

# CONFERENCE PROGRAM

## TUTORIALS

### **Sunday, July 31, 8:00AM-10:00AM**

**Tutorial T1: Signal Processing & Machine Learning Approaches in Brain-Machine Interfaces**, Instructor: G. Garcia-Molina, Room: Cedar

**Tutorial T2: Adaptive Critic Designs**, Instructor: G.K. Veneyagamoorthy, Room: Monterey

**Tutorial T3: Introduction to the Evaluation of Neural Networks and Other Decision Functions**, Instructor: D. Brown, Room: Carmel

**Tutorial T4: Dynamic Logic**, Instructor: L. Perlovsky, Room: San Martin

**Tutorial T5: Complex-Valued Neural Networks: New Trends & Applications**, Instructors: I. Aizenberg, D. Mandic and A. Hirose, Room: San Simeon

### **Sunday, July 31, 10:30AM-12:30PM**

**Tutorial T6: Neuropercolation & Neurodynamics**, Instructors: Walter Freeman and Robert Kozma, Room: Cedar

**Tutorial T7: Advanced Computational and Learning Methods for Smart Grid**, Instructor: G.K. Veneyagamoorthy, Room: Monterey

**Tutorial T8: Evolving Neural Networks**, Instructor: R. Miikkulainen, Room: Carmel

**Tutorial T9: Computational Social Science I: Sociodynamics**, Instructor: P. Erdi, Room: San Martin

**Tutorial T10: Learning Deep Architectures and Applications**, Instructor: K. Chen, Room: San Simeon

### **Sunday, July 31, 1:30PM-3:30PM**

**Tutorial T11: Cognitive Memory**, Instructor: B. Widrow, Room: Cedar

**Tutorial T12: Brain-Like Prediction, Decision and Control**, Instructor: P. Werbos, Room: Monterey

**Tutorial T13: Advanced Methodologies for Learning Sparse Data**, Instructor: V. Cherkassky, Room: Carmel

**Tutorial T14: Computational Social Science II: Social Systems**, Instructor: P. Erdi, Room: San Martin

**Tutorial T15: Conformal Predictions for Reliable Machine Learning**, Instructors: V. Balasubraminian, S. Ho, S. Panchanathan, V. Vovk, Room: San Simeon

### **Sunday, July 31, 4:00PM-6:00PM**

**Tutorial T16: Autonomous Machine Learning**, Instructor: A. Roy, Room: Cedar

**Tutorial T17: Computation with Locally-Connected Dynamical Systems**, Instructor: G. Paziienza, Room: Monterey

**Tutorial T18: Ensemble Learning through Diversity Management**, Instructor: H. Chen and X. Yao, Room: Carmel

**Tutorial T19: Effective Modeling of the Time Domain in Neural Networks**, Instructors: A. R. Rao and G.A. Cecchi, Room: San Martin

**Tutorial T20: Stochastic Artificial Neurons and Neural Networks**, Instructor: R. Windecker, Room: San Simeon

## **RESEARCH PRESENTATIONS**

### **Monday, August 1, 8:00AM-9:00AM**

**Plenary Talk Mo-Plen1: Chair: Kenji Doya, Room: Oak**

#### ***Learning Motor Skills in Humans and Humanoids***

**Stefan Schaal**

University of Southern California, USA

### **Monday, August 1, 9:30AM-11:30AM**

**Special Session Mo1-1: Embodied and Developmental Robotics, Chair: Pitoyo Hartono and Ryo Saegusa, Room: Cedar**

- 9:30AM *Innovative Embodiment of Job Interview in Emotionally Aware Communication Robot [no. 326]*  
Rajiv Khosla, Mei-Tai Chu, K.G. Yamada, K. Kunieda and S. Oga
- 9:50AM *Application of Hybrid Learning Strategy for Manipulator Robot [no. 507]*  
Shingo Nakamura and Shuji Hashimoto
- 10:10AM *A Hybrid Fuzzy Q Learning algorithm for robot navigation [no. 537]*  
Sean Gordon, Napoleon Reyes and Andre Barczak
- 10:30AM *Active Perception for Action Mirroring [no. 595]*  
Ryo Saegusa, Lorenzo Natale, Giorgio Metta and Giulio Sandini
- 10:50AM *Adaptive Self-Protective Motion based on Reflex Control [no. 594]*  
Toshihiko Shimizu, Ryo Saegusa, Shuhei Ikemoto, Ishiguro Hiroshi and Giorgio Metta
- 11:10AM *Problems of Temporal Granularity in Robot control: Levels of Adaptation and a Necessity of Self-Confidence [no. 547]*  
Hiroaki Wagatsuma and Yousuke Tomonaga

**Session Mo1-2: Recurrent Networks, Chair: Simona Dobi, Room: Pine**

- 9:30AM *Relational Reinforcement Learning and Recurrent Neural Network with State Classification to Solve Joint Attention [no. 269]*  
Renato da Silva and Roseli Romero
- 9:50AM *Robust Jordan Network for Nonlinear Time Series Prediction [no. 521]*  
Qing Song
- 10:10AM *A Memetic Framework for Cooperative Coevolution of Recurrent Neural Networks [no. 157]*  
Rohitash Chandra, Marcus Frean and Mengjie Zhang
- 10:30AM *Continuous Time Recurrent Neural Network Designed for KWTA Operation [no. 44]*  
Ruxandra Liana Costea and Corneliu Marinov
- 10:50AM *Distributed Parameter Bioprocess Plant Identification and I-Term Control Using Centralized Recurrent Neural Network Models [no. 78]*  
Ieroham Baruch, Eloy Saldierna and Oscar Castillo
- 11:10AM *Dynamics of fractional-order neural networks [no. 147]*  
Eva Kaslik and Seenith Sivasundaram

**Special Session Mo1-3: Autonomous and Incremental Learning (AIL), Chair: Vincent Lemaire, José García-Rodríguez and Isabelle Guyon, Room: Oak**

*Organized under the auspices of the **INNS Autonomous Machine Learning SIG***

- 9:30AM *Unsupervised and Transfer Learning Challenge [no. 178]*  
Isabelle Guyon, Gideon Dror, Vincent Lemaire, Graham Taylor and David Aha

- 9:50AM *Learning with few examples: an empirical study on leading classifiers [no. 220]*  
Christophe Salperwyck and Vincent Lemaire
- 10:10AM *Pruning with Replacement and Automatic Distance Metric Detection in Limited General Regression Neural Networks [no. 198]*  
Koichiro Yamauchi
- 10:30AM *Fast Autonomous Growing Neural Gas [no. 167]*  
Jose Garcia-Rodriguez, Anastassia Angelopoulou, Juan Manuel Garcia, Alexandra Psarrou, Sergio Orts and Vicente Morell
- 10:50AM *Using 3D GNG-Based Reconstruction for 6DoF Egomotion [no. 229]*  
Diego Viejo, Jose Garcia, Miguel Cazorla, David Gil and Magnus Johnsson
- 11:10AM *Parameter Selection for Smoothing Splines using Stein's Unbiased Risk Estimator (SURE) [no. 561]*  
Sepideh Seifzadeh, Mohammad Rostami, Ali Ghodsi and Fakhreddine Karray

**Session Mo1-4: Neurocontrol I: Methods, Chair: Derong Liu, Room: Monterey**

- 9:30AM *Dynamic Learning Rate for Recurrent High Order Neural Observer (RHONO): Anaerobic Process Application [no. 377]*  
Kelly Gurubel, Edgar Sanchez and Salvador Carlos-Hernandez
- 9:50AM *Neural Networks for Model Predictive Control [no. 48]*  
Petia Georgieva and Sebastiao Foyo de Azevedo
- 10:10AM *Neural Image Thresholding with SIFT-Controlled Gabor Feature [no. 438]*  
Ahmed Othman and Hamid Tizhoosh
- 10:30AM *Self-Organizing Neural Population Coding for Improving Robotic Visuomotor Coordination [no. 310]*  
Tao Zhou, Piotr Dudek and Bertram Shi
- 10:50AM *Robust Model Predictive Control of Nonlinear Affine Systems Based on a Two-layer Recurrent Neural Network [no. 29]*  
Zheng Yan and Jun Wang
- 11:10AM *Battery State of Charge Estimation Based on a Combined Model of Extended Kalman Filter and Neural Networks [no. 447]*  
Zhihang Chen, Shiqi Qiu, M.Abul Masrur and Yi Lu Murphey

**Session Mo1-5: Supervised, Unsupervised and Ensemble Learning, Chair: Haibo He, Room: Carmel**

- 9:30AM *Nonlinear Multi-model Ensemble Prediction Using Dynamic Neural Network with Incremental Learning [no. 598]*  
Michael Siek and Solomatine Dimitri
- 9:50AM *A Semi-supervised Clustering Algorithm that Integrates Heterogeneous Dissimilarities and Data Sources [no. 366]*  
Manuel Martin-Merino
- 10:10AM *Uncertainty Sampling Methods to Select Datasets for Active Meta-Learning [no. 237]*  
Ricardo Prudencio, Carlos Soares and Teresa Ludermir
- 10:30AM *Supervised Learning in a Single Layer Dynamic Synapses Neural Network [no. 468]*  
Ali Yousefi, Alireza A. Dibazar and Theodore W. Berger
- 10:50AM *Supervised Matrix Factorization with Sparseness Constraints and Fast Inference [no. 212]*  
Markus Thom, Roland Schweiger and Guenther Palm
- 11:10AM *Conditional Multi-Output Regression [no. 62]*  
Chao Yuan

**Session Mo1-6: Feature Extraction, Chair: Seiichi Ozawa, Room: Santa Clara**

- 9:30AM *Bio-inspired Meta-heuristic as feature selector in Ensemble Systems: A Comparative Analysis [no. 247]*  
Laura Santana, Anne Canuto and Ligia Silva

- 9:50AM *Group Lasso Regularized Multiple Kernel Learning for Heterogeneous Feature Selection [no. 525]*  
Yi-Ren Yeh, Yung-Yu Chung, Ting-Chu Lin and Yu-Chiang Frank Wang
- 10:10AM *GA-based Feature Selection Approach in Biometric Hand Systems [no. 75]*  
Rafael Marcos Luque, David Elizondo, Ezequiel Lopez-Rubio and Esteban Jose Palomo
- 10:30AM *On the Behavior of Feature Selection Methods Dealing with Noise and Relevance over Synthetic Scenarios [no. 324]*  
Veronica Bolon-Canedo, Noelia Sanchez-Marono and Amparo Alonso-Betanzos
- 10:50AM *A Fast Incremental Kernel Principal Component Analysis for Learning Stream of Data Chunks [no. 600]*  
Takaomi Tokumoto and Seiichi Ozawa
- 11:10AM *A Cortex-like Model for Rapid Object Recognition Using Feature-Selective Hashing [no. 216]*  
Yu-Ju Lee, Chuan-Yung Tsai and Liang-Gee Chen

### **Monday, August 1, 11:40AM-12:40PM**

#### **Special Session Mo2-1: Hybrid Intelligent Systems, Chair: Patricia Melin, Room: Cedar**

- 11:40AM *Genetic Optimization of Ensemble Neural Networks for Complex Time Series Prediction [no. 64]*  
Martha Pulido, Patricia Melin and Oscar Castillo
- 12:00PM *Parallel Genetic Algorithms for Optimization of Modular Neural Networks in Pattern Recognition [no. 86]*  
Fevrier Valdez, Patricia Melin and Herman Parra
- 12:20PM *Hierarchical genetic optimization of modular neural networks and their type-2 fuzzy response integrators for human recognition based on multimodal biometry [no. 278]*  
Daniela Sanchez, Patricia Melin and Oscar Castillo

#### **Session Mo2-2: Models of Neurobiological Disorders, Chair: Todd Leen, Room: Pine**

- 11:40AM *Effects of Compensation, Connectivity and Tau in a Computational Model of Alzheimer's Disease [no. 136]*  
Mark Rowan
- 12:00PM *Simulating Parkinson's disease patient deficits using a COVIS-based computational model [no. 67]*  
Sebastien Helie, Erick J. Paul and F. Gregory Ashby
- 12:20PM *Modeling Prosopagnosia Using Dynamic Artificial Neural Networks [no. 430]*  
Robyn Vandermeulen, Laurence Morissette and Sylvain Chartier

#### **Special Session Mo2-3: Neuro-Cognitive Modelling of Auditory Perception, Learning, and Speech Understanding, Chair: Harry Erwin, Room: Oak**

*Organized under the auspices of the **INNS Autonomous Machine Learning SIG***

- 11:40AM *Attention Driven Computational Model of the Auditory Midbrain for Sound Localization in Reverberant Environments [no. 275]*  
Jindong Liu, Harry Erwin and Guang-Zhong Yang
- 12:00PM *A Comparison of Sound Localisation Techniques using Cross-Correlation and Spiking Neural Networks for Mobile Robotics [no. 414]*  
Julie Wall, Thomas McGinnity and Liam Maguire
- 12:20PM *Biologically-inspired neural coding of sound onset for a musical sound classification task [no. 301]*  
Michael Newton and Leslie Smith

#### **Session Mo2-4: Neurocontrol II: Applications, Chair: Edgar Sanchez, Room: Monterey**

- 11:40AM *Discrete-Time Neural Identifier for Electrically Driven Nonholonomic Mobile Robots [no. 234]*  
Alma Y. Alanis, Lopez-Franco Michel, Arana-Daniel Nancy and Lopez-Franco Carlos

- 12:00PM *Discrete-Time Neural Block Control for a Doubly Fed Induction Generator [no. 388]*  
Riemann Ruiz, Edgar Sanchez and Alexander Loukianov
- 12:20PM *Nonlinear Adaptive Flight Control Using Sliding Mode Online Learning [no. 602]*  
Thomas Krueger, Philipp Schnetter, Robin Placzek and Peter Voersmann

**Session Mo2-5: Clustering, Chair: Donald Wunsch, Room: Carmel**

- 11:40AM *Structured Clustering with Automatic Kernel Adaptation [no. 288]*  
Weike Pan and James Kwok
- 12:00PM *A Low-Order Model of Biological Neural Networks for Hierarchical or Temporal Pattern Clustering, Detection and Recognition [no. 35]*  
James Lo
- 12:20PM *A Hierarchical Approach to Represent Relational Data Applied to Clustering Tasks [no. 644]*  
Joao Carlos Xavier Junior, Anne Canuto, Alex Freitas, Luiz Goncalves and Carlos Silla Jr.

