432]  
Pingping Zhu, Hongchuan Wei, Wenjie Lu and Silvia Ferrari
- P345 PAC-Bayes Analysis for Twin Support Vector Machines [#15117]  
Xijiong Xie and Shiliang Sun
- P346 Face Recognition using Support Vector Machine and Multiscale Directional Image Representation Methods: A comparative study [#15608]

Daniel Costa, Sarajane Peres, Pollyana Mustaro and Clodoaldo Lima

P347 Improved Multi-kernel SVM for Multi-modal and Imbalanced Dialogue Act Classification [#15249]

Yucan Zhou, Xiaowei Cui, Qinghua Hu and Yuan Jia

P348 Solving the Data Imbalance Problem of P300 Detection via Random Under-Sampling Bagging SVMs [#15800]

Xiaofeng Shi, Guoqiang Xu, Furao Shen and Jinxi Zhao

P349 Benchmarking the Semi-Supervised Naive Bayes Classifier [#15558]

Awat Saeed, Gavin Cawley and Anthony Bagnall

P350 Semi-Supervised Min-Max Modular SVM [#15333]

Yan-Ping Wu and Yun Li

P351 Sparse Density Estimation On Multinomial Manifold Combining Local Component Analysis [#15015]

Xia Hong and Junbin Gao

P352 Collaborative Clustering with Heterogeneous Algorithms [#15107]

Jeremie Sublime, Nistor Grozavu, Younes Bennani and Antoine Cornuejols

P353 An Efficient Recognition Algorithm for Restricted Bayesian Networks [#15065]

Yuuji Ichisugi and Naoto Takahashi

P354 Threshold Optimization of Pseudo-Inverse Linear Discriminants Based on Overall Accuracies [#15728]

Tian Tian, Ji Wang and Daqi Gao

P355 An Extended Fuzzy Local Information C-Means Clustering Algorithm [#15020]

Lili Hou, Le Zhang, Qiuying Yang and Ying Wen

P356 Two-layer Mixture of Factor Analyzers with Joint Factor Loading [#15104]

Xi Yang, Huang Kaizhu, Zhang Rui and John Yannis Goulermas

P357 An investigation into the use of subspace methods for face detection [#15584]

Salaheddin Alakkari, Eugene Gath and John James Collins

P358 A Multi-label Feature Selection Algorithm Based on Multi-objective Optimization [#15139]

Jing Yin, Tengfei Tao and Jianhua Xu

P359 Feature Selection using Deep Neural Networks [#15503]

Debaditya Roy, Sri Rama Murty K. and Krishna Mohan C.

- P360 Improving Load Forecast Accuracy by Clustering Consumers using Smart Meter Data [#15176]  
Abbas Shahzadeh, Abbas Khosravi and Saeid Nahavandi
- P361 A Differential Evolution-Based Method for Class-Imbalanced Cost-Sensitive Learning [#15219]  
Chen Qiu, Liangxiao Jiang and Ganggang Kong
- P362 Effectiveness of Random Search in SVM hyper-parameter tuning [#15557]  
Rafael G. Mantovani, Andre L. D. Rossi, Bernd Bischl, Joaquin Vanschoren and Andre C. P. L. F. Carvalho
- P363 Face Expression Recognition with a 2-Channel Convolutional Neural Network [#15380]  
Dennis Hamester, Pablo Barros and Stefan Wermter
- P364 A Combination of Multi-state Activation Functions, Mean-normalisation and Singular Value Decomposition for Learning Deep Neural Networks [#15052]  
Chenghao Cai, Dengfeng Ke, Yanyan Xu and Kaile Su
- P365 Regularizing Neural Networks with Adaptive Local Drop [#15422]  
Binbin Cao, Jianmin Li and Bo Zhang
- P366 Forecasting the Weather of Nevada: A Deep Learning Approach [#15760]  
Moinul Hossain, Banafsheh Rekabdar, Sushil Louis and Sergiu Dascalu
- P367 Analysis of Function of Rectified Linear Unit Used in Deep learning [#15433]  
Kazuyuki Hara, Daisuke Saito and Hayaru Shouno
- P368 Stochastic Least Squares Learning for Deep Architectures [#15330]  
Girish Kumar, Jian Min Sim, Eng Yeow Cheu and Xiaoli Li
- P369 Optimized Deep Belief Networks on CUDA GPUs [#15341]  
Teng Li, Yong Dou, Jingfei Jiang, Yueqing Wang and Qi Lv
- P370 An Empirical Analysis of Different Sparse Penalties for Autoencoder in Unsupervised Feature Learning [#15423]  
Nan Jiang, Wenge Rong, Baolin Peng, Yifan Nie and Zhang Xiong
- P371 An overview on the Gaussian Fields and Harmonic Functions Method for Semi-supervised Learning [#15308]  
Celso Sousa
- P372 Evolutionary Adaptive Self-Generating Prototypes for Imbalanced Datasets [#15611]

Dayvid Oliveira, George Cavalcanti, Tsang Ren and Ricardo Silva

P373 A simulator for Freeman K-sets in Java [#15281]

Denis Piazzentin and Joao Luis Rosa

P374 Reconstructing fMRI BOLD signals arising from Cerebellar Granule Neurons - Comparing GLM and Balloon Models [#15524]

Chaitanya Medini, Bipin Nair, Giovanni Naldi, Egidio D'Angelo and Shyam Diwakar

P375 EEG Source Localization by Memory Network Analysis of Subjects Engaged in Perceiving Emotions from Facial Expressions [#15615]

Reshma Kar, Amit Konar, Aruna Chakraborty, Basabdatta Sen Bhattacharya and Atulya Nagar

P376 Forecasting Model for Bidding Behavior of Advertisers Based on HMM [#15140]

Long Lili, Dong Hongbin, Pan Yue, Huangfu Li, Gou Naikang and Wang Xingmei

P377 Self-organization of Hippocampal Representations in Large Environments [#15821]