**Session Mo2-6: Music Recognition & Generation, Chair: Wlodzislaw Duch, Room: Santa Clara**

- 11:40AM *Generation of composed musical structures through recurrent neural networks based on chaotic inspiration [no. 702]*  
Andres Coca, Roseli Romero and Liang Zhao
- 12:00PM *A SOM-based Multimodal System for Musical Query-by-Content [no. 82]*  
Kyle Dickerson and Dan Ventura
- 12:20PM *Identification of Key Music Symbols for Optical Music Recognition and On-Screen Presentation [no. 405]*  
Tatiana Tambouratzis

**Monday, August 1, 1:50PM-2:50PM**

**Plenary Talk Mo-Plen2: Chair: DeLiang Wang, Room: Oak**

**Neural Network ReNNaissance**

**Juergen Schmidhuber**  
IDSIA, Switzerland

**Monday, August 1, 3:20PM-5:20PM**

**Special Session Mo3-1: Emerging Neuromorphic Hardware: Architectures and Applications, Chair: Robinson Pino, Helen Li and Partha Dutta, Room: Cedar**

- 3:20PM *Reconfigurable N-Level Memristor Memory Design [no. 642]*  
Cory Merkel, Nakul Nagpal, Sindhura Mandalapu and Dhireesha Kudithipudi
- 3:40PM *A Columnar V1/V2 Visual Cortex Model and Emulation using a PS3 Cell-BE Array [no. 354]*  
Robinson Pino, Michael Moore, Jason Rogers and Qing Wu
- 4:00PM *Multiple Memristor Read and Write Circuit for Neuromorphic Applications [no. 548]*  
Chris Yakopcic, Tarek Taha, Guru Subramanyam and Stanley Rogers
- 4:20PM *An Event-Driven Model for the SpiNNaker Virtual Synaptic Channel [no. 411]*  
Alexander Rast, Francesco Galluppi, Sergio Davies, Luis Plana and Thomas Sharp
- 4:40PM *Review and Unification of Learning Framework in Cog Ex Machina Platform for Memristive Neuromorphic Hardware [no. 531]*  
Anatoli Gorchetchnikov, Massimiliano Versace, Heather Ames, Ben Chandler and Jasmin Leveille
- 5:00PM *Biologically Inspired Model for Crater Detection [no. 512]*  
Yang Mu, Wei Ding, Dacheng Tao and Tomasz Stepinski

**Session Mo3-2: Reinforcement Learning I, Chair: Georgios Anagnostopoulos, Room: Pine**

- 3:20PM *A Reversibility Analysis of Encoding Methods for Spiking Neural Networks [no. 382]*  
Cameron Johnson, Sinchan Roychowdhury and Ganesh-Kumar Venayagamoorthy
- 3:40PM *Residential Energy System Control and Management using Adaptive Dynamic Programming [no. 49]*  
Ting Huang and Derong Liu
- 4:00PM *A Neural Architecture to Address Reinforcement Learning Problems [no. 615]*  
Fernando Von Zuben and Rodrigo Arruda
- 4:20PM *An Improved Neural Architecture for Gaze Movement Control in Target Searching [no. 484]*  
Jun Miao, Lijuan Duan, Laiyun Qing and Yuanhua Qiao
- 4:40PM *Neural-Network-Based Optimal Control for a Class of Nonlinear Discrete-Time Systems With Control Constraints Using the Iterative GDHP Algorithm [no. 38]*  
Derong Liu, Ding Wang and Zhao Dongbin
- 5:00PM *Optimal Control for Discrete-Time Nonlinear Systems with Unfixed Initial State Using Adaptive Dynamic Programming [no. 39]*  
Qinglai Wei and Derong Liu

**Special Session Mo3-3: Brain-Mind Architectures and Learning Mechanisms, Chair: Juyang Weng and Asim Roy, Room: Oak**

Organized under the auspices of the **INNS Autonomous Machine Learning SIG**

- 3:20PM *The Schizophrenic Brain: A Broken Hermeneutic Circle. Some New Insights and Results [no. 633]*  
Peter Erdi, Mihaly Banyai, Vaibhav Diwadkar and Balazs Ujfalussy
- 3:40PM *A theory of the brain - the brain uses both distributed and localist (symbolic) representation [no. 68]*  
Asim Roy
- 4:00PM *Three Theorems: Brain-like Networks Logically Reason and Optimally Generalize [no. 626]*  
Juyang Weng
- 4:20PM *Mental Saccades in Control of Cognitive Process [no. 126]*  
Janusz Starzyk
- 4:40PM *CHARISMA: A Context Hierarchy-based Cognitive Architecture for Self-Motivated Social Agents [no. 399]*  
Matthew Conforth and Yan Meng
- 5:00PM *A Neural Model of Motor Synergies [no. 622]*  
Kiran Byadarhaly, Mithun Perdoor and Ali Minai

**Session Mo3-4: Bayesian Systems, Chair: Thomas Caudell, Room: Monterey**

- 3:20PM *Belief Function Model for Reliable Optimal Set Estimation of Transition Matrices in Discounted Infinite-Horizon Markov Decision Processes [no. 263]*  
Baohua Li and Jennie Si
- 3:40PM *Topic Model with Constrained Word Burstiness Intensities [no. 40]*  
Shaoze Lei, Jianwen Zhang, Shifeng Weng and Changshui Zhang
- 4:00PM *Phase diagrams of a variational Bayesian approach with ARD prior in NIRS-DOT [no. 271]*  
Atsushi Miyamoto, Kazuho Watanabe, Kazushi Ikeda and Masa-aki Sato
- 4:20PM *Triply Fuzzy Function Approximation for Bayesian Inference [no. 655]*  
Bart Kosko, Osonde Osoba and Sanya Mitaim
- 4:40PM *Simultaneous Learning of Several Bayesian and Mahalanobis Discriminant Functions by a Neural Network with Additional Nodes [no. 168]*  
Yoshifusa Ito, Hiroyuki Izumi and Cidambi Srinivasan

5:00PM *Turning Bayesian Model Averaging Into Bayesian Model Combination [no. 545]*  
Kristine Monteith, James Carroll, Kevin Seppi and Tony Martinez

**Session Mo3-5: Visualization, Chair: Ke Chen, Room: Carmel**

- 3:20PM *Quest for Efficient Option Pricing Prediction model using Machine Learning Techniques [no. 154]*  
B.V. Phani, Chandra Bala and Vijay Raghav
- 3:40PM *3D Modeling of Virtualized Reality Objects Using Neural Computing [no. 453]*  
Andres F. Serna-Morales, Flavio Prieto, Eduardo Bayro-Corrochano and Edgar N. Sanchez
- 4:00PM *CAVE-SOM: Immersive Visual Data Mining Using 3D Self-Organizing Maps [no. 509]*  
Dumidu Wijayasekara, Ondrej Linda and Milos Manic
- 4:20PM *Visualisation of Network Forensics Traffic Data with a Self-Organising Map for Qualitative Features [no. 367]*  
Esteban Jose Palomo, John North, David Elizondo, Rafael Marcos Luque and Tim Watson
- 4:40PM *Coupling Clustering and Visualization for Knowledge Discovery from Data [no. 443]*  
Guenael Cabanes and Younes Bennani
- 5:00PM *Accelerated Learning of Generalized Sammon Mappings [no. 621]*  
Yinjie Huang, Michael Georgiopoulos and Georgios Anagnostopoulos

**Session Mo3-6: Signal Processing in Biology and Engineering, Chair: Yoonsuck Choe, Room: Santa Clara**

- 3:20PM *Exploring Retrograde Signaling via Astrocytes as a Mechanism for Self Repair [no. 663]*  
John Wade, Liam McDaid, Jim Harkin, Vincenzo Crunelli, Scott Kelso and Valeriu Beiu
- 3:40PM *Evaluating dependence in spike train metric spaces [no. 542]*  
Sohan Seth, Austin Brockmeier, John Choi, Mulugeta Semework, Joseph Francis and Jose Principe
- 4:00PM *A Texture-based Method for Classifying Cracked Concrete Surfaces from Digital Images using Neural Networks [no. 540]*  
ZhiQiang Chen, Reza Derakhshani, Ceki Halmen and John Kevern
- 4:20PM *Versatile Neural Network Method for Recovering Shape from Shading by Model Inclusive Learning [no. 673]*  
Yasuaki Kuroe and Hajimu Kawakami
- 4:40PM *Text to Phoneme Alignment and Mapping for Speech Technology: A Neural Networks Approach [no. 150]*  
John Bullinaria
- 5:00PM *B-spline neural network based digital baseband predistorter solution using the inverse of De Boor algorithm [no. 34]*  
Xia Hong, Yu Gong and Sheng Chen

**Monday, August 1, 5:30PM-6:30PM**

**Special Session Mo4-1: Intelligent Embedded Systems, Chair: Manuel Roveri, Room: Cedar**

- 5:30PM *Embedded Power Quality Monitoring System based on Independent Component Analysis and SVMs [no. 462]*  
Marta Ruiz-Llata, Guillermo Guarnizo and Carlos Boya
- 5:50PM *Neural Classification of Infrasonic Signals Associated with Hazardous Volcanic Eruptions [no. 93]*  
Ajay Iyer, Fredric Ham and Milton Garces
- 6:10PM *A Hierarchical, Nonparametric, Sequential Change-Detection Test [no. 601]*  
Cesare Alippi, Giacomo Boracchi and Manuel Roveri

**Session Mo4-2: Reinforcement Learning II, Chair: Anthony Kuh, Room: Pine**

- 5:30PM *Direct Heuristic Dynamic Programming with Augmented States [no. 656]*  
Jian Sun, Feng Liu, Jennie Si and Shengwei Mei
- 5:50PM *Reinforcement Active Learning Hierarchical Loops [no. 631]*  
Goren Gordon and Ahissar Ehud
- 6:10PM *Connectionist Reinforcement Learning for Intelligent Unit Micro Management in StarCraft [no. 379]*  
Amirhosein Shantia, Eric Begue and Marco Wiering

**Special Session Mo4-3: Autonomous Learning of Object Representation and Control, Chair: Rolf Wurtz and Janusz Starzyk, Room: Oak**

Organized under the auspices of the **INNS Autonomous Machine Learning SIG**

- 5:30PM *An insect brain inspired neural model for object representation and expectation [no. 400]*  
Paolo Arena, Luca Patane' and Pietro Savio Termini
- 5:50PM *Autonomous learning of a human body model [no. 97]*  
Thomas Walther and Rolf P. Wurtz
- 6:10PM *Motivated Learning In Autonomous Systems [no. 145]*  
Pawel Raif and Janusz Starzyk

**Session Mo4-4: Cognitive Systems, Chair: Lokendra Shastri, Room: Monterey**

- 5:30PM *Recognition Model of Cerebral Cortex based on Approximate Belief Revision Algorithm [no. 102]*  
Yuuji Ichisugi
- 5:50PM *How the Core Theory of CLARION Captures Human Decision-Making [no. 59]*  
Sebastien Helie and Ron Sun
- 6:10PM *Interacting Maps for Fast Visual Interpretation [no. 174]*  
Matthew Cook, Luca Gugelmann, Florian Jug, Christoph Krautz and Angelika Steger

**Panel Session Mo4-5: Undergraduate Education in Cognitive Science and NN, Chair: Peter Erdi and Simona Doboli, Room: Carmel**

**Panelists:** Simona Doboli Péter Érdi, Daniel Levine, Irwin King, Aluizio F. R. Araujo and Robert Kozma

**Session Mo4-6: Neuromorphic Engineering, Chair: Eros Pasero, Room: Santa Clara**

- 5:30PM *Implementation of Signal Processing Tasks on Neuromorphic Hardware [no. 248]*  
Olivier Temam and Rodolphe Heliot
- 5:50PM *Pulse-Type Hardware Inhibitory Neural Networks for MEMS Micro Robot Using CMOS Technology [no. 337]*  
Ken Saito, Kazuto Okazaki, Kentaro Sakata, Tatsuya Ogiwara, Yoshifumi Sekine and Fumio Uchikoba
- 6:10PM *Memristor synaptic dynamics influence on synchronous behavior of two Hindmarsh-Rose neurons [no. 495]*  
Fernando Corinto, Alon Ascoli, Valentina Lanza and Marco Gilli

**Monday, August 1, 7:30PM-9:00PM****Poster Session Mo-PA: Poster Session A, Chair: Michael Georgiopoulos, Room: Bayshore Ballroom**

- P101 *Evaluating the Training Dynamics of a CMOS based Synapse [no. 256]*  
Arfan Ghani, Liam McDaid, Ammar Belatreche, Peter Kelly, Steve Hall, Tom Dowrick, Shou Huang, John Marsland and Andy Smith

- P102 *Stability analysis of neural plasticity rules for implementation on memristive neuromorphic hardware [no. 524]*  
Zlatko Vasilkoski, Heather Ames, Ben Chandler, Anatoli Gorchetchnikov, Jasmin Leveille, Gennady Livitz, Ennio Mingolla and Massimiliano Versace
- P103 *A Digital Implementation of the Nucleus Laminaris [no. 314]*  
Enrico Heinrich, Ralf Joost and Ralf Salomon
- P104 *Development of large-scale neural network hardware for practical applications [no. 680]*  
Iman Mohtashemi, Babak Azimi, Dimitri Kitariev and Charles Dickinson
- P105 *A Digital Bit Serial Dynamical System Implementation of a Silicon Neuron [no. 687]*  
Sharayu Kulkarni, Eric Basham and David W. Parent
- P106 *Memristor based brain-like computing system [no. 697]*  
Marius-Tudor Benea
- P107 *Object recognition and localization in a virtual animat: large-scale implementation in dense memristive memory devices [no. 458]*  
Jasmin Leveille, Heather Ames, Anatoli Gorchetchnikov, Ben Chandler and Massimiliano Versace
- P108 *Percolation in Memristive Networks [no. 567]*  
Giovanni E. Pazienza, Robert Kozma and Jordi Albo-Canals
- P109 *The Visually-Guided Adaptive Robot (ViGuAR) [no. 620]*  
Gennady Livitz, Heather Ames, Ben Chandler, Anatoli Gorchetchnikov and Jasmin Leveille
- P110 *Distributed Configuration of Massively-Parallel Simulation on SpiNNaker Neuromorphic Hardware [no. 243]*  
Thomas Sharp, Cameron Patterson and Steve Furber
- P111 *Neuroevolution of Hierarchical Nonlinearities in a Production Environment [no. 529]*  
Anya Getman, Side Zhao, Chenyao Chen, Chuck Rathke, Alex Morin and Clayton Wilson
- P112 *Short-Term Load Forecasting for Electrical Regional of a Distribution Utility Considering Temperature [no. 419]*  
Ronaldo Aquino, Aida Ferreira, Milde Lira, Otoni Nobrega Neto, Priscila Amorim, Carlos Diniz and Tatiana Silveira
- P113 *Hospital Foundation Actions: Neural Network Model Variable Importance [no. 451]*  
Mary Malliaris and Maria Pappas
- P114 *Toward Constructive Methods for Sigmoidal Neural Networks - Function Approximation in Engineering Mechanics Applications [no. 517]*  
Jin-Song Pei, Joseph Wright, Sami Masri, Eric Mai and Andrew Smyth
- P115 *A Novel Multilayer Neural Network Model for Heat Treatment of Electroless Ni-P Coatings [no. 640]*  
Sayed Yousef Monir Vaghefi and Sayed Mahmoud Monir Vaghefi
- P116 *Selecting Syntactic Attributes for Authorship Attribution [no. 58]*  
Paulo Varela, Edson Justino and Luiz Oliveira
- P117 *Melody Retrieval by Self-Organizing Map with Refractoriness which has Robustness for Fluctuation of Key Input [no. 285]*  
Akira Cho and Yuko Osana
- P118 *Chord Recognition Using Neural Networks Based on Particle Swarm Optimization [no. 182]*  
Cheng-Jian Lin, Chin-Ling Lee and Chun-Cheng Peng
- P119 *Stochastic Analysis of Smart Home User Activities [no. 25]*  
M. R. Alam, M. B. I. Reaz, M. A. M. Ali and F. H. Hashim
- P120 *Agent Teams and Evolutionary Computation: Optimizing Semi-Parametric Spatial Autoregressive Models [no. 77]*  
Tamas Krisztin and Matthias Koch

- P121 *Modeling the Young Modulus of Nanocomposites: A Neural Network Approach [no. 335]*  
Leandro Cupertino, Omar Vilela Neto, Marco Aurelio Pacheco, Marley Vellasco and Jose Roberto dAlmeida
- P122 *Modeling a System for Monitoring an Object Using Artificial Neural Networks and Reinforcement Learning [no. 482]*  
Helton Peixoto, Anthony Diniz, Nathalee Almeida, Jorge Melo, Ana Guerreiro and Adriaio Doria Neto
- P123 *Pattern Classifiers with Adaptive Distances [no. 321]*  
Telmo Silva Filho and Renata Souza
- P124 *A Fast Exact k-Nearest Neighbors Algorithm for High Dimensional Search Using k-Means Clustering and Triangle Inequality [no. 284]*  
Xueyi Wang
- P125 *A GPU based Parallel Hierarchical Fuzzy ART Clustering [no. 572]*  
Sejun Kim and Donald Wunsch II
- P126 *Online Parts-Based Feature Discovery using Competitive Activation Neural Networks [no. 315]*  
Lester Solbakken and Steffen Junge
- P127 *A New Algorithm for Graph Mining [no. 215]*  
Chandra Bala and Shalini Bhaskar
- P128 *Stochastic Artificial Neural Networks and Random Walks [no. 250]*  
Richard Windecker
- P129 *Semantic Knowledge Inference from Online News Media using an LDA-NLP Approach [no. 646]*  
Sarjoun Doumit and Ali Minai
- P130 *Noise Benefits in the Expectation-Maximization Algorithm: NEM Theorems and Models [no. 671]*  
Bart Kosko, Osonde Osoba and Sanya Mitaim
- P131 *Hidden Markov model estimation based on alpha-EM algorithm: Discrete and continuous alpha-HMMs [no. 180]*  
Yasuo Matsuyama
- P132 *Beyond Probabilistic Record Linkage: Using Neural Networks and Complex Features to Improve Genealogical Record Linkage [no. 23]*  
D. Randall Wilson
- P133 *A Novel Multilayer Neural Network Model for TOA-Based Localization in Wireless Sensor Networks [no. 648]*  
Sayed Yousef Monir Vaghefi and Reza Monir Vaghefi
- P134 *A Stochastic Model based on Neural Networks [no. 317]*  
Luciana Campos, Marley Vellasco and Juan Lazo
- P135 *A Fast Learning Algorithm with Promising Convergence Capability [no. 205]*  
Chi Chung Cheung, Sin-Chun Ng, Andrew K Lui and Sean Shensheng Xu
- P136 *Optimal Output Gain Algorithm for Feed-Forward Network Training [no. 533]*  
Babu Hemanth Kumar Aswathappa, Michael T. Manry and Rohit Rawat
- P137 *Random Sampler M-Estimator Algorithm for Robust Function Approximation via Feed-Forward Neural Networks [no. 660]*  
Moumen El-Melegy
- P138 *Analysis and Improvement of Multiple Optimal Learning Factors for Feed-Forward Networks [no. 530]*  
Praveen Jesudhas, Michael T. Manry and Rohit Rawat
- P139 *Proving the Efficacy of Complementary Inputs for Multilayer Neural Networks [no. 428]*  
Timothy Andersen
- P140 *A New Sensitivity-Based Pruning Technique for Feed-Forward Neural Networks That Improves Generalization [no. 445]*  
Iveta Mrazova and Zuzana Reitermanova

- P141 *Boundedness and Convergence of MPN for Cyclic and Almost Cyclic Learning with Penalty [no. 50]*  
Jian Wang, Wei Wu and Jacek Zurada
- P142 *PCA and Gaussian Noise in MLP Neural Network Training Improve Generalization in Problems with Small and Unbalanced Data Sets [no. 546]*  
Icamaan Silva and Paulo Adeodato
- P143 *Parameterized Online quasi-Newton Training for High-Nonlinearity Function Approximation using Multilayer Neural Networks [no. 571]*  
Hiroshi Ninomiya
- P144 *Towards a generalization of decompositional approach of rules extraction from Network [no. 328]*  
Norbert Tsopze, Engelbert Mephu Nguifo and Gilbert Tindo
- P145 *Experimental Studies with a Hybrid Model of Unsupervised Neural Networks [no. 353]*  
Sato Kazuhito, Madokoro Hirokazu, Otani Toshimitsu and Kadowaki Sakura
- P146 *A SOM combined with KNN for Classification Task [no. 488]*  
Leandro A. Silva and Emilio Del-Moral-Hernandez
- P147 *A Hybrid PCA-LDA Model for Dimesion Reduction [no. 452]*  
Zhao Nan, Mio Washington and Liu Xiuwen
- P148 *Hybrid Neural-Evolutionary Model for Electricity Price Forecasting [no. 666]*  
Dipti Srinivasan, Guofan Zhang, Abbas Khosravi, Saeid Nahavandi and Doug Creighton
- P149 *Evolving Clonal Adaptive Resonance Theory based on ECOS Theory [no. 425]*  
Jose Alexandrino, Cleber Zanchettin and Edson Carvalho Filho
- P150 *A Distributed, Bio-Inspired Coordination Strategy for Multiple Agent Systems Applied to Surveillance Tasks in Unknown Environments [no. 713]*  
Rodrigo Calvo, Janderson Oliveira, Mauricio Figueiredo and Roseli Romero
- P151 *Hybrid Learning Based on Multiple Self-organizing Maps and Genetic Algorithm [no. 480]*  
Qiao Cai, Haibo He and Hong Man
- P152 *Forecasting Time Series with a Logarithmic Model for the Polynomial Artificial Neural Networks [no. 560]*  
Carlos Luna, Eduardo Gomez-Ramirez, Kaddour Najim and Enso Ikonen
- P153 *Ensemble of Perceptrons with Confidence Measure for Piecewise Linear Decomposition [no. 153]*  
Pitoyo Hartono
- P154 *A Method For Dynamic Ensemble Selection Based on a Filter and an Adaptive Distance to Improve the Quality of the Regions of Competence [no. 249]*  
Rafael Cruz, George Cavalcanti and Tsang Ren
- P155 *Ensemble Classifier Composition: Impact on Feature Based Offline Cursive Character Recognition [no. 179]*  
Ashfaqr Rahman and Brijesh Verma
- P156 *Probabilistic Self-Organizing Maps for Multivariate Sequences [no. 186]*  
Rakia Jaziri, Mustapha Lebbah, Nicoleta Rogovschi and Younes Bennani
- P157 *Combining Different Ways to Generate Diversity in Bagging Models: An Evolutionary Approach [no. 463]*  
Diego Silveira Costa Nascimento, Anne Magaly de Paula Canuto, Ligia Maria Moura e Silva and Andre Luis Vasconcelos Coelho
- P158 *Information Coding with Neural Ensembles for a Mobile Robot [no. 183]*  
Daniel Calderon, Tatiana Baidyk and Ernst Kussul
- P159 *Comparison of Neural Networks-based ANARX and NARX Models by application of correlation tests [no. 439]*  
Sven Nomm and Ulle Kotta

- P160 *An Online Actor-Critic Learning Approach with Levenberg-Marquardt Algorithm [no. 483]*  
Zhen Ni, Haibo He, Prokhorov Danil and Fu Jian
- P161 *Development of a Mix-Design Based Rapid Chloride Permeability Assessment Model Using Neurons [no. 566]*  
Hakan Yasarer and Yacoub Najjar
- P162 *Hierarchical Discriminative Sparse Coding via Bidirectional Connections [no. 586]*  
Zhengping Ji, Wentao Huang, Garrett Kenyon and Luis Bettencourt
- P163 *Lag Selection for Time Series Forecasting using Particle Swarm Optimization [no. 501]*  
Gustavo Ribeiro, Paulo Neto, George Cavalcanti and Ing Ren Tsang
- P164 *Metamodeling for Large-Scale Optimization Tasks Based on Object Networks [no. 605]*  
Ludmilla Werbos, Robert Kozma, Rodrigo Silva-Lugo, Giovanni E. Paziienza and Paul Werbos
- P165 *A weighted image reconstruction based on PCA for pedestrian detection [no. 420]*  
Guilherme Carvalho, Lailson Moraes, George Cavalcanti and Ing Ren Tsang
- P166 *Partitioning Methods used in DBS Treatments Analysis Results - paper upload [no. 378]*  
Oana Geman and Cornel Turcu
- P167 *A Tool to Implement Probabilistic Automata in RAM-based Neural Networks [no. 232]*  
Marcilio de Souto
- P168 *Global Stability Analysis Using the Method of Reduction of Dissipativity Domain [no. 522]*  
Reza Jafari and Martin Hagan
- P169 *Decentralized Neural Block Control for an Industrial PA10-7CE Robot Arm [no. 575]*  
Ramon Garcia, Edgar Sanchez, Victor Santibanez and Jose Antonio Ruz
- P170 *Object Permanence: Growing Humanoid Robot through the Human Cognitive Development Stages [no. 117]*  
Jun-Cheol Park, Seungkyu Nam and Dae-Shik Kim
- P171 *Image Segmentation Based on Local Spectral Histograms and Linear Regression [no. 124]*  
Jiangye Yuan, DeLiang Wang and Rongxing Li
- P172 *Power Wind Mill Fault Detection via one-class nu-SVM Vibration Signal Analysis [no. 130]*  
David Martinez-Rego, Oscar Fontenla-Romero and Amparo Alonso-Betanzos
- P173 *Improved Image Super-Resolution by Support Vector Regression [no. 161]*  
Le An and Bir Bhanu
- P174 *A Statistical Parametric Method for the Extraction of Stimulus Dependent Activity from Intrinsic Optical Signals [no. 204]*  
Gang Wang, Katsutoshi Miyahara and Masaru Kuroiwa
- P175 *Realizing Video Time Decoding Machines with Recurrent Neural Networks [no. 223]*  
Aurel A. Lazar and Yiyin Zhou
- P176 *Blind Signal Separation in Distributed Space-Time Coding Systems Using the FastICA Algorithm [no. 614]*  
Xianxue Fan, Jorge Igual, Raul Llinares, Addisson Salazar and Gang Wu
- P177 *The Role of Orientation Diversity in Binocular Vergence Control [no. 471]*  
Chao Qu and Bertram Shi
- P178 *PAC learnability versus VC dimension: a footnote to a basic result of statistical learning [no. 251]*  
Vladimir Pestov
- P179 *Instance Selection Algorithm based on a Ranking Procedure [no. 496]*  
Cristiano Pereira and George Cavalcanti
- P180 *Learning to Rank Relational Objects Based on the Listwise Approach [no. 384]*  
Yuxin Ding, Di Zhou, Min Xiao and Li Dong
- P181 *Fast AdaBoost Training using Weighted Novelty Selection [no. 273]*  
Mojtaba Seyedhosseini, Antonio Paiva and Tolga Tasdizen
- P182 *Multiple Distribution Data Description Learning Method for Novelty Detection [no. 481]*  
Trung Le, Dat Tran, Phuoc Nguyen, Wanli Ma and Dharmendra Sharma