Shuang Liu, Bailu Si and Yang Lin

P378 ANSWER: An Unsupervised Attractor Network Method for Detecting Salient Words in Text Corpora [#15704]

Madhavun Candadai, Aashay Vanarase, Mei Mei and Ali Minai

P379 ASD Detection in Males Using MRI- An Age-group Based Study [#15377]

Vigneshwaran Subbaraju, Suresh Sundaram, Mahanand Belathur Suresh and Sundararajan Narasimhan

P380 Si elegans: Hardware Architecture and Communications Protocol [#15701]

Pedro Machado, Appiah Kofi, Martin McGinnity, John Wade and Martin McGinnity

P381 A Novel Hardware-Efficient Cochlea Model based on Asynchronous Cellular Automaton [#15745]

Masato Izawa and Hiroyuki Torikai

P382 HMAX Model: A Survey [#15576]

Chang Liu and Fuchun Sun

P383 Composer Classification based on Temporal Coding in Adaptive Spiking Neural Networks [#15765]

Chaitanya Prasad Narisetty, Krishnakant Saboo and Bipin Rajendran

P384 Clustering-based gene-subnetwork biomarker identification using gene expression data [#15721]

Narumol Doungpan, Worrawat Engchuan, Asawin Meechai and Jonathan Chan

P385 An HMM-based Gait Comparison on Inertial Sensors: Using Alzheimer's Disease Patients as Examples [#15735]

Wei-Hsin Wang, Hao-Li Wu, Pau-Choo Chung and Ming-Chyi Pai

P386 Short Answer Question Examination using an Automatic Off-line Handwriting Recognition System and a Novel Combined Feature [#15378]

Hemmaphan Suwanwiwat, Umapada Pal and Michael Blumenstein

P387 Recognizing Visual Composite in Real Images [#15361]

Lin Bai, Kan Li and Shuai Jiang

P388 Modelling of a retinal ganglion cell with simple spiking models [#15686]

Philip Vance, Sonya Coleman, Dermot Kerr, Gautham Das and Martin McGinnity

P389 Bag-of-Visual Words for Word-Wise Video Script Identification: A Study [#15511]

Nabin Sharma, Ranju Mandal, Rabi Sharma, Umapada Pal and Michael Blumenstein

P390 An Online Incremental Learning Algorithm For Time Series [#15799]

Haoran Xu, Youlu Xing, Furao Shen and Jinxi Zhao

P391 The Impact of Longstanding Messages in Micro-Blogging Classification [#15650]

Joana Costa, Catarina Silva, Mario Antunes and Bernardete Ribeiro

P392 Interval-valued Symbolic Representation based Method for Off-line Signature Verification [#15354]

Srikanta Pal, Alireza Alaei, Umapada Pal and Michael Blumenstein

P393 Improving Deep Neural Networks Using Softplus Units [#15271]

Hao Zheng, Zhanlei Yang, Jizhong Liang, Yanpeng Li and Wenju Liu

P394 Restoring High Frequency Spectral Envelopes Using Neural Networks for Speech Bandwidth Extension [#15300]

Yu Gu and Zhen-Hua Ling

P395 Indoor Localization by Denoising Autoencoders and Semi-supervised Learning in 3D Simulated Environment [#15629]

Amirhossein Shantia, Rik Timmers, Lambert Schomaker and Marco Wiering

P396 Event-Triggered Adaptive Dynamic Programming for Continuous-time Nonlinear System Using Measured Input-Output Data [#15287]

Xiangnan Zhong, Zhen Ni and Haibo He

P397 Efficient Use of Nadaraya-Watson Models and Low-discrepancy Sequences for

Approximate Dynamic Programming [#15399]

Cristiano Cervellera, Mauro Gaggero, Danilo Maccio and Roberto Marcialis

P398 Neurocontrol of Single Shaft Heavy duty Gas Turbine Using Adaptive Dynamic Programming [#15550]

Yuzhu Huang and Hongde Jiang

P399 Music Genre Classification with Self-Organizing Maps and Edit Distance [#15409]

Razvan Popovici and Razvan Andonie

P400 Combining PCA and Multiset CCA for Dimension Reduction when Group ICA is Applied to Decompose Naturalistic fMRI Data [#15636]

Valeri Tsatsishvili, Fengyu Cong, Petri Toiviainen and Tapani Ristaniemi

P401 Scalable Real-time Parking Lot Classification: An Evaluation of Image Features and Supervised Learning Algorithms [#15050]

Marc Tschentscher, Christian Koch, Markus Koenig, Jan Salmen and Marc Schlipfing

P402 Automatic Classification of Drum Sounds with Indefinite Pitch [#15089]

Vinicius Souza, Gustavo Batista and Nilson Souza-Filho

P403 Compressed representation learning for fluid field reconstruction from sparse sensor observations [#15355]

Hongming Zhou, Yeng Chai Soh, Chaoyang Jiang and Xiaoying Wu

P404 An Echo State Network Approach to Structural Health Monitoring [#15505]

Adam Wootton, Charles Day and Peter Haycock

P405 Realistic and Very Fast Simulation of Individual Electricity Consumptions [#15082]

Alexis Bondu and Asma Dachraoui

P406 Echo state networks, artificial neural networks and fuzzy systems models for improve short-term wind speed forecasting [#15589]

Ronaldo Aquino, Ramon Souza, Otoni Nobrega Neto, Milde Lira, Manoel Carvalho and Aida Ferreira

P407 Prediction Interval Estimation for Wind Farm Power Generation Forecasts Using Support Vector Machines [#15563]

Nitin Anand Shrivastava, Abbas Khosravi and Bijaya Ketan Panigrahi

P408 Network-Traffic Anomaly Detection with Incremental Majority Learning [#15428]

Huang Shin-Ying, Yu Fang, Tsaih Rua-Huan and Huang Yennun

P409 Probabilistic Temporal Bilinear Model for Temporal Dynamic Recommender

Systems [#15487]

Cheng Luo, Xiongcai Cai and Nipa Chowdhury

P410 A Word Distributed Representation Based Framework for Large-scale Short Text Classification [#15343]

Di Yao, Jingping Bi, Jianhui Huang and Zhu Jin

## Wednesday, July 15, 2015

### Plenary Talk Plenary4: Plenary session: Barak Pearlmutter

*Wednesday, July 15, 8:00AM-9:00AM, Room: Auditorium, Chair: Huang, De-Shuang*

### Session Struct: Structures and hierarchies

*Wednesday, July 15, 9:10AM-10:30AM, Room: Auditorium, Chair: Koprinkova-Hristova, Petia*

9:10AM Evolving Artificial Neural Networks through L-System and Evolutionary Computation [#15375]

Lidio Mauro Lima De Campos, Roberto Celio Limao De Oliveira and Mauro Roisenberg

9:30AM On effects of IP improvement of ESN reservoirs for reflecting of data structure [#15613]

Petia Koprinkova-Hristova

9:50AM Order-aware exemplars for structuring video sets: Clustering, aligned matching and retrieval by similarity [#15223]

Yasuo Matsuyama, Akihiro Shikano, Hiromichi Iwase and Teruki Horie

10:10AM Improvement of Reliabilities of Regulations using a Hierarchical Structure in a Genetic Network [#15125]

Shuhei Kimura and Mariko Okada-Hatakeyama

### Special Session ss33: Intelligent Vehicle Systems

*Wednesday, July 15, 9:10AM-10:30AM, Room: Ballroom, Chair: Murphy, Yi*

9:10AM Approaching Real-World Navigation Using Object Recognition Network [#15643]

Zeja Zheng and Weng Juyang

9:30AM Driver Yawning Detection based on Deep Convolutional Neural Learning and Robust Nose Tracking [#15420]

Weiwei Zhang, Yi Murphey, Tianyu Wang and Qijie Xu

9:50AM Extending Traffic Light Recognition: Efficient Classification of Phase and

Pictogram [#15326]

Matthias Michael and Marc Schlipf

10:10AM Maneuver Segmentation for Autonomous Parking Based on Ensemble Learning [#15389]

Gennaro Notomista and Michael Botsch

### **Session Spiking1: Spiking neural networks 1**

*Wednesday, July 15, 9:10AM-10:30AM, Room: Brehon, Chair: Dora, Shirin*

9:10AM Limits of Coincidence Detector Neurons as Decoders of Polychronous Neuronal Groups Firing Completely [#15427]

Joao Paulo Cerquinho Cajueiro and Joao Ranhel

9:30AM NormAD - Normalized Approximate Descent based Supervised Learning Rule for Spiking Neurons [#15488]

Navin Anwani and Bipin Rajendran

9:50AM CARLsim 3: A User-Friendly and Highly Optimized Library for the Creation of Neurobiologically Detailed Spiking Neural Networks [#15225]

Michael Beyeler, Kristofor Carlson, Ting-Shuo Chou, Nikil Dutt and Jeffrey Krichmar

10:10AM A Two Stage Learning Algorithm for a Growing-Pruning Spiking Neural Network for Pattern Classification Problems [#15454]

Shirin Dora, Sundaram Suresh and Narasimhan Sundararajan

### **Session Robot1: Robotics 1: Spatial Cognition and Navigation**

*Wednesday, July 15, 9:10AM-10:30AM, Room: Park Suite, Chair: Jung, Seul*

9:10AM A Spatial Cognition Model Integrating Grid Cells and Place Cells [#15407]

Gonzalo Tejera, Martin Llofriu, Alejandra Barrera and Alfredo Weitzenfeld

9:30AM Applying the Canonical Distributed Embodied Evolution Algorithm in a Collective Indoor Navigation Task [#15748]

Pedro Trueba, Abraham Prieto, Francisco Bellas and Duro Richard

9:50AM A Boundedness Theoretical Analysis for GrADP Design: A Case Study on Maze Navigation [#15291]

Zhen Ni, Xiangnan Zhong and Haibo He

10:10AM Neural Network Control for Balancing Performance of a Single-wheel Transportation Vehicle [#15269]

Min S. Ha and Seul Jung

### **Session HW1: Hardware 1**

*Wednesday, July 15, 9:10AM-10:30AM, Room: Mangerton, Chair: Suri, Manan*

9:10AM A Divide-and-Conquer Strategie for FPGA Implementations of Large MLP-based Classifiers [#15392]



Javier Echanobe, Raul Finker and Ines del Campo

9:30AM Noise-Robust Hardware Implementation of Neural Networks [#15497]

Vincent Canals, Miquel L. Alomar, Antoni Morro, Antoni Oliver and Josep L. Rossello

9:50AM Training neural hardware with noisy components [#15702]

Fred Rothganger, Brian Evans, James Aimone and Erik DeBenedictis

10:10AM OXRAM Based ELM Architecture for Multi-Class Classification Applications [#15469]

Manan Suri, Vivek Parmar, Gilbert Sassine and Fabien Alibert

**Panel Session Invited3: Invited Speaker: Cesare Alippi**

*Wednesday, July 15, 10:50AM-11:30AM, Room: Auditorium, Chair: Huang, De-Shuang*

**Special Session ss12-1: Concept Drift, Domain Adaptation and Learning in Dynamic Environments 1**

*Wednesday, July 15, 10:50AM-12:10PM, Room: Ballroom, Chair: Boracchi, Giacomo*

10:50AM Credit Card Fraud Detection and Concept-Drift Adaptation with Delayed Supervised Information [#15365]

Andrea Dal Pozzolo, Giacomo Boracchi, Olivier Caelen, Cesare Alippi and Gianluca Bontempi