- P183 *Weight of evidence as a tool for attribute transformation in the preprocessing stage of supervised learning algorithms [no. 60]*  
Eftim Zdravevski, Petre Lameski and Andrea Kulakov
- P184 *On Improving Trust-Region Variable Projection Algorithms for Separable Nonlinear Least Squares Learning [no. 107]*  
Eiji Mizutani and James Demmel
- P185 *ITR-Score Algorithm: a New Efficient Trace Ratio Criterion based Algorithm for Supervised Dimensionality Reduction [no. 53]*  
Mingbo Zhao, Zhao Zhang and Tommy W.S. Chow
- P186 *Supervised Link Prediction in Weighted Networks [no. 473]*  
Hially Sa and Ricardo Prudencio
- P187 *Variations to incremental growing neural gas algorithm based on label maximization [no. 209]*  
Jean-Charles Lamirel, Raghendra Mall, Pascal Cuxac and Ghada Safi
- P188 *Robust Locally Linear Embedding using Penalty Functions [no. 477]*  
Manda Winlaw, Leila Samimi Dehkordy and Ali Ghodsi
- P189 *On the Clustering of Large-scale Data: A Matrix-based Approach [no. 52]*  
Lijun Wang and Ming Dong
- P190 *A Fast Optimized Semi-Supervised Non-Negative Matrix Factorization Algorithm [no. 514]*  
Noel Lopes and Bernardete Ribeiro
- P191 *Density and Neighbor Adaptive Information Theoretic Clustering [no. 72]*  
Baoyuan Wu and Baogang Hu
- P192 *Entropy Penalized Learning for Gaussian Mixture Models [no. 429]*  
Boyu Wang, Feng Wan, Peng Un Mak, Pui In Mak and Mang I Vai
- P193 *Model-based clustering with Hidden Markov Model regression for time series with regime changes [no. 579]*  
Chamroukhi Faicel, Same Allou, Aknin Patrice and Govaert Gerard
- P194 *Tangent Space Guided Intelligent Neighbor Finding [no. 535]*  
Michael Gashler and Tony Martinez
- P195 *Controlled Consensus Time for Community Detection in Complex Networks [no. 85]*  
Jean Huertas and Liang Zhao
- P196 *New Approaches for Solving Permutation Indeterminacy and Scaling Ambiguity in Frequency Domain Separation of Convolved Mixtures [no. 201]*  
Zhitang Chen and Laiwan Chan
- P197 *On the Structure of Algorithm Spaces [no. 155]*  
Adam Peterson, Tony Martinez and George Rudolph
- P198 *Feature selection of pathway markers for microarray-based disease classification using negatively correlated feature sets [no. 725]*  
Jonathan Chan, Pitak Sootanan and Ponlavit Larpeampaisarl

## **Tuesday, August 2, 8:00AM-9:00AM**

**Plenary Talk Tu-Plen1: Chair: Peter Erdi, Room: Oak**

### ***Brains, Machines and Buildings***

**Michael Arbib**

University of Southern California, USA

*This talk is part of the NSF-sponsored symposium: **From Brains to Machines***

## Tuesday, August 2, 9:30AM-11:30AM

### Special Session Tu1-1: Computational Intelligence in Patient Care, Chair: Jim DeLeo and Adam Gaweda, Room: Cedar

- 9:30AM *Spectral decomposition methods for the analysis of MRS information from human brain tumors [no. 722]*  
Sandra Ortega-Martorell, Alfredo Vellido, Paulo J.G. Lisboa, Margarida Julia-Sape and Carles Arus
- 9:50AM *PLANN-CR-ARD model predictions and Non-parametric estimates with Confidence Intervals [no. 327]*  
Arsene Corneliu and Lisboa Paulo
- 10:10AM *Magnetic Resonance Estimation of Longitudinal Relaxation Time (T1) in Spoiled Gradient Echo Using an Adaptive Neural Network [no. 523]*  
Hassan Bagher-Ebadian, Rajan Jain, Ramesh Paudyal, Siamak Nejad-Davarani, Jayant Narang, Quan Jiang, Tom Mikkelsen and James Ewing
- 10:30AM *Optimizing Drug Therapy with Reinforcement Learning: The Case of Anemia Management [no. 433]*  
Jordan Malof and Adam Gaweda
- 10:50AM *Alzheimer's Disease Detection Using A Self-adaptive Resource Allocation Network Classifier [no. 404]*  
Mahanand B. S., Suresh S., Sundararajan N. and Aswatha Kumar M.
- 11:10AM *Neural Model of Blood Glucose Level for Type 1 Diabetes Mellitus Patients [no. 422]*  
Alma Y. Alanis, Edgar N. Sanchez, Eduardo Ruiz-Velazquez and Blanca S. Leon

### Session Tu1-2: Self Organization, Chair: Emilio Del Moral Hernandez, Room: Pine

- 9:30AM *BSOM network for pupil segmentation [no. 555]*  
Gabriel Vasconcelos, Carlos Bastos, Ing Ren Tsang and George Cavalcanti
- 9:50AM *A Self-Organizing Neural Scheme for Road Detection in Varied Environments [no. 643]*  
Usman Ali Malik, Syed Usman Ahmed and Faraz Kunwar
- 10:10AM *A Batch Self-Organizing Maps Algorithm Based on Adaptive Distances [no. 475]*  
Luciano D. S. Pacifico and Francisco de A. T. De Carvalho
- 10:30AM *Magnification in divergence based neural maps [no. 113]*  
Thomas Villmann and Sven Haase
- 10:50AM *Cooperation Control and Enhanced Class structure in Self-Organizing Maps [no. 160]*  
Ryotaro Kamimura
- 11:10AM *Fast Online Incremental Transfer Learning for Unseen Object Classification Using Self-Organizing Incremental Neural Networks [no. 170]*  
Aram Kawewong, Sirinart Tangruamsub, Pichai Kankuekul and Osamu Hasegawa

### Special Track Tu1-3: From Brains to Machines I, Chair: Steven Bressler, Room: Oak

*This session is part of the NSF-sponsored symposium: **From Brains to Machines.***

- 9:30AM *Neural networks underlying top-down enhancement and suppression of visual processing*  
Adam Gazzaley (Invited Talk)
- 10:10AM *The effects of aging on functional connectivity during cognitive tasks and at rest*  
Cheryl Grady (Invited Talk)
- 10:50AM *New insights into the cortical neural substrate for goal-directed cognitive control*  
Jennie Si (Invited Talk)

### Session Tu1-4: Kernel Methods and SVM I, Chair: David Casasent, Room: Monterey

- 9:30AM *Out-of-Sample Eigenvectors in Kernel Spectral Clustering [no. 485]*  
Carlos Alzate and Johan A.K. Suykens

- 9:50AM *Multi-task Beta Process Sparse Kernel Machines [no. 54]*  
Junbin Gao
- 10:10AM *In-sample Model Selection for Support Vector Machines [no. 255]*  
Davide Anguita, Alessandro Ghio, Luca Oneto and Sandro Ridella
- 10:30AM *Kernel Principal Subspace Mahalanobis Distances for Outlier Detection [no. 519]*  
Cong Li, Michael Georgiopoulos and Georgios Anagnostopoulos
- 10:50AM *Kernel Adaptive Filtering with Maximum Correntropy Criterion [no. 421]*  
Songlin Zhao, Badong Chen and Jose Principe
- 11:10AM *Parallel Semiparametric Support Vector Machines [no. 123]*  
Roberto Diaz-Morales, Harold Y. Molina-Bulla and Angel Navia-Vazquez

**Special Session Tu1-5: Consciousness-Driven Vision: Toward a Breakthrough in Bio-Inspired Computer Vision, Chair: Chao-Hui Huang and Daniel Racoceanu, Room: Carmel**

- 9:30AM *Consciousness-driven Model for Visual Attention [no. 233]*  
Pierre Cagnac, Noel Di Noia, Chao-Hui Huang, Daniel Racoceanu and Laurent Chaudron
- 9:50AM *A Neurophysiologically Inspired Hippocampus Based Associative-ART Artificial Neural Network Architecture [no. 437]*  
Craig Vineyard, Stephen Verzi, Michael Bernard, Shawn Taylor and Wendy Shaneyfelt
- 10:10AM *Where-What Network 5: Dealing with Scales for Objects in Complex Backgrounds [no. 576]*  
Xiaoying Song, Wenqiang Zhang and Juyang Weng
- 10:30AM *A Hybrid System with What-Where-Memory for Multi-Object Recognition [no. 396]*  
Yuhua Zheng and Yan Meng
- 10:50AM *ECoG Patterns in short-term (STM) vs. long-term (LTM) Memory Formation [no. 61]*  
Walter J Freeman
- 11:10AM *The temporality of consciousness: computational principles of a single Information Integration-Propagation Process (I2P2) [no. 369]*  
Jean-Christophe Sarrazin, Vanessa Gonzalez, Bruno Berberian and Arnaud Tonnelier

**Session Tu1-6: Feed-Forward Networks, Chair: Seiichi Ozawa, Room: Santa Clara**

- 9:30AM *RANSAC Algorithm with Sequential Probability Ratio Test for Robust Training of Feed-Forward Neural Networks [no. 714]*  
Moumen El-Melegy
- 9:50AM *Advances on Criteria for Biological Plausibility in Artificial Neural Networks: Think of Learning Processes [no. 303]*  
Alberione Silva and Joao Luis Rosa
- 10:10AM *Efficient Levenberg-Marquardt Minimization of the Cross-Entropy Error Function [no. 21]*  
Amar Saric (Sarich) and Jing Xiao
- 10:30AM *Learning Algorithms for a Specific Configuration of the Quantron [no. 140]*  
Simon de Montigny and Richard Labib
- 10:50AM *Optimizing The Quality of Bootstrap-based Prediction Intervals [no. 647]*  
Abbas Khosravi, Saeid Nahavandi, Doug Creighton and Dipti Srinivasan
- 11:10AM *The impact of preprocessing on forecasting electrical load: an empirical evaluation of segmenting time series into subseries [no. 723]*  
Sven F. Crone and Nikolaos Kourentzes

**Tuesday, August 2, 11:40AM-12:40PM**

**Special Session Tu2-1: Automated Supervised and Unsupervised Learning, Chair: Nistor Grozavu and Shogo Okada, Room: Cedar**

Organized under the auspices of the **INNS Autonomous Machine Learning SIG**

- 11:40AM *Training a network of mobile neurons [no. 356]*  
Bruno Apolloni, Simone Bassis and Lorenzo Valerio
- 12:00PM *Incremental 2-Directional 2-Dimensional Linear Discriminant Analysis for Multitask Pattern Recognition [no. 606]*  
Chunyu Liu, Young-Min Jang, Seiichi Ozawa and Minhoo Lee
- 12:20PM *Online Incremental Clustering with Distance Metric Learning for High Dimensional Data [no. 426]*  
Okada Shogo and Nishida Toyoaki

**Session Tu2-2: Deep Learning, Chair: Marley Vellasco, Room: Pine**

- 11:40AM *Modular Deep Belief Networks that do not Forget [no. 260]*  
Leo Pape, Faustino Gomez, Mark Ring and Juergen Schmidhuber
- 12:00PM *Scalable Low-Power Deep Machine Learning with Analog Computation [no. 200]*  
Itamar Arel and Holleman Jeremy
- 12:20PM *Exploring Speaker-Specific Characteristics with Deep Learning [no. 47]*  
Ahmad Salman and Ke Chen

**Special Track Tu2-3: From Brains to Machines I (cont.), Chair: Steven Bressler, Room: Oak**

*This session is part of the NSF-sponsored symposium: **From Brains to Machines.***

- 11:40AM *Dynamical functional organization of the human brain*  
Vinod Menon (Invited Talk)
- 12:20PM *Discussion - Part I*  
Michael Arbib, Adam Gazzaley, Cheryl Grady, Vinod Menon and Jennie Si

**Session Tu2-4: Information Retrieval, Chair: Irwin King, Room: Monterey**

- 11:40AM *Unified Perception-Prediction Model for Context Aware Text Recognition on a Heterogeneous Many-Core Platform [no. 362]*  
Qinru Qiu, Qing Wu and Richard Linderman
- 12:00PM *Improving Question Retrieval in Community Question Answering [no. 96]*  
Wei Wang, Baichuan Li and Irwin King
- 12:20PM *Cell Assemblies for Query Expansion in Information Retrieval [no. 138]*  
Isabel Volpe, Viviane P. Moreira and Christian Huyck

**Special Session Tu2-5: Biologically Inspired Computational Vision, Chair: Khan Iftekharuddin, Room: Carmel**

- 11:40AM *Modeling Dopamine and Serotonin Systems in a Visual Recognition Network [no. 632]*  
Stephen Paslaski, Courtland VanDam and Juyang Weng
- 12:00PM *Image Compression based on Growing Hierarchical Self-Organizing Maps [no. 345]*  
Esteban J. Palomo and Enrique Dominguez
- 12:20PM *GPGPU Acceleration of Cellular Simultaneous Recurrent Networks Adapted for Maze Traversals [no. 558]*  
Kenneth Rice, Tarek Taha, Khan Iftekharuddin, Keith Anderson and Teddy Salan

**Session Tu2-6: Evolutionary Learning, Chair: Carlo Francesco Morabito, Room: Santa Clara**

- 11:40AM *A Self-Organizing Neural Network Using Hierarchical Particle Swarm Optimization [no. 181]*  
Cheng-Jian Lin, Chin-Ling Lee and Chun-Cheng Peng
- 12:00PM *Modularity Adaptation in Cooperative Coevolution of Feedforward Neural Networks [no. 158]*  
Rohitash Chandra, Marcus Frean and Mengjie Zhang
- 12:20PM *Automatic Design of Neural Networks with L-Systems and Genetic Algorithms - A Biologically Inspired Methodology [no. 261]*  
Lidio Campos, Mauro Roisenberg and Roberto Oliveira

## Tuesday, August 2, 1:50PM-2:50PM

**Plenary Talk Tu-Plen2: Chair: Jose Principe, Room: Oak**

**Cognitive Computing: Neuroscience, Supercomputing, Nanotechnology**

**Dharmendra Modha**

IBM Almaden Research Center, USA

*This talk is part of the NSF-sponsored symposium: **From Brains to Machines***

## Tuesday, August 2, 3:20PM-5:20PM

**Special Session Tu3-1: Smart Grid and Energy Applications I, Chair: Ganesh K. Venayagamoorthy and Lingfeng Wang, Room: Cedar**

- 3:20PM *Characterization and Modeling of a Grid-Connected Photovoltaic System Using a Recurrent Neural Network [no. 371]*  
Daniel Riley and Ganesh Venayagamoorthy
- 3:40PM *Real-time State Estimation on Micro-grids [no. 300]*  
Ying Hu, Anthony Kuh, Aleksandar Kavcic and Dora Nakafuji
- 4:00PM *Optimal Operation via a Recurrent Neural Network of a Wind- Solar Energy System [no. 460]*  
Manuel Gamez, Edgar Sanchez and Luis Ricalde
- 4:20PM *Widely Linear Adaptive Frequency Estimation In Three-Phase Power Systems Under Unbalanced Voltage Sag Conditions [no. 360]*  
Yili Xia, Scott Douglas and Danilo Mandic
- 4:40PM *Inferring Cascading Network-Power Disruptions and Sustainability [no. 645]*  
Supaporn Erjongmanee, Chuanyi Ji and James Momoh
- 5:00PM *Composite Power System Reliability Evaluation Using Support Vector Machines on a Multicore Platform [no. 528]*  
Robert Green II, Lingfeng Wang and Mansoor Alam