11:10AM On Sequences of Different Adaptive Mechanisms in Non-Stationary Regression Problems [#15713]

Rashid Bakirov, Bogdan Gabrys and Damien Fay

11:30AM Detecting Anomalous Structures by Convolutional Sparse Models [#15726]

Diego Carrera, Giacomo Boracchi, Alessandro Foi and Brendt Wohlberg

11:50AM Quantifying the Limited and Gradual Concept Drift Assumption [#15826]

Joseph Sarnelle, Anthony Sanchez, Robert Capo, Joshua Haas and Robi Polikar

**Session Spiking2: Spiking neural networks 2**

*Wednesday, July 15, 10:50AM-12:10PM, Room: Brehon, Chair: Marsland, John*

10:50AM Multi-DL-ReSuMe: Multiple neurons Delay Learning Remote Supervised Method [#15665]

Aboozar Taherkhani, Ammar Belatreche, Yuhua Li and Liam P. Maguire

11:10AM Supervised learning in Spiking Neural Networks with Limited Precision: SNN/LP [#15651]

Evangelos Stomatias and John Marsland

11:30AM Fast-Classifying, High-Accuracy Spiking Deep Networks Through Weight and Threshold Balancing [#15603]

Peter U. Diehl, Daniel Neil, Jonathan Binas, Matthew Cook, Shih-Chii Liu and Michael Pfeiffer

11:50AM Dynamically Evolving Spiking Neural Network for Pattern Recognition [#15538]

Jinling Wang, Ammar Belatreche, Liam Maguire and Martin McGinnity

**Session Robot2: Robotics 2: Sensory and motor processing**

*Wednesday, July 15, 10:50AM-12:10PM, Room: Park Suite, Chair: Zhang, LI*

10:50AM Estimating Multimodal Attributes for Unknown Objects [#15743]

Daiki Kimura and Osamu Hasegawa

11:10AM Intelligent Facial Expression Recognition with Adaptive Feature Extraction for a Humanoid Robot [#15057]

Kamlesh Mistry, Li Zhang and John Barnden

11:30AM EMG based elbow joint powered exoskeleton for biceps brachii strength augmentation [#15530]

Vladimir Krasim, Gandhi Vaibhav, Yang Zhijun and Karamanoglu Mehmet

11:50AM Population based Mean of Multiple Computations Networks: A Building Block for Kinematic Models [#15727]

Manuel Baum, Martin Meier and Malte Schilling

**Session HW2: Hardware 2**

*Wednesday, July 15, 10:50AM-12:10PM, Room: Mangerton, Chair: Rothganger, Fred*

10:50AM Memristor Based Neuromorphic Circuit for Ex-Situ Training of Multi-Layer Neural Network Algorithms [#15761]

Chris Yakopcic, Raqibul Hasan and Tarek Taha

11:10AM Efficient Training Algorithms for Neural Networks Based on Memristive Crossbar Circuits [#15720]

Irina Kataeva, Farnood Merrih-Bayat, Elham Zamanidoost and Dmitri Strukov

11:30AM Design of analog subthreshold encoded neural network circuit in sub-100nm CMOS [#15567]

Benoit Larras, Cyril Lahuec, Fabrice Seguin and Matthieu Arzel

11:50AM A Fully Integrated Analog Neuron for Dynamic Multi-layer Perceptron Networks [#15256]

Melin Ngwar and Jim Wight

**Session ML1: Machine learning 1**

*Wednesday, July 15, 11:30AM-12:10PM, Room: Auditorium, Chair: Hakawa, Hiroomi*

11:30AM An Autonomous Competitive Learning Algorithm using Quantum Hamming Neural Networks [#15633]

Mohammed Zidan, Alaa Sagheer and Nasser Metwally

11:50AM Vector Classification by a Winner-Take-All Neural Network with Digital

Frequency-Locked Loop [#15436]

Hiroomi Hikawa

**Plenary Talk Plenary5: Plenary session: Steve Furber**

*Wednesday, July 15, 1:10PM-2:10PM, Room: Auditorium, Chair: Erdi, Peter*

**Session ML2: Machine learning 2**

*Wednesday, July 15, 2:20PM-4:00PM, Room: Auditorium, Chair: Anguita, Davide*

2:20PM Stationarity of Matrix Relevance LVQ [#15248]

Michael Biehl, Barbara Hammer, Frank-Michael Schleif, Petra Schneider and Thomas Villmann

2:40PM Reduction of Catastrophic Forgetting With Transfer Learning and Ternary Output Codes [#15214]

Steven Gutstein and Ethan Stump

3:00PM Efficient Representation Ranking for Transfer Learning [#15262]

Son Tran and Artur Garcez

3:20PM Function approximation for large markov decision processes using self-organizing neural networks [#15475]

Teck-Hou Teng

3:40PM The on-line Curvilinear Component Analysis (onCCA) for Real-Time Data Reduction [#15049]

Giansalvo Cirrincione, Jeanny Herault and Vincenzo Randazzo

**Special Session ss12-2: Concept Drift, Domain Adaptation and Learning in Dynamic Environments 2**

*Wednesday, July 15, 2:20PM-4:00PM, Room: Ballroom, Chair: Alippi, Cesare*

2:20PM Use of Ensembles of Fourier Spectra in Capturing Recurrent Concepts in Data Streams [#15438]

Sakthithasan Sripirakas, Russel Pears, Albert Bifet and Bernhard Pfahringer

2:40PM A2D2: A Pre-event Abrupt Drift Detection [#15777]

Tatiana Escovedo, Adriano Koshiyama, Marley Vellasco, Andre Abs da Cruz and Rubens Melo

3:00PM An Approach to Handle Concept Drift in Financial Time Series Based on Extreme Learning Machines and Explicit Drift Detection [#15635]

Rodolfo Carneiro Cavalcante and Adriano Lorena Inacio de Oliveira

3:20PM Repeated Play of the SVM Game as a Means of Adaptive Classification [#15646]

Craig Vineyard, Stephen Verzi, Conrad James, James Aimone and Gregory Heileman

3:40PM Combining Offline and Online Classifiers for Life-long Learning [#15577]

Lydia Fischer, Barbara Hammer and Heiko Wersing

**Special Session ss01-1: Computational Intelligence applied to Vision and Robotics (CIVR) 1**

*Wednesday, July 15, 2:20PM-4:00PM, Room: Brehon, Chair: Garcia-Rodriguez, Jose*

2:20PM Using GNG on 3D Object Recognition in Noisy RGB-D data [#15110]

Jose Carlos Rangel, Vicente Morell, Miguel Cazorla, Sergio Orts-Escolano and Jose Garcia-Rodriguez

2:40PM Evaluation of Multi Feature Fusion at Score-Level for Appearance-based Person Re-Identification [#15122]

Markus Eisenbach, Alexander Kolarow, Alexander Vorndran, Julia Niebling and Horst-Michael Gross

3:00PM ECAS-II: A Hybrid Algorithm for the Construction of Multidimensional Image Segmenters [#15286]

Blanca Priego, Francisco Bellas and Richard Duro

3:20PM Gesture based Human Multi-Robot Interaction [#15381]

Gerard Canal, Cecilio Angulo and Sergio Escalera

3:40PM ChaLearn Looking at People 2015 new competitions: Age Estimation and Cultural Event Recognition [#15482]

Escalera Sergio, Gonzalez Jordi, Baro Xavier, Pardo Pablo, Fabian Junior, Oliu Marc, Escalante Hugo, Huerta Ivan and Guyon Isabelle

**Session RL1: Reinforcement learning 1**

*Wednesday, July 15, 2:20PM-4:00PM, Room: Park Suite, Chair: Anderson, Charles*

2:20PM Following Newton Direction in Policy Gradient with Parameter Exploration [#15568]

Giorgio Manganini, Matteo Pirota, Marcello Restelli and Luca Bascetta

2:40PM Faster Reinforcement Learning After Pretraining Deep Networks to Predict State Dynamics [#15781]

Charles Anderson, Minwoo Lee and Daniel Elliott

3:00PM A Comparative Study between Motivated Learning and Reinforcement Learning [#15640]

James Graham, Janusz Starzyk, Zhen Ni, Haibo He, Teck-Hou Teng and Ah-Hwee Tan

3:20PM Continuous-time on-policy neural reinforcement learning of working memory tasks [#15520]

Davide Zambrano, Roelfsema Pieter and Bohte Sander

3:40PM Online Reinforcement Learning by Bayesian Inference [#15242]

Zhongpu Xia and Dongbin Zhao

### **Session HW3: Hardware 3**

*Wednesday, July 15, 2:20PM-4:00PM, Room: Mangerton, Chair: Roy, Kaushik*

2:20PM An efficient SpiNNaker implementation of the Neural Engineering Framework [#15170]

Andrew Mundy, James Knight, Terrence Stewart and Steve Furber

2:40PM Scalable Energy-Efficient, Low-Latency Implementations of Trained Spiking Deep Belief Networks on SpiNNaker [#15502]

Evangelos Stromatias, Daniel Neil, Francesco Galluppi, Michael Pfeiffer, Shih-Chii Liu and Steve Furber

3:00PM Spin-Transfer Torque Magnetic Neuron for Low Power Neuromorphic Computing [#15022]

Abhronil Sengupta and Kaushik Roy

3:20PM Neuron-like Digital Hardware Architecture for Large-scale Neuromorphic Computing [#15641]

Byungik Ahn

3:40PM A neuromorphic hardware framework based on population coding [#15453]

Chetan Singh Thakur, Tara Julia Hamilton, Runchun Wang, Jonathan Tapson and Andre van Schaik

### **Session ML3: Machine learning 3**

*Wednesday, July 15, 4:20PM-6:00PM, Room: Auditorium, Chair: Comminiello, Danilo*

4:20PM Link prediction in graph construction for supervised and semi-supervised learning [#15384]

Lilian Berton, Jorge Valverde-Rebaza and Alneu de Andrade Lopes

4:40PM Discriminative Concept Learning Network: Reveal High-level Differential Concepts from Shallow Architecture [#15363]

Qiao Wang, Sylvia Young, Aaron Harwood and Cheng Soon Ong

5:00PM Stochastic Discriminant Analysis [#15477]

Mika Juuti, Francesco Corona and Juha Karhunen

5:20PM Improved Error Bounds Based on Worst Likely Assignments [#15676]

Eric Bax

5:40PM Learning the Hash Code with Generalised Regression Neural Networks for Handwritten Signature Biometric Data Retrieval [#15617]

Bernardete Ribeiro, Noel Lopes and Catarina Silva

### **Special Session ss12-3: Concept Drift, Domain Adaptation and Learning in Dynamic Environments 3**

*Wednesday, July 15, 4:20PM-6:00PM, Room: Ballroom, Chair: Lemaire, Vincent*

- 4:20PM Monitoring Term Drift Based on Semantic Consistency in an Evolving Vector Field [#15693]  
Peter Wittek, Sandor Daranyi, Efstratios Kontopoulos, Theodoros Moysiadis and Ioannis Kompatsiaris
- 4:40PM Concept Drift Detection using Supervised Bivariate Grids [#15273]  
Christophe Salperwyck, Marc Boulle and Vincent Lemaire
- 5:00PM Comparison Between Inverse Modelling and Data Assimilation to Estimate Rainfall from Runoff Using the Multilayer Perceptron [#15228]  
Anne Johannet, Virgile Taver, Valerie Borrell Estupina, Marc Vinches, Severin Pistre and Dominique Bertin
- 5:20PM Feature Ranking in Changing Environments where New Features are Introduced [#15373]  
Alexandra Degeest, Michel Verleysen and Benoit Frenay
- 5:40PM Concept Drift Detection for Streaming Data [#15186]  
Zubin Abraham and Heng Wang