**Session Tu3-2: Fuzzy Methods, Chair: Carlo Francesco Morabito, Room: Pine**

- 3:20PM *Traffic Flow Breakdown Prediction using Feature Reduction through Rough-Neuro Fuzzy Networks [no. 407]*  
Carlos Affonso, Renato Sassi and Ricardo Ferreira
- 3:40PM *A Sequential Learning Algorithm for Meta-Cognitive Neuro-Fuzzy Inference System for Classification Problems [no. 516]*  
Suresh Sundaram and Kartick Subramanian
- 4:00PM *Guided fuzzy clustering with multi-prototypes [no. 499]*  
Shenglan Ben, Zhong Jin and Jingyu Yang
- 4:20PM *Adaptive Neuro-Fuzzy Control of Dynamical Systems [no. 557]*  
Alok Kanti Deb and Alok Juyal
- 4:40PM *A Rough-Fuzzy Hybrid Approach on a Neuro-Fuzzy Classifier for High Dimensional Data [no. 570]*  
Chang Su Lee
- 5:00PM *Neuro-fuzzy Dynamic Pole Placement Control of Nonlinear Discrete-time Systems [no. 330]*  
Juri Belikov and Eduard Petlenkov

**Special Track Tu3-3: From Brains to Machines II, Chair: Steven Bressler, Room: Oak**

*This session is part of the NSF-sponsored symposium: **From Brains to Machines***

- 3:20PM *Neural adaptations to a brain-machine interface*  
Jose Carmena (Invited Talk)

- 4:00PM *Cyborg Beetles: Building Interfaces Between Synthetic and Multicellular*  
Michel Maharbiz (Invited Talk)
- 4:40PM *Biomimetic Models and Microelectronics for Neural Prosthetic Devices that Support Memory Systems of the Brain*  
Theodore Berger (Invited Talk)

**Session Tu3-4: Kernel Methods and SVM II, Chair: Vladimir Cherkassky, Room: Monterey**

- 3:20PM *An Outpost Vector Placement Evaluation of an Incremental Learning Algorithm for Support Vector Machine [no. 76]*  
Piyabute Fuangkhn and Thitipong Tanprasert
- 3:40PM *Extended Kalman Filter Using a Kernel Recursive Least Squares Observer [no. 304]*  
Pingping Zhu, Badong Chen and Jose Principe
- 4:00PM *Adaptive Tree Kernel by Multinomial Generative Topographic Mapping [no. 352]*  
Davide Bacciu, Alessio Micheli and Alessandro Sperduti
- 4:20PM *Momentum Sequential Minimal Optimization: an Accelerated Method for Support Vector Machine training [no. 99]*  
Alvaro Barbero and Jose R. Dorronsoro
- 4:40PM *Nonlinear Extension of Multiobjective Multiclass Support Vector Machine Based on the One-against-all Method [no. 329]*  
Keiji Tatsumi, Masato Tai and Tetsuzo Tanino
- 5:00PM *Convergence of Algorithms for Solving the Nearest Point Problem in Reduced Convex Hulls [no. 109]*  
Jorge Lopez and Jose R. Dorronsoro

**Special Session Tu3-5: Competition: Machine Learning for Traffic Sign Recognition, Chair: Johannes Stallkamp, Room: Carmel**

- 3:20PM *The German Traffic Sign Recognition Benchmark: A multi-class classification competition [no. 312]*  
Johannes Stallkamp, Marc Schlipsing, Jan Salmen and Christian Igel
- 3:40PM *Traffic Sign Classification using K-d trees and Random Forests [no. 446]*  
Fatin Zaklouta, Bogdan Stanculescu and Omar Hamdoun
- 4:00PM *Traffic Sign Recognition with Multi-Scale Convolutional Networks [no. 578]*  
Pierre Sermanet and Yann Lecun
- 4:20PM *A Committee of Neural Networks for Traffic Sign Classification [no. 402]*  
Dan Cirestan, Ueli Meier, Jonathan Masci and Juergen Schmidhuber
- 4:40PM *Real-time competition results and awards*

**Session Tu3-6: Applications I, Chair: Leonid Perlovsky, Room: Santa Clara**

- 3:20PM *Learning Random Subspace Novelty Detection Filters [no. 472]*  
Fatma Hamdi and Younes Bennani
- 3:40PM *The Application of Evolutionary Neural Network for Bat Echolocation Call Recognition [no. 246]*  
Golrokh Mirzaei, Mohammad Wadood Majid, Mohsin Jamali, Jeremy Ross and Joseph Frizado
- 4:00PM *Neural Network Estimation of Photovoltaic I-V Curves under Partially Shaded Conditions [no. 295]*  
Jacques Dolan, Ritchie Lee, Yoo-Hsiu Yeh, Chiping Yeh, Daniel Nguyen, Ben-Menehem Shahr and Ishihara Abraham
- 4:20PM *Gradient-based Morphological Approach for Software Development Cost Estimation [no. 143]*  
Ricardo Araujo, Adriano Oliveira, Sergio Soares and Silvio Meira
- 4:40PM *Yearly and Seasonal Models for Electricity Load Forecasting [no. 316]*  
Irena Koprinska, Mashud Rana and Vassilios Agelidis
- 5:00PM *A MLP-SVM Hybrid Model for Cursive Handwriting Recognition [no. 185]*  
Washington Azevedo and Cleber Zanchettin

## Tuesday, August 2, 5:30PM-6:30PM

### Special Session Tu4-1: Smart Grid and Energy Applications II, Chair: Danilo Mandic and Lingfeng Wang, Room: Cedar

- 5:30PM *Back to Basics: Operationalizing Data Mining and Visualization Techniques for Utilities* [no. 651]  
Dora Nakafuji, Thomas Aukai, Lisa Dangelmaier, Chris Reynolds, Jennifer Yoshimura and Ying Hu
- 5:50PM *Neural Network Identification for Biomass Gasification Kinetic Model* [no. 398]  
Rocio Carrasco, Edgar Sanchez and Salvador Carlos-Hernandez
- 6:10PM *Application of Neural Networks in the Classification of Incipient Faults in Power Transformers: A Study of Case* [no. 653]  
Luciana Castanheira, Joao Vasconcelos, Agnaldo Reis, Paulo Magalhaes and Savio Silva

### Session Tu4-2: Radial Basis Functions, Chair: Alessandro Sperduti, Room: Pine

- 5:30PM *Selective Adjustment of Rotationally-Asymmetric Neuron Sigma-Widths* [no. 309]  
Nathan Rose
- 5:50PM *An Improved Geometric Radial Basis Function Network for Hand-Eye Calibration* [no. 286]  
Eduardo Vazquez-Santacruz and Eduardo Bayro-Corrochano
- 6:10PM *Radial Basis Function Network for Well Log Data Inversion* [no. 239]  
Kou-Yuan Huang, Liang-Chi Shen and Li-Sheng Weng

### Special Track Tu4-3: From Brains to Machines II (cont.), Chair: Steven Bressler, Room: Oak

*This session is part of the NSF-sponsored symposium: **From Brains to Machines***

- 5:30PM *How to Work Towards a Mathematical Understanding of the Brain*  
Dileep George (Invited Talk)
- 6:10PM *Discussion - Part II*  
Theodore Berger, Jose Carmena, Dileep George, Michel Maharbiz and Dharmendra Modha

### Session Tu4-4: Information Theoretic Methods, Chair: Bruno Apolloni, Room: Monterey

- 5:30PM *A Nonparametric Information Theoretic Approach for Change Detection in Time Series* [no. 281]  
Songlin Zhao and Jose Principe
- 5:50PM *Adaptive Background Estimation using an Information Theoretic Cost for Hidden State Estimation* [no. 125]  
Goktug Cinar and Jose Principe
- 6:10PM *Closed-form Cauchy-Schwarz pdf Divergence for Mixture of Gaussians* [no. 526]  
Kittipat Kampa, Erion Hasanbelliu and Jose Principe

### Special Session Tu4-5: Computational Intelligence Research in Driver Fatigue and Distraction, Chair: Dev Kochhar and Mahmoud Abou-Nasr, Room: Carmel

- 5:30PM *Genetic Feature Selection in EEG-Based Motion Sickness Estimation* [no. 98]  
Chun-Shu Wei, Li-Wei Ko, Shang-Wen Chuang, Tzyy-Ping Jung and Chin-Teng Lin
- 5:50PM *EEG-based Brain Dynamics of Driving Distraction* [no. 319]  
Chin-Teng Lin, Shi-An Chen, Li-Wei Ko and Yu-Kai Wang
- 6:10PM *Audio Visual Cues in Driver Affect Characterization: Issues and Challenges in Developing Robust Approaches* [no. 628]  
Ashish Tawari and Mohan Trivedi

### Session Tu4-6: Classification, Chair: Marley Vellasco, Room: Santa Clara

- 5:30PM *Incremental Object Classification Using Hierarchical Generative Gaussian Mixture and Topology Based Feature Representation* [no. 203]  
Sungmoon Jeong and Minho Lee

- 5:50PM *Multinomial Squared Direction Cosines Regression [no. 634]*  
Naveed Iqbal and Georgios Anagnostopoulos
- 6:10PM *Online-Learned Classifiers for Robust Multitarget Tracking [no. 279]*  
Shuqing Zeng and Yanhua Chen

## Tuesday, August 2, 7:30PM-9:00PM

### Poster Session Tu-PB: Poster Session B, Chair: Cesare Alippi, Room: Bayshore Ballroom

- P301 *Synapse Maintenance in the Where-What Network [no. 580]*  
Yuekai Wang, Xiaofeng Wu and Juyang Weng
- P302 *Learning confidence exchange in Collaborative Clustering [no. 190]*  
Nistor Grozavu, Mohamad Ghassany and Younes Bennani
- P303 *Neuromorphic Motivated Systems [no. 607]*  
James Daly, Jacob Brown and Juyang Weng
- P304 *A Solution to Harmonic Frequency Problem: Frequency and Phase Coding-Based Brain-Computer Interface [no. 440]*  
Chi Man Wong, Boyu Wang, Feng Wan, Peng Un Mak, Pui In Mak and Mang I Vai
- P305 *An Improved BCI Paradigm of Motor Imagery for Real-Time Dynamic System Control [no. 694]*  
Jun Jiang, Jingwei Yue, Nan Zhang, Zongtan Zhou and Dewen Hu
- P306 *A brain-computer interface (BCI) using two components of event-related potentials: P300 and transient visual evoked potential [no. 695]*  
Xianpeng Meng, Ming Zhang, Yu Ge, Zongtan Zhou and Dewen Hu
- P307 *Semi-supervised feature extraction with local temporal regularization for EEG Classification [no. 42]*  
Wenting Tu and Shiliang Sun
- P308 *Performance and Features of Multi-Layer Perceptron with Impulse Glial Network [no. 520]*  
Chihiro Ikuta, Yoko Uwate and Yoshifumi Nishio
- P309 *Autoassociative Pyramidal Neural Network for Face Verification [no. 338]*  
Bruno Fernandes, George Cavalcanti and Tsang Ren
- P310 *Nomen Meum Earl : Teaching Machines to Imitate [no. 90]*  
Chris Lanz
- P311 *Cooperation between reinforcement and procedural learning in the basal ganglia [no. 187]*  
Nishal Shah and Frederic Alexandre
- P312 *Multiple Declarative Memory Systems: Classification with Machine Learning Techniques [no. 373]*  
Asaf Gilboa, Hananel Hazan, Ester Koilis, Larry Manevitz and Tali Sharon
- P313 *Categorization by Competitive Learning Networks with Spiking Neurons: Design Rules for Converting Rate into Spiking Neural Networks [no. 133]*  
Suhas E. Chelian, Narayan Srinivasa, Gail A. Carpenter and Stephen Grossberg
- P314 *Pattern Separation with Polychronous Spiking [no. 476]*  
Rajan Bhattacharyya, Larry M. Kite and Michael J. Daily
- P315 *Learning sameness is difficult for Simple Recurrent networks: an exploration using TLU networks [no. 177]*  
Juan Valle-Lisboa
- P316 *Modeling Knowledge Representation in Neuronal Networks [no. 701]*  
Garrett Evans and John Collins
- P317 *How do little hippocampal neurons learn to code big spaces? Coordinated learning of entorhinal grid cells and hippocampal place cells [no. 116]*  
Praveen Pilly and Stephen Grossberg
- P318 *Dynamic of Neural Plasticity in a Brain Control Task, Prediction from Modeling. [no. 500]*  
Frederic Simard and Sam Musallam

- P319 *An Improved Architecture for Probabilistic Neural Networks [no. 202]*  
Bala Chandra and Venkata Naresh Babu Kuppili
- P320 *Utilizing Hubel Wiesel Models for Semantic Associations and Topics Extraction from Unstructured Text [no. 196]*  
Sandeep Tiwari and Kiruthika Ramanathan
- P321 *A Novel Neural Network Inspired from Neuroendocrine-Immune System [no. 492]*  
Bao Liu, Junhong Wang and Huachao Qu
- P322 *Chaotic Complex-valued Multidirectional Associative Memory with Variable Scaling Factor --- One-to-Many Association Ability --- [no. 282]*  
Akio Yoshida and Yuko Osana
- P323 *A Multi-state Model of Cortical Memory [no. 51]*  
Jean-Philippe Thivierge, Frederic Dandurand and Denis Cousineau
- P324 *A Hubel Wiesel Model of Early Concept Generalization Based on Local Correlation of Input Features [no. 165]*  
Sepideh Sadeghi and Kiruthika Ramanathan
- P325 *Modeling the Cholinergic Innervation in the Infant Cortico-Hippocampal System and its Contribution to Early Memory Development and Attention [no. 305]*  
Alexandre Pitti and Yasuo Kuniyoshi
- P326 *Bio-Inspired Balanced Tree Structure Dynamic Network [no. 71]*  
Fengchen Liu, Yongsheng Ding and Weixun Gao
- P327 *Cellular Neural Networks with Switching Two Types of Templates [no. 308]*  
Yoshihiro Kato, Yasuhiro Ueda, Yoko Uwate and Yoshifumi Nishio
- P328 *Adaptive Spiking Neural Networks with Hodgkin-Huxley Neurons and Hebbian Learning [no. 57]*  
Lyle Long
- P329 *A General Framework for Development of the Cortex-like Visual Object Recognition System: Waves of Spikes, Predictive Coding and Universal Dictionary of Features [no. 322]*  
Sergey Tarasenko
- P330 *Comparative Study on Dimension Reduction Techniques for Cluster Analysis of Microarray Data [no. 387]*  
Daniel Araujo, Adriaio Doria Neto, Allan Martins and Jorge Melo
- P331 *Application of Cover's Theorem to the Evaluation of the Performance of CI Observers [no. 221]*  
Frank Samuelson and David Brown
- P332 *The Time Course of Gamma-band Responses to Subjective Contour in Different Task Paradigms [no. 434]*  
Evgeniya Belova
- P333 *Self-segmentation Based on Predictability Measure in Multimodal Autonomous System [no. 211]*  
Jae Hyun Lim, Jae Heon Yoo, Soo-Young Lee and Dae-Shik Kim
- P334 *Two-way MLP [no. 118]*  
Tiago B. A. de Carvalho
- P335 *Overriding Racial Stereotypes: A Multilevel Neural Network Implementation of the Iterative Reprocessing Model of Social Evaluation [no. 698]*  
Stephen Read and Phillip Ehret
- P336 *Retrospective Learning of Spatial Invariants During Object Classification by Embodied Autonomous Neural Agents [no. 444]*  
Thomas Caudell, Cheir Burch, Mustafa Zengin, Nathan Gauntt and Michael Healy
- P337 *Integrating multi-sensory input in the body model - a RNN approach to connect visual features and motor control [no. 585]*  
Malte Schilling