**Special Session ss01-2: Computational Intelligence applied to Vision and Robotics (CIVR) 2**

*Wednesday, July 15, 4:20PM-6:00PM, Room: Brehon, Chair: Azorin-Lopez, Jorge*

- 4:20PM Processing Point Cloud Sequences with Growing Neural Gas [#15620]  
Sergio Orts-Escolano, Jose Garcia-Rodriguez, Vicente Morell, Miguel Cazorla, Marcelo Saval-Calvo and Jorge Azorin
- 4:40PM Non-rigid point set registration using color and data downsampling [#15692]  
Marcelo Saval-Calvo, Sergio Orts-Escolano, Jorge Azorin-Lopez, Jose Garcia-Rodriguez, Andres Fuster-Guillo, Vicente Morell-Gimenez and Miguel Cazorla
- 5:00PM Self-Organizing Activity Description Map to Represent and Classify Human Behaviour [#15718]  
Jorge Azorin-Lopez, Marcelo Saval-Calvo, Andres Fuster-Guillo, Jose Garcia-Rodriguez and Sergio Orts-Escolano
- 5:20PM Enhanced Image Classification With a Fast-Learning Shallow Convolutional Neural Network [#15736]  
Mark McDonnell and Tony Vladusich
- 5:40PM Improving Bag of Visual Words Representations with Genetic Programming [#15739]  
Hugo Jair Escalante, Jose Martinez, Sergio Escalera, Victor Ponce and Xavier Baro

**Session RL2: Reinforcement learning 2**

*Wednesday, July 15, 4:20PM-6:00PM, Room: Park Suite, Chair: Potter, Steve*

- 4:20PM Learning Eye Movements Strategies on Tiled Large High-Resolution Displays using Inverse Reinforcement Learning [#15571]  
Redwan Abdo A. Mohammed and Oliver Staadt
- 4:40PM Interactive Reinforcement Learning through Speech Guidance in a Domestic Scenario [#15293]  
Francisco Cruz, Johannes Twiefel, Sven Magg, Cornelius Weber and Stefan Wermter
- 5:00PM Approximate Policy Iteration with Unsupervised Feature Learning based on Manifold Regularization [#15034]  
Hongliang Li, Derong Liu and Ding Wang
- 5:20PM A Spiking Neuronal Model Learning a Motor Control Task by Reinforcement Learning and Structural Synaptic Plasticity [#15358]  
Spueler Martin, Nagel Sebastian and Rosenstiel Wolfgang
- 5:40PM Adaptive-Critic-Based Control of a Synchronous Generator in a Power System Using Biologically Inspired Artificial Neural Networks [#15634]  
Jing Dai, Ganesh K. Venayagamoorthy, Ronald G. Harley, Yi Deng and Steve M. Potter

**Session Noise: Anomaly and noise**

*Wednesday, July 15, 4:20PM-6:00PM, Room: Mangerton, Chair: Angelov, Plamen*

- 4:20PM Expected Similarity Estimation for Large Scale Anomaly Detection [#15066]  
Markus Schneider, Wolfgang Ertel and Guenther Palm
- 4:40PM Self-structured Confabulation Network for Fast Anomaly Detection and Reasoning [#15135]  
Qiuwen Chen, Qing Wu, Morgan Bishop, Richard Linderman and Qinru Qiu
- 5:00PM The Adaptable Buffer Algorithm for High Quantile Estimation in Non-Stationary Data Streams [#15041]  
Ognjen Arandjelovic, Pham Duc-Son and Venkatesh Svetha
- 5:20PM PCAGA: Principal Component Analysis Based Genetic Algorithm for Solving Conditional Nonlinear Optimal Perturbation [#15360]  
Bin Mu, Linlin Zhang, Shijin Yuan and Hongyu Li
- 5:40PM Online Fault Detection Based on Typicality and Eccentricity Data Analytics [#15626]  
Bruno Costa, Claubert Bezerra, Luiz Affonso Guedes and Plamen Angelov

**Thursday, July 16, 2015**

**Plenary Talk Plenary6: Plenary session: Lee Giles**

*Thursday, July 16, 8:00AM-9:00AM, Room: Auditorium, Chair: Minai, Ali*

**Special Session ss16-1: Computational Intelligence Algorithms for Digital Audio Applications 1**

*Thursday, July 16, 9:10AM-10:30AM, Room: Auditorium, Chair: Squartini, Stefano*

9:10AM Non-Linear Prediction with LSTM Recurrent Neural Networks for Acoustic Novelty Detection [#15683]

Erik Marchi, Fabio Vesperini, Felix Weninger, Florian Eyben, Stefano Squartini and Bjoern Schuller

9:30AM Polyphonic Sound Event Detection Using Multi Label Deep Neural Networks [#15500]

Emre Cakir, Toni Heittola, Heikki Huttunen and Tuomas Virtanen

9:50AM An Interactive Optimization Procedure for Stereophonic Acoustic Echo Cancellation Systems [#15252]

Laura Romoli, Stefania Cecchi, Francesco Piazza, Danilo Comminiello, Michele Scarpiniti and Aurelio Uncini

10:10AM Functional Link Expansions for Nonlinear Modeling of Audio and Speech Signals [#15251]

Danilo Comminiello, Simone Scardapane, Michele Scarpiniti, Raffaele Parisi and Aurelio Uncini

**Session ML4: Machine learning 4**

*Thursday, July 16, 9:10AM-10:30AM, Room: Ballroom, Chair: Bertini, Joao*

9:10AM Refining Constructive Neural Networks Using Functionally Expanded Input Data [#15299]

Joao Bertini and Maria Nicoletti

9:30AM Exponential C-loss for Data Fitting [#15618]

Badong Chen, Ren Wang, Nanning Zheng and Jose Principe

9:50AM Kolmogorov Complexity Vector: A Novel Data Representation [#15394]

Ge Yang and Ali Ghodsi

10:10AM A Sample Partition Method for Learning to Rank Based on Query-level Vector Extraction [#15368]

Jungang Xu, Shilong Zhou, Hong Chen and Pengfei Li

**Session Spiking3: Spiking neural networks 3**

*Thursday, July 16, 9:10AM-10:30AM, Room: Brehon, Chair: Shanahan, Murray*

9:10AM Runtime Detection of Activated Polychronous Neuronal Group towards its Spatiotemporal Analysis [#15207]

Haoqi Sun, Yan Yang, Olga Sourina and Guang-Bin Huang



- 9:30AM Scale and Translation Invariant Learning of Spatio-Temporal Patterns using Longest Common Subsequences and Spiking Neural Networks [#15737]  
Banafsheh Rekabdar, Monica Nicolescu, Mircea Nicolescu and Richard Kelley
- 9:50AM GPU-based Fast Parameter Optimization for Phenomenological Spiking Neural Models [#15561]  
Zafeirios Fountas and Murray Shanahan
- 10:10AM Stochastic and Asynchronous Spiking Dynamic Neural Fields [#15709]  
Benoit Chappet de Vangel, Cesar Torres-Huitzil and Bernard Girau

### **Session Cluster: Clustering**

*Thursday, July 16, 9:10AM-10:30AM, Room: Park Suite, Chair: Wunsch, Donald C.*

- 9:10AM The Unbalancing Effect of Hubs on K-medoids Clustering in High-Dimensional Spaces [#15019]  
Dominik Schnitzer and Arthur Flexer
- 9:30AM Spectral Clustering Using Robust Similarity Measure Based on Closeness of Shared Nearest Neighbors [#15316]  
Xiucai Ye and Tetsuya Sakurai
- 9:50AM Multi-Prototype Local Density-based Hierarchical Clustering [#15747]  
Leonardo Enzo Brito da Silva and Donald C. Wunsch II
- 10:10AM Impact of different Metrics on Multi-View Clustering [#15253]  
Angela Serra, Dario Greco and Roberto Tagliaferri

### **Session BioPerc1: Biologically inspired perception 1**

*Thursday, July 16, 9:10AM-10:30AM, Room: Mangerton, Chair: Khan Iftekharuddin*

- 9:10AM Modelling Retinal Ganglion Cells using Self-Organising Fuzzy Neural Networks [#15604]  
Scott McDonald, Dermot Kerr, Sonya Coleman, Martin McGinnity and Philip Vance
- 9:30AM HEVS: A Hierarchical Computational Model for Early Stages of the Visual System [#15126]  
Jiuqi Han, Qingqun Kong, Yi Zeng and Hongwei Hao
- 9:50AM Design of a Silicon Cochlea System with Biologically Faithful Response [#15787]  
Shiwei Wang, Thomas Koickal, Godwin Enemali, Luiz Gouveia, Lei Wang and Alister Hamilton
- 10:10AM A Bio-Inspired Method for Object Representation [#15141]  
Hui Wei

**Special Session ss16-2/r: Computational Intelligence Algorithms for Digital Audio Applications 2 + Regular session on Image Analysis**

*Thursday, July 16, 10:50AM-12:10PM, Room: Auditorium, Chair: Squartini, Stefano; Mello, Carlos*

- 10:50AM A Deep Neural Network Approach for Voice Activity Detection in Multi-Room Domestic Scenarios [#15340]  
Giacomo Ferroni, Roberto Bonfigli, Emanuele Principi, Stefano Squartini and Francesco Piazza
- 11:10AM Data-driven vocal folds models for the representation of both acoustic and high speed video data [#15586]  
Carlo Drioli and Gian Luca Foresti
- 11:30AM Text Segmentation in Ancient Topographic Maps and Floor Plans with Support Vector Data Description [#15331]  
Saulo Machado and Carlos Mello
- 11:50AM One-shot Training of Polynomial Cellular Neural Networks and Applications in Image Processing. [#15133]  
Antonio Arista-Jalife and Eduardo Gomez-Ramirez

**Session Datamine: Data and text mining**

*Thursday, July 16, 10:50AM-12:10PM, Room: Ballroom, Chair: Schikuta, Erich*

- 10:50AM Kernel Spectral Document Clustering Using Unsupervised Precision-Recall Metrics [#15543]  
Raghvendra Mall and Johan Suykens
- 11:10AM Using Active Learning Techniques for Improving Database Schema Matching Methods [#15509]  
Diego Rodrigues, Altigran Silva, Rosiane Rodrigues and Eulanda Santos
- 11:30AM Directed Generalized Measure of Association: A Data Driven Approach Towards Causal Inference [#15762]  
Mehrnaz Khodam Hazrati, Andreas Keil and Jose C. Principe
- 11:50AM Semantic Extensions to the Vienna Neural Network Specification Language [#15560]  
Erich Schikuta, Altaf Huqqani and Thomas Kopica

**Session Image: Image analysis**

*Thursday, July 16, 10:50AM-12:10PM, Room: Brehon, Chair: Lin, Feng*

- 10:50AM Multi-Scale Local Shape Analysis and Feature Selection in Machine Learning Applications [#15229]  
Paul Bendich, Ellen Gasparovic, John Harer, Rauf Izmailov and Linda Ness
- 11:10AM Pixel Characteristics based Feature Extraction Approach for Roadside Object Detection [#15463]

Sujan Chowdhury, Brijesh Verma, Mary Tom and Mengjie Zhang

11:30AM Dual Spatial Pyramid On Rotation Invariant Texture Feature For HEp-2 Cell Classification [#15137]