- P338 *Discovery of Pattern Meaning from Delayed Rewards by Reinforcement Learning with a Recurrent Neural Network [no. 311]*  
Katsunari Shibata and Hiroki Utsunomiya
- P339 *A Neural Circuit Model for nCRF's Dynamic Adjustment and its Application on Image Representation [no. 111]*  
Hui Wei and Xiao-Mei Wang
- P340 *Attention Selection Model Using Weight Adjusted Topological Properties and Quantification Evaluating Criterion [no. 92]*  
Yu Fang, Xiaodong Gu and Yuanyuan Wang
- P341 *Natural Language Generation Using Automatically Constructed Lexical Resources [no. 214]*  
Naho Ito and Masafumi Hagiwara
- P342 *Neural Model for Counting and Subitizing [no. 242]*  
Zong-En Yu, Shyh-Kang Jeng and Michael Arbib
- P343 *Neuromorphic vision for intelligent transportation system [no. 696]*  
Woo Joon Han and Il Song Han
- P344 *Implementation of the COVIS theory of categorization with a Feature Extracting Bidirectionnal Associative Memory with Self-Organizing Maps [no. 686]*  
Laurence Morissette, Sylvain Chartier and Denis Cousineau
- P345 *Artificial Neural Network Performance Degradation Under Network Damage: Stuck-At Faults [no. 114]*  
Robert Nawrocki and Richard Voyles
- P346 *Reinforcement Learning and Dimensionality Reduction: a model in Computational Neuroscience [no. 184]*  
Nishal Shah and Frederic Alexandre
- P347 *A Novel Facial Feature Extraction Method Based on ICM Network for Affective Recognition [no. 415]*  
Fania Mokhayeri and Mohammad Reza Akbarzadeh-T
- P348 *New Insights into the Cortical Neural Substrate for Goal-Directed Cognitive Control [no. 457]*  
Jennie Si
- P349 *Do Basal Ganglia amplify willed action by stochastic resonance? A model. [no. 691]*  
Srinivasa Chakravarthy
- P350 *Predictive neural fields for improved tracking and attentional properties [no. 346]*  
Jean-Charles Quinton and Bernard Girau
- P351 *Visual attention using spiking neural maps [no. 449]*  
Roberto Vazquez, Bernard Girau and Jean-Charles Quinton
- P352 *Reconstructing the Stochastic Evolution Diagram of Dynamic Complex Systems [no. 254]*  
Navid Bazzazzadeh, Benedikt Brors and Roland Eils
- P353 *Bayesian Inference by Spiking Neurons: A model of optimal state estimation in the vestibulo-cerebellum. [no. 685]*  
Mike Paulin and Larry Hoffman
- P354 *A Manifold Representation of Aging in Human Brain using Resting-State Functional Connectivity MRI [no. 682]*  
Lubin Wang, Hui Shen, Zongtan Zhou, Yadong Liu and Dewen Hu
- P355 *Biological Validation of the Compartmental Model of Nitric Oxide Diffusion [no. 689]*  
Carmen Paz Suarez Araujo, Pablo Fernandez Lopez and Patricio Garcia Baez
- P356 *Artificial neural networks to investigate the significance of PAPP-A and b-hCG for the prediction of chromosomal abnormalities [no. 409]*  
Costas Neocleous, Kypros Nicolaidis, Kleanthis Neokleous, Christos Schizas and Andreas Neocleous

- P357 *Neural Networks Based Minimal or Reduced Model Representation for Control of Nonlinear MIMO Systems [no. 361]*  
Kristina Vassiljeva, Juri Belikov and Eduard Petlenkov
- P358 *Explorations on System Identification via Higher-Level Application of Adaptive-Critic Approximate Dynamic Programming [no. 152]*  
Joshua Hughes and George Lendaris
- P359 *A system for segmentation and follow-up of brain tumors in MRI scans [no. 670]*  
Lior Weizman, Liat Ben Sira, Leo Joskowicz, Ben Shofty and Shlomi Constantini
- P360 *Abnormal brain oscillations in Alzheimer's disease: a study using a neural mass computational model [no. 721]*  
Basabdatta Sen Bhattacharya, Damien Coyle, Liam Maguire and Martin McGinnity
- P361 *Hyperlearning: A Hypothesis of Dopamine and Storytelling in Schizophrenia [no. 710]*  
Uli Grasemann, Risto Miikkulainen and Ralph Hoffman
- P362 *Modeling Normal/Epileptic Brain Dynamics with Potential Application in Titration Therapy [no. 650]*  
Mark Myers and Robert Kozma
- P363 *Synchronization of a class of partially unknown chaotic systems with integral observer basing orthogonal neural networks [no. 654]*  
Yuye Wang, Shen Wei, Jingwen Wang and Guangrui Xu
- P364 *Estimation of Input Information Applied to Neurons by Local Adaptive Kernel Density Function [no. 706]*  
Kaori Kuroda and Tohru Ikeguchi
- P365 *An Analog Circuit Silicon Neuron Developed Using Dynamical Systems Theory Approach [no. 709]*  
Eric Basham, Aravind Sheshadri and Parent David
- P366 *Ion-Channel and Synaptic Noise in a Cortical Neuromorphic Circuit [no. 293]*  
Mohammad Mahvash and Alice C Parker
- P367 *Why NeuroElectroDynamics is Better than Spike timing Models? [no. 679]*  
Dorian Aur and Mandar Jog
- P368 *Chaotic Simulated Annealing in Feed-Forward Neural Networks with Varying Learning Rates [no. 213]*  
Lipo Wang
- P369 *Functional Roles of Coherence Resonance in an Inhibitory Network Model of Stellate Cells [no. 608]*  
Kazuki Nakada
- P370 *Large-Scale Simulations of Hippocampal and Prefrontal Activity during a Spatial Navigation Task [no. 705]*  
Corey Thibeault, Laurence Jayet Bray, Joshua Hegie, Gareth Ferneyhough and Kevin Cassiday
- P371 *Neuronal networks biochemical reactions discrete chaotic dynamics and brain creativity mathematical modeling [no. 661]*  
Vladimir Gontar and Olga Grechko
- P372 *The CARMEN Project and Neuroinformatics [no. 89]*  
Leslie Smith, Jim Austin, Tom Jackson, Paul Watson and Colin Ingram
- P373 *Knife-Edge Scanning Microscopy for Connectomics Research [no. 469]*  
Yoonsuck Choe, David Mayerich, Jaerock Kwon, Daniel Miller, Ji Ryang Chung, Chul Sung, John Keyser and Louise Abbott
- P374 *An Optimal Construction and Training of Second Order RBF Network for Approximation and Illumination invariant Image Segmentation [no. 657]*  
Xun Cai, Kanishka Tyagi and Michael Manry

- P375 *On Combination of SMOTE and Particle Swarm Optimization based Radial Basis Function for Imbalanced Problems [no. 252]*  
Ming Gao, Xia Hong, Sheng Chen and Chris Harris
- P376 *Some Experimental Results on Sparsely Connected Autoassociative Morphological Memories for the Reconstruction of Color Images Corrupted by Either Impulsive or Gaussian Noise [no. 79]*  
Marcos Eduardo Valle and Daniela Maria Grande Vicente
- P377 *Prosody Dependent Mandarin Speech Recognition [no. 63]*  
Chong-Jia Ni, Wen-Ju Liu and Bo Xu
- P378 *A Spiking Neural Network for Tactile Form Based Object Recognition [no. 191]*  
Sivalogeswaran Ratnasingam and Martin McGinnity
- P379 *Smart Recognition and Synthesis of Emotional Speech for Embedded Systems with Natural User Interfaces [no. 189]*  
Malcangi Mario
- P380 *Temporal Nonlinear Dimensionality Reduction [no. 410]*  
Michael Gashler and Tony Martinez
- P381 *An Electrosensory Virtual Reality [no. 582]*  
Todd Leen, Patrick Roberts, John Hunt, Amy Boyle, Nathaniel Sawtell and Karina Scalise
- P382 *Generative Mechanisms During Testing: How the Brain May Recognize Mixtures of Patterns. [no. 718]*  
Tsvi Achler, Zhengping Ji and Luis Bettencourt
- P383 *Representing and Decoding Rank Order Codes Using Polychronization in a Network of Spiking Neurons [no. 207]*  
Francesco Galluppi and Steve Furber
- P384 *A Training Algorithm for SpikeProp Improving Stability of Learning Process [no. 208]*  
Toshiki Wakamatsu, Haruhiko Takase, Hiroharu Kawanaka and Shinji Tsuruoka
- P385 *Optimization of Spiking Neural Networks with Dynamic Synapses for Spike Sequence Generation using PSO [no. 623]*  
Ammar Mohemmed, Satoshi Matsuda, Stefan Schliebs, Kshitij Dhoble and Nikola Kasabov
- P386 *Local learning rules for spiking neurons with dendrite. [no. 459]*  
Olivier Manette
- P387 *Are Probabilistic Spiking Neural Networks Suitable for Reservoir Computing? [no. 664]*  
Stefan Schliebs, Mohemmed Ammar and Nikola Kasabov
- P388 *Temporal and rate decoding in spiking neurons with dendrites [no. 43]*  
Olivier Manette
- P389 *Foraging Behavior in a 3-D Virtual Sea Snail Having a Spiking Neural Network Brain [no. 45]*  
David Olmsted
- P390 *Comparing Evolutionary Methods for Reservoir Computing Pre-training [no. 81]*  
Aida Ferreira and Teresa Ludermir
- P391 *Reference time in SpikeProp [no. 238]*  
Ioana Sporea and Andre Gruning
- P392 *Selecting the Hypothesis Space for Improving the Generalization Ability of Support Vector Machines [no. 257]*  
Davide Anguita, Alessandro Ghio, Luca Oneto and Sandro Ridella
- P393 *Modularity-based model selection for kernel spectral clustering [no. 391]*  
Rocco Langone, Carlos Alzate and Johan A. K. Suykens
- P394 *Sparseness and a Reduction from Totally Nonnegative Least Squares to SVM [no. 403]*  
Vamsi Potluru, Sergey Plis, Shuang Luan, Vince Calhoun and Thomas Hayes
- P395 *Handwritten Chinese Character Identification with Bagged One-Class Support Vector Machines [no. 56]*  
Hong-Wei Hao, Cui-Xia Mu, Xu-Cheng Yin and Zhi-Bin Wang

- P396 *Designing Associative Memories Implemented via Recurrent Neural Networks for Pattern Recognition [no. 541]*  
Jose A. Ruz-Hernandez, Maria U. Suarez-Duran, Ramon Garcia-Hernandez, Evgen Shelomov and Edgar N. Sanchez

**Poster Session Tu-PC: Poster Session C: Competitions, Chair: Sven Crone and Isabelle Guyon, Room: Bayshore Ballroom**

- P501 *A Hybrid System Ensemble Based Time Series Signal Classification on Driver Alertness Detection [no. 435]*  
Shen Xu, Ruoqian Liu, Dai Li and Yi Lu Murphey
- P502 *Exploring the relationship between degrees of self similarity and altered driving states [no. 669]*  
Sekou Remy
- P503 *Graph-based Features for Supervised Link Prediction [no. 272]*  
William Cukierski, Benjamin Hamner and Bo Yang
- P504 *Link Prediction by De-anonymization: How We Won the Kaggle Social Network Challenge [no. 385]*  
Arvind Narayanan, Elaine Shi and Benjamin Rubinstein
- P505 *A Support Vector Machines Network for Traffic Sign Recognition [no. 456]*  
Fabio Boi and Lorenzo Gagliardini
- P506 *Coherence Vector of Oriented Gradients for Traffic Sign Recognition using Neural Networks [no. 199]*  
Rajesh R., Rajeev K., Suchithra K., Lekhesh V.P., Ragesh N.K. and Gopakumar V.