Xiang Xu, Feng Lin, Carol Ng and Khai pang Leong

11:50AM Factor Graphs for Pixelwise Illuminant Estimation [#15759]

Lawrence Mutumbu and Antonio Robles-Kelly

### **Session Local : Local learning**

*Thursday, July 16, 10:50AM-12:10PM, Room: Park Suite, Chair: Zhang, Haijun*

10:50AM Self-Organizing Map-based Probabilistic Associative Memory for Sequential Patterns [#15527]

Niitsuma Jun and Osana Yuko

11:10AM Learning of local predictable representations in partially learnable environments [#15680]

Mathieu Lefort and Alexander Gepperth

11:30AM A Tree-Structured Representation for Book Author and Its Recommendation Using Multilayer SOM [#15369]

Lu Lu and Haijun Zhang

11:50AM An ART-like Algorithm for constructing RBF Neural Networks [#15305]

Xi Meng, Junfei Qiao and Honggui Han

### **Session BioPerc2: Biologically inspired perception 2**

*Thursday, July 16, 10:50AM-12:10PM, Room: Mangerton, Chair: Smith, Leslie*

10:50AM C.elegans chemotaxis inspired neuromorphic circuit for contour tracking and obstacle avoidance [#15533]

Shibani Santurkar and Bipin Rajendran

11:10AM Gabor feature processing in spiking neural networks from retina-inspired data [#15108]

Aristeidis Tsitiridis, Cristina Conde, Isaac Martin de Diego, Jose Sanchez del Rio Saez, Jorge Raul Gomez and Enrique Cabello

11:30AM Novel Hierarchical Cellular Simultaneous Recurrent Neural Network for Object Detection [#15297]

Mahbubul Alam, Lasitha Vidyaratne and Khan Iftekharuddin

11:50AM A Biologically Inspired Onset and Offset Sound Segmentation Approach [#15097]

Andrew Abel, Dean Hunter and Leslie Smith

### **Workshop ws1: Workshop 1: The 2nd International Workshop on Advances in Learning from/with Multiple Learners (ALML 2015)**

*Thursday, July 16, 1:30PM-4:30PM, Room: Ballroom, Chair: Nistor Grozavu and Guénaél Cabanes*

1:30PM Uncorrelated Transferable Feature Extraction for Signal Classification in Brain-Computer Interfaces [#15819]

Honglei Shi, Jinhua Xu and Shiliang Sun

**Workshop ws2: Workshop 2: The International Workshop on Spatial Representations in Biology and Robots**

*Thursday, July 16, 1:30PM-4:30PM, Room: Brehon, Chair: Jörg Conradt and Fred Hamker*

**Workshop ws3: Workshop 3: Computational Neurology and Psychiatry: Do we need it?**

*Thursday, July 16, 1:30PM-4:30PM, Room: Park Suite, Chair: Basabdatta Sen Bhattacharya and Péter Érdi*

**Friday, July 17, 2015**

**Workshop ws4-1: Workshop 4: BMI Workshop on Brain-Mind 1**

*Friday, July 17, 9:00AM-12:00PM, Room: Ballroom, Chair: Leonid Perlovsky and Juyang (John) Weng*

**Workshop ws5-1: Workshop 5: The 2nd International Workshop on Computational Energy Management in Smart Grids (CEMiSG 2015) 1**

*Friday, July 17, 9:00AM-12:00PM, Room: Brehon, Chair: Stefano Squartini*

9:00AM A Learning Intelligent System for Fault Detection in Smart Grid by a One-Class Classification Approach [#15682]

Enrico De Santis, Antonello Rizzi, Alireza Sadeghian and Frattale Mascioli Fabio Massimo

9:20AM Energy management with the support of dynamic pricing strategies in real micro-grid scenarios [#15493]

Marco Severini, Stefano Squartini, Marco Fagiani and Francesco Piazza

9:40AM Appliance Level Demand Modeling and Pricing Optimization for Demand Response Management in Smart Grid [#15233]

Fan-Lin Meng and Xiao-Jun Zeng

10:00AM Unit Commitment Considering Multiple Charging and Discharging Scenarios of Plug-in Electric Vehicles [#15254]

Zhile Yang, Kang Li, Qun Niu and Aoife Foley

10:20AM Methods for Clustering the Electrical Load in European Countries [#15064]

Ankit Kumar Tanwar, Emanuele Crisostomi, Pietro Ferraro, Giuseppe Giunta, Marco Raugi and Mauro Tucci

**Workshop ws4-2: Workshop 4: BMI Workshop on Brain-Mind 2**

*Friday, July 17, 1:30PM-4:30PM, Room: Ballroom, Chair: Leonid Perlovsky and Juyang (John) Weng*

**Workshop ws5-2: Workshop 5: The 2nd International Workshop on Computational Energy Management in Smart Grids (CEMiSG 2015) 2**

*Friday, July 17, 1:30PM-4:30PM, Room: Brehon, Chair: Stefano Squartini*

- 1:30PM Thermal Comfort Control Based on MEC Algorithm for HVAC Systems [#15240]  
Dong Li, Dongbin Zhao, Yuanheng Zhu and Zhongpu Xia
- 1:50PM Indoor thermal comfort control through fuzzy logic PMV optimization [#15607]  
Lucio Ciabattoni, Gionata Cimini, Francesco Ferracuti, Massimo Grisostomi, Gianluca Ippoliti and Matteo Pirro
- 2:10PM A Non-Linear State Space Frequency Estimator for Three-Phase Power Systems [#15591]  
Sayed Pouria Talebi, Sithan Kanna and Danilo Mandic
- 2:30PM A Novelty Detection approach to identify the occurrence of leakage in Smart Gas and Water Grids [#15289]  
Marco Fagiani, Stefano Squartini, Marco Severini and Francesco Piazza