**Wednesday, August 3, 8:00AM-9:00AM**

**Plenary Talk We-Plen1: Chair: David Casasent, Room: Oak**

***Challenges for Computational Vision: From Random Dots to the Wagon Wheel Illusion***

**Leon Glass**

McGill University, Canada

**Wednesday, August 3, 9:30AM-11:30AM**

**Special Session We1-1: Memristor Minds I, Chair: Robert Kozma and Giovanni Paziienza, Room: Cedar**

- 9:30AM *Neuromorphic hardware, memristive memory, and photonic interconnect [no. 683]*  
Greg Snider (Invited talk)
- 10:10AM *Biologically-inspired schemes with memory circuit elements [no. 91]*  
Massimiliano Di Ventra (Invited talk)
- 10:50AM *Brain-Inspired Computing with Memristive Technology [no. 84]*  
Massimiliano Versace (Invited talk)

**Special Session We1-2: From Neuroscience to Robotics and Human-Computer Interfaces, Chair: Hava Siegelmann, Room: Pine**

*This session is dedicated to the memory of Philip Goodman (1954 - 2010)*

- 9:30AM *Fuzzy Bio-Interface: Indicating Logicality from Living Neuronal Network and Learning Control of Bio-Robot [no. 497]*  
Isao Hayashi, Megumi Kiyotoki, Ai Kiyohara, Minori Tokuda and Suguru N. Kudoh

- 9:50AM *The Effects of Neuromodulation on Human-Robot Interaction in Games of Conflict and Cooperation [no. 432]*  
Derrik Asher, Andrew Zaldivar, Brian Barton, Alyssa Brewer and Jeffrey Krichmar
- 10:10AM *Expanding the Go/NoGo depiction of the action of Basal Ganglia Pathways [no. 690]*  
Sanjeeva Kumar, Maithreye Rengaswamy, Neelima Gupte and Srinivasa Chakravarthy
- 10:30AM *Functional and Physical Constraints for Evolving Small-World Structure in Embodied Networks [no. 486]*  
Derek Harter
- 10:50AM *Modeling Oxytocin Induced Neurorobotic Trust and Intent Recognition in Human-Robot Interaction [no. 700]*  
Sridhar Anumandla, Laurence Jayet Bray, Corey Thibeault, Roger Hoang and Sergiu Dascalu
- 11:10AM *A Spiking Neuronal Network Model of the Dorsal Raphe Nucleus [no. 333]*  
KongFatt Wong-Lin, Girijesh Prasad and T. Martin McGinnity

**Special Session We1-3: Neural Modeling of Socio-Cultural and Linguistic Phenomena: Neural network and neural modeling fields approaches, Chair: José Fontanari, Room: Oak**

- 9:30AM *Towards the Grounding of Abstract Words: A Neural Network Model for Cognitive Robots [no. 122]*  
Francesca Stramandinoli, Angelo Cangelosi and Davide Marocco
- 9:50AM *From Neural Activation to Symbolic Alignment: A Network-Based Approach to the Formation of Dialogue Lexica [no. 132]*  
Alexander Mehler, Andy Luecking and Peter Menke
- 10:10AM *A Low-Power Memristive Neuromorphic Circuit Utilizing a Global/Local Training Mechanism [no. 431]*  
Garrett Rose, Robinson Pino and Qing Wu
- 10:30AM *Aquila: An Open-Source GPU-Accelerated Toolkit for Cognitive and Neuro-Robotics Research [no. 370]*  
Martin Peniak, Anthony Morse, Christopher Larcombe, Salomon Ramirez-Contla and Angelo Cangelosi
- 10:50AM *A Neural Network model for spatial mental imagery investigation: A study with the humanoid robot platform iCub [no. 454]*  
Alessandro Di Nuovo, Davide Marocco, Santo Di Nuovo and Angelo Cangelosi
- 11:10AM *Emotions of Cognitive Dissonance [no. 46]*  
Jose Fontanari, Leonid Perlovsky, Marie-Claude Bonniot-Cabanac and Michel Cabanac

**Session We1-4: Unsupervised Learning I, Chair: Georgios Anagnostopoulos, Room: Monterey**

- 9:30AM *Sparse Kernelized Vector Quantization with Local Dependencies [no. 325]*  
Frank-Michael Schleif
- 9:50AM *Network-Based Learning Through Particle Competition for Data Clustering [no. 37]*  
Thiago Silva and Liang Zhao
- 10:10AM *Observed Stent's anti-Hebbian Postulate on Dynamic Stochastic Computational Synapses [no. 290]*  
Subha Danushika Fernando, Koichi Yamada and Ashu Marasinghe
- 10:30AM *Expectation-Maximization Approach to Boolean Factor Analysis [no. 139]*  
Alexander Frolov, Dusan Husek and Pavel Polyakov
- 10:50AM *Non-Gaussian Component Analysis using Density Gradient Covariance Matrix [no. 210]*  
Nima Reyhani and Erkki Oja
- 11:10AM *Finding Dependent and Independent Components from Two Related Data Sets [no. 121]*  
Juha Karhunen and Tele Hao

**Session We1-5: Applications II, Chair: Anya Getman, Room: Carmel**

- 9:30AM *A Hardware Suitable Integrated Neural System for Autonomous Vehicles - Road Structuring and Path Tracking [no. 423]*  
Udhay Ravishankar and Milos Manic
- 9:50AM *Real Time Vehicle Speed Prediction using a Neural Network Traffic Model [no. 627]*  
Jungme Park, Dai Li, Yi L Murphey, Johannes Kristinsson and Ryan McGee
- 10:10AM *Forecasting tropospheric ozone concentrations with adaptive neural networks [no. 392]*  
Eros Pasero, Luca Mesin, Fiammetta Orione and Riccardo Taormina
- 10:30AM *Wiener Systems for Reconstruction of Missing Seismic Traces [no. 231]*  
Gonzalo Safont, Addisson Salazar, Luis Vergara, Raul Linares and Jorge Igual
- 10:50AM *Discrete Synapse Recurrent Neural Network with Time-Varying Delays for Nonlinear System Modeling and Its Application on Seismic Signal Classification [no. 489]*  
Hyung O. Park, Alireza A. Dibazar and Theodore W. Berger
- 11:10AM *Application of SOM to Analysis of Minnesota Soil Survey Data. [no. 151]*  
Sauptik Dhar and Vladimir Cherkassky

**Session We1-6: Time Series Modeling and Prediction, Chair: Sven Crone, Room: Santa Clara**

- 9:30AM *Prediction of Electric Power Consumption for Commercial Buildings [no. 156]*  
Vladimir Cherkassky, Sohini Roy Chowdhury, Volker Landenberger, Saurabh Tewari and Paul Bursch
- 9:50AM *GA-PAT-KNN: Framework for Time Series Forecasting [no. 487]*  
Armando Goncalves, Igor Alencar, Ing-Ren Tsang and George Cavalcanti
- 10:10AM *Hybrid Model Incorporating Multiple Scale dynamics for Time Series Forecasting [no. 708]*  
Vishal Sharma and Dipti Srinivasan
- 10:30AM *Predictions Tasks with Words and Sequences: Comparing a Novel Recurrent Architecture with the Elman Network [no. 262]*  
David Gil, Jose Garcia, Miguel Cazorla and Magnus Johnsson
- 10:50AM *Designing Dilation-Erosion Perceptrons with Differential Evolutionary Learning for Air Pressure Forecasting [no. 144]*  
Ricardo Araujo, Adriano Oliveira, Sergio Soares and Silvio Meira
- 11:10AM *Semi-supervised monitoring of electric load time series for unusual patterns [no. 588]*  
Nikolaos Kourentzes and Sven Crone

**Wednesday, August 3, 11:40AM-12:40PM**

**Special Session We2-1: Memristor Minds II, Chair: Robert Kozma and Giovanni Paziienza, Room: Cedar**

- 11:40AM *Computational Intelligence and Neuromorphic Computing Architectures [no. 668]*  
Robinson Pino
- 12:00PM *Memristor Crossbar for System Architecture [no. 711]*  
Chris Yakopcic, Tarek Taha, Guru Subramanyam, Stanley Rogers and Robinson Pino
- 12:20PM *Phase Change Memory for Synaptic Plasticity Application in Neuromorphic Systems [no. 149]*  
Manan Suri, Veronique Sousa, Luca Perniola, Dominique Vuillaume and Barbara DeSalvo

**Special Session We2-2: Mining the Brain: Better Neural Networks Inspired by Neurobiology, Chair: Fred Harris, Room: Pine**

*This session is dedicated to the memory of Philip Goodman (1954 - 2010)*

- 11:40AM *Bio-inspired Models of Memory Capacity, Recall Performance and Theta Phase Precession in the Hippocampus [no. 662]*  
Vassilis Cutsuridis, Bruce P. Graham, Stuart Cobb and Michael E. Hasselmo
- 12:00PM *Evolving Recurrent Neural Networks are Super-Turing [no. 681]*  
Jeremie Cabessa and Hava Siegelmann
- 12:20PM *A forecast-based biologically-plausible STDP learning rule [no. 383]*  
Sergio Davies, Alexander Rast, Francesco Galluppi and Steve Furber

**Special Session We2-3: Autonomous Social Learning and Knowledge Representation, Chair: Yan Meng and Angelo Cangelosi, Room: Oak**

Organized under the auspices of the **INNS Autonomous Machine Learning SIG**

- 11:40AM *Embodied Cognition, Language, and Mirror Neuron System [no. 141]*  
Leonid Perlovsky
- 12:00PM *Creative Brain and Abstract Art: a quantitative study on Kandinskij paintings [no. 493]*  
Francesco Carlo Morabito, Matteo Cacciola and Gianluigi Occhiuto
- 12:20PM *Self-Reorganizing Knowledge Representation for Autonomous Learning in Social Agents [no. 397]*  
Matthew Conforth and Yan Meng

**Session We2-4: Unsupervised Learning II, Chair: Carlos Alzate, Room: Monterey**

- 11:40AM *Evolutionary Spectral Co-Clustering [no. 235]*  
Nathan Green, Manjeet Rege, Xumin Liu and Reynold Bailey
- 12:00PM *Independent Component Analysis with Graphical Correlation: Applications to Multi-Vision Coding [no. 162]*  
Ryota Yokote, Toshikazu Nakamura and Yasuo Matsuyama
- 12:20PM *Discriminative Hat Matrix : a new tool for outlier identification and linear regression [no. 175]*  
Franck Dufrenois and Jean Charles Noyer

**Special Session We2-5: Concept Drift and Learning in Dynamic Environments, Chair: Robi Polikar, Room: Carmel**

- 11:40AM *A Supervised Approach for Change Detection in Data Streams [no. 131]*  
Alexis Bondu and Marc Boulle
- 12:00PM *An effective just-in-time adaptive classifier for gradual concept drifts [no. 355]*  
Cesare Alippi, Giacomo Boracchi and Manuel Roveri
- 12:20PM *Semi-supervised Learning in Nonstationary Environments [no. 563]*  
Gregory Ditzler and Robi Polikar

**Session We2-6: Financial Applications, Chair: Li-Wei Ko, Room: Santa Clara**

- 11:40AM *Forecasting Exchange Rate with Deep Belief Networks [no. 276]*  
Jing Chao, Furao Shen and Jinxi Zhao
- 12:00PM *A Simulation Environment for Volatility Analysis of Developed and in Development Markets [no. 505]*  
Paulo Mattos Neto, Tiago Ferreira and George Cavalcanti
- 12:20PM *Graph Weighted Subspace Learning Models in Bankruptcy [no. 427]*  
Bernardete Ribeiro and Ning Chen

**Wednesday, August 3, 1:50PM-2:50PM**

**Plenary Talk We-Plen2: Chair: Risto Miikkulainen, Room: Oak**

## **Deep Learning and Unsupervised Feature Learning**

**Andrew Ng**

Stanford University, USA

### **Wednesday, August 3, 3:20PM-4:20PM**

**Special Session We3-1.1: Memristor Minds III, Chair: Robert Kozma and Giovanni Paziienza, Room: Cedar**

- 3:20PM *Simulation of a Memristor-Based Spiking Neural Network Immune to Device Variations [no. 376]*  
Damien Querlioz, Olivier Bichler and Christian Gamrat
- 3:40PM *An Implementation of a Chalcogenide based, Ion-Conducting Field Programmable Memristor Array (FPMA) [no. 119]*  
Terry Gafron, Jennifer Regner and Kristy Campbell
- 4:00PM *Class of all i-v dynamics for memristive elements in Pattern Recognition Systems [no. 474]*  
Fernando Corinto, Alon Ascoi and Marco Gilli

### **Wednesday, August 3, 4:20PM-6:00PM**

**Panel Session We3-1.2: Is the Memristor the Future of AI?, Chair: Robert Kozma and Giovanni Paziienza, Room: Cedar**

**Panelists:** Leon Chua, Kristy Campbell, Max DiVentra, Anatoli Gorchetchnikov, Carlo Morabito, Steven Kang, Robinson Pino, Greg Snider, Tarek Taha, Paul Werbos and Don Wunsch

### **Wednesday, August 3, 3:20PM-6:00PM**

**Special Session We3-2: Advances towards Natural Human-Computer Interfaces, Chair: Jeff Krichmar, Room: Pine**

*This session is dedicated to the memory of Philip Goodman (1954 - 2010)*

- 3:20PM *A Comparative Study of Classification Methods for Gesture Recognition using a 3-axis Accelerometer [no. 510]*  
Fahad Moiz, Prasad Nattoo, Reza Derakhshani and Walter Leon-Salas
- 3:40PM *Gaze Tracking Based On Pupil Estimation Using Multilayer Perception [no. 551]*  
Kim Sangwook, Hwang Byunghun and Lee Minho
- 4:00PM *Recognition of Human Physical Activity based on a novel Hierarchical Weighted Classification scheme [no. 455]*  
Oresti Banos, Miguel Damas, Hector Pomares and Ignacio Rojas
- 4:20PM *Emotional State Recognition from Speech via Soft-Competition on Different Acoustic Representations [no. 401]*  
Arslan Shaukat and Ke Chen
- 4:40PM *Study on Gesture Recognition System Using Posture Classifier and Jordan Recurrent Neural Network [no. 108]*  
Hiroomi Hikawa and Araga Yusuke
- 5:00PM *Communicated Somatic Markers Benefit Both the Individual and the Species [no. 719]*  
Kyle Harrington, Megan Olsen and Hava Siegelmann
- 5:20PM *Spiking Neural Networks based Cortex-Like Mechanism: A Case Study for Facial Expression Recognition [no. 348]*  
Siyao Fu, Guosheng Yang and Zengguang Hou
- 5:40PM *A New Efficient SVM and Its Application to Real-time Accurate Eye Localization [no. 518]*  
Shuo Chen and Chengjun Liu

**Special Session We3-3: Neural Network Models and Human Nature, Chair: Dan Levine, Room: Oak**

- 3:20PM *Creativity and Thinking according to Cognition-Language-Music Model [no. 112]*  
Leonid Perlovsky
- 3:40PM *Connectivity and Creativity in Semantic Neural Networks [no. 659]*  
Nagendra Marupaka and Ali Minai
- 4:00PM *A stochastic model of the role of semantic networks in individual and group idea generation [no. 717]*  
Simona Doboli and Vincent Brown
- 4:20PM *Neurodynamics and the mind [no. 704]*  
Wlodzislaw Duch
- 4:40PM *Neural Networks As a Path to Self-Awareness [no. 716]*  
Paul Werbos
- 5:00PM *The Pitfalls of Doing the Right Thing for the Wrong Reason [no. 193]*  
Daniel Levine
- 5:20PM *Mental Disorders within a Cognitive Architecture [no. 101]*  
Ron Sun, Nick Wilson and Robert Mathews
- 5:40PM *Discussion*  
Daniel Levine, Simona Doboli, Wlodzislaw Duch, Ali Minai, Leonid Perlovsky, Ron Sun, John Taylor, Paul Werbos

**Session We3-4: Optimization, Chair: Robi Polikar, Room: Monterey**

- 3:20PM *Ant Colony Optimization Changing the Rate of Dull Ants and its Application to QAP [no. 581]*  
Sho Shimomura, Haruna Matsushita and Yoshifumi Nishio
- 3:40PM *Solving a Real Large Scale Mid-term Scheduling for Power Plants via Hybrid Intelligent Neural Networks Systems [no. 176]*  
Ronaldo Aquino, Otoni Nobrega Neto, Milde Lira and Manoel Carvalho Jr.
- 4:00PM *Water Quantity Prediction Based on Particle Swarm Optimization and Evolutionary Algorithm Using Recurrent Neural Networks [no. 450]*  
Nian Zhang and Shuhua Lai
- 4:20PM *Chaotic Routing Strategy with Load-Balanced Effects for Communication Networks [no. 349]*  
Takayuki Kimura and Tohru Ikeguchi
- 4:40PM *Computational Intelligence Methods for Helicopter Loads Estimation [no. 395]*  
Julio J. Valdes, Catherine Cheung and Weichao Wang
- 5:00PM *Optimization of Wavelet Neural Networks for Nonlinear System Identification [no. 630]*  
Juan Cordova and Wen Yu
- 5:20PM *Solving Traveling Salesman Problem by a Hybrid Combination of PSO and Extremal Optimization [no. 320]*  
Saeed Khakmardan, Hanieh Poostchi and Mohammad -R Akbarzadeh -T
- 5:40PM *Multi-Objective Evolutionary Optimization of Exemplar-Based Classifiers: A PNN Test Case [no. 365]*  
Talitha Rubio, Tiantian Zhang, Michael Georgiopoulos and Assem Kaylani

**Special Session We3-5: Complex-Valued Neural Networks, Chair: Igor Aizenberg, Danilo Mandic, Akira Hirose and Jacek Zurada, Room: Carmel**

- 3:20PM *On Retrieval Performance of Associative Memory by Complex-valued Synergetic Computer [no. 296]*  
Kimura Masaaki, Isokawa Teijiro, Nishimura Haruhiko and Matsui Nobuyuki
- 3:40PM *Fully Complex-valued ELM Classifiers for Human Action Recognition [no. 577]*  
Venkatesh Babu Radhakrishnan and Suresh Sundaram

- 4:00PM *A Class of Fast Quaternion Valued Variable Stepsize Stochastic Gradient Learning Algorithms for Vector Sensor Processes [no. 574]*  
Mingxuan Wang, Clive Cheong Took and Danilo Mandic
- 4:20PM *Classification of Blurred Textures using Multilayer Neural Network Based on Multi-Valued Neurons [no. 289]*  
Igor Aizenberg, Jacob Jackson and Shane Alexander
- 4:40PM *Complex-Valued Functional Link Network Design by Orthogonal Least Squares Method for Function Approximation Problems [no. 318]*  
Md. Faijul Amin, Ramasamy Savitha, Muhammad Ilias Amin and Kazuyuki Murase
- 5:00PM *A Fast Learning Fully Complex-valued Relaxation Network (FCRN) [no. 297]*  
Suresh Sundaram, Savitha Ramasamy and Sundararajan Narasimhan
- 5:20PM *Models of Clifford Recurrent Neural Networks and Their Dynamics [no. 228]*  
Yasuaki Kuroe
- 5:40PM *A Fast Learning Complex-valued Neural Classifier for Real-valued Classification Problems [no. 467]*  
Savitha Ramasamy, Suresh Sundaram and Sundararajan Narasimhan

**Session We3-6: Learning and Neural Dynamics, Chair: Emilio Del Moral Hernandez, Room: Santa Clara**

- 3:20PM *The effects of feedback and lateral connections on perceptual processing: a study using oscillatory networks [no. 258]*  
A. Ravishankar Rao and Guillermo Cecchi
- 3:40PM *Perturbation Theory for Stochastic Learning Dynamics [no. 424]*  
Todd Leen and Robert Friel
- 4:00PM *An Echo State Network Architecture Based on Volterra Filtering and PCA with Application to the Channel Equalization Problem [no. 142]*  
Levy Boccatto, Amauri Lopes, Romis Attux and Fernando Jose Von Zuben
- 4:20PM *Sparse Analog Associative Memory via L1-Regularization and Thresholding [no. 416]*  
Rakesh Chalasani and Jose Principe
- 4:40PM *Latent Learning - What your net also learned [no. 287]*  
Steven Gutstein, Olac Fuentes and Eric Freudenthal
- 5:00PM *Preliminary Studies on Parameter Aided EKF-CRTRL Equalizer Training for Fast Fading Channels [no. 504]*  
Pedro Gouvea Coelho and Luiz Biondi Neto
- 5:20PM *Stability Analysis of Layered Digital Dynamic Networks Using Dissipativity Theory [no. 357]*  
Nam Nguyen and Martin Hagan
- 5:40PM *A Neurodynamical Model of Context-Dependent Category Learning [no. 625]*  
Laxmi Iyer and Ali Minai

**Wednesday, August 3, 6:15PM-7:30PM**

**David Rumelhart Memorial Plenary Talk We-DR: Chair: Hava Siegelmann, Room: Bayshore Ballroom**

***Learning Natural Language Semantics***

**Michael I. Jordan**

University of California Berkeley, USA

*This plenary session is organized to honor the memory and celebrate the scientific contributions of Professor David Rumelhart (1942 – 2011)*

## Thursday, August 4, 8:00AM-9:30AM

### Featured Plenary Session Th-Plen1: The Emergence of Mind, Chair: Steven Bressler, Room: Oak

- 8:00AM ***The Making of Mind through the Action-Perception Cycle***  
**Walter J. Freeman**  
 University of California Berkeley, USA
- 8:30AM ***Conscious Experience and the Observing Ego: A Dynamic Global Workspace Hypothesis***  
**Bernard J. Baars**  
 The Neurosciences Institute, USA
- 9:00AM ***Social Cognition: Learning Gaze Following, Joint Attention, Imitation, and Tool Use***  
**Stephen Grossberg**  
 Boston University, USA

## Thursday, August 4, 10:00AM-12:20PM

### Session Th1-1: Bioinformatics and Biomedical Applications, Chair: Li-Wei Ko, Room: Cedar

- 10:00AM *Sparse Bayesian Prediction of Disordered Residues and Disordered Regions Based on Amino-Acid Composition [no. 341]*  
 Gavin Cawley, Steven Hayward, Gareth Janacek and Geoff Moore
- 10:20AM *Inferring method of the Gene Regulatory Networks using Neural Networks Adopting a Majority Rule [no. 618]*  
 Yasuki Hirai, Masahiro Kikuchi and Hiroaki Kurokawa
- 10:40AM *Chaos of Protein Folding [no. 408]*  
 Jacques Bahi, Nathalie Cote and Christophe Guyeux
- 11:00AM *Optimistic bias in the assessment of high dimensional classifiers with a limited dataset [no. 554]*  
 Weijie Chen and David Brown
- 11:20AM *Fetal Electrocardiogram Extraction and R-Peak Detection for Fetal Heart Rate Monitoring using Artificial Neural Network and Correlation [no. 24]*  
 M. A. Hasan, M. B. I. Reaz and M. I. Ibrahimy
- 11:40AM *An Innovative Positional Pattern Detection Tool Applied to GAL4 Binding Sites in Yeast [no. 506]*  
 Heike Sichtig and Alberto Riva
- 12:00PM *Magnetic Resonance Imaging Estimation of Longitudinal Relaxation Rate Change in Dual Gradient Echo Sequences Using an Adaptive Model [no. 515]*  
 Hassan Bagher-Ebadian, Siamak Nejad-Davarani, Meser Ali, Stephen Brown, Malek Makki, Quan Jiang, Douglas Noll and James Ewing

### Session Th1-2: Spiking Neural Networks, Chair: Nikola Kasabov, Room: Pine

- 10:00AM *Neuronal Avalanche Induced by Multiplicative Spike-Timing-Dependent Plasticity [no. 323]*  
 Shuhei Ohno, Hideyuki Kato and Tohro Ikeguchi
- 10:20AM *Simulation of Large Neuronal Networks with Biophysically Accurate Models on Graphics Processors [no. 672]*  
 Mingchao Wang, Boyuan Yan, Jingzhen Hu and Peng Li
- 10:40AM *An Extended Evolving Spiking Neural Network Model for Spatio-Temporal Pattern Classification [no. 544]*  
 Haza Nuzly Abdull Hamed, Nikola Kasabov, Siti Mariyam Shamsuddin, Harya Widiputra and Kshitij Dhoble

- 11:00AM *A Novel Asynchronous Digital Spiking Neuron Model and its Various Neuron-like Bifurcations and Responses [no. 169]*  
Takashi Matsubara and Hiroyuki Torikai
- 11:20AM *A Novel Piece-Wise Constant Analog Spiking Neuron Model and its Neuron-like Excitabilities [no. 166]*  
Yutaro Yamashita and Hiroyuki Torikai
- 11:40AM *Lateral Inhibitory Networks: Synchrony, Edge Enhancement, and Noise Reduction [no. 218]*  
Cornelius Glackin, Liam Maguire, Liam McDaid and John Wade
- 12:00PM *Unsupervised Features Extraction from Asynchronous Silicon Retina through Spike-Timing-Dependent Plasticity [no. 188]*  
Olivier Bichler, Damien Querlioz, Simon J. Thorpe, Jean-Philippe Bourgoin and Christian Gamrat

#### **Thursday, August 4, 10:00AM-11:20AM**

##### **Panel Session Th1-3.1: Autonomous Machine Learning Panel I - Architectural Issues for Autonomous Learning Systems, Chair: Asim Roy and Juyang Weng, Room: Oak**

**Panelists:** Asim Roy, Bruno Apolloni, Wlodek Duch, Walter Freeman, Ali Minai, Carlo Francesco Morabito, Leonid Perlovsky, John Taylor, Juyang Weng and Asim Roy

*Organized under the auspices of the **INNS Autonomous Machine Learning SIG***

#### **Thursday, August 4, 11:20AM-12:20PM**

##### **Panel Session Th1-3.2: Autonomous Machine Learning Panel II - Brain-Mind Architectures: Module-Free, General Purpose, and Immediate Learning?, Chair: Juyang Weng and Asim Roy, Room: Oak**

**Panelists:** Asim Roy, Janusz Starzyk, Ron Sun, John Taylor, Bernard Widrow and Juyang Weng

*Organized under the auspices of the **INNS Autonomous Machine Learning SIG***

#### **Thursday, August 4, 10:00AM-12:20PM**

##### **Session Th1-4: Brain-Computer Interface & EEG, Chair: Jose Principe, Room: Monterey**

- 10:00AM *A Two-fold classification for composite decision about localized arm movement from EEG by SVM and QDA techniques [no. 291]*  
Anwasha Khasnobish, Saugat Bhattacharyya, Amit Konar, Dewakinandan Tibarewala and Atulya Nagar
- 10:20AM *Classification of EEG During Imagined Mental Tasks by Forecasting with Elman Recurrent Neural Networks [no. 564]*  
Elliott Forney and Charles Anderson
- 10:40AM *Analysis of absence seizure EEG via Permutation Entropy spatio-temporal clustering [no. 306]*  
Nadia Mammone and Francesco C. Morabito
- 11:00AM *A Brain-Computer Interface for classifying EEG correlates of chronic mental stress [no. 171]*  
Reza Khosrowabadi, Chai Quek, Kai Keng Ang, Sau Wai Tung and Michel Heijnen
- 11:20AM *EEG denoising with a Recurrent Quantum Neural Network for a Brain-Computer Interface [no. 331]*  
Vaibhav Gandhi, Vipul Arora, Laxmidhar Behera, Girijesh Prasad, Damien Coyle and Martin McGinnity
- 11:40AM *Filter Bank Feature Combination (FBFC) approach for Brain-Computer Interface [no. 294]*  
Zheng Yang Chin, Kai Keng Ang, Cuntai Guan, Chuanchu Wang and Haihong Zhang

- 12:00PM *Filter Bank Common Spatial Pattern (FBCSP) algorithm using online adaptive and semi-supervised learning [no. 105]*  
Kai Keng Ang, Zheng Yang Chin, Haihong Zhang and Cuntai Guan

**Session Th1-5: Pattern Analysis: Biology and Engineering, Chair: Ke Chen, Room: Carmel**

- 10:00AM *Computational Intelligence Methods for Underwater Magnetic-based Protection Systems [no. 74]*  
Decherchi Sergio, Leoncini Davide, Gastaldo Paolo, Zunino Rodolfo and Faggioni Osvaldo
- 10:20AM *Perfect Recall from Noisy Input Patterns with a Dendritic Lattice Associative Memory [no. 127]*  
Gerhard X. Ritter and Gonzalo Urcid
- 10:40AM *Finding Patterns in Labeled Graphs Using Spectrum Feature Vectors in a SOM Network [no. 259]*  
Rigoberto Fonseca, Pilar Gomez-Gil, Jesus Gonzalez and Ivan Olmos
- 11:00AM *Improving Classification Accuracy by Identifying and Removing Instances that Should Be Misclassified [no. 553]*  
Michael Smith and Tony Martinez
- 11:20AM *A New Evaluation Measure for Learning from Imbalanced Data [no. 134]*  
Nguyen Thai-Nghe, Zeno Gantner and Lars Schmidt-Thieme
- 11:40AM *Discriminant Kernels derived from the Optimum Nonlinear Discriminant Analysis [no. 83]*  
Takio Kurita
- 12:00PM *Fast pattern matching with time-delay neural networks [no. 498]*  
Heiko Hoffmann, Michael Howard and Michael Daily

**Session Th1-6: Robotics and Control, Chair: Zeng Guang Hou, Room: Santa Clara**

- 10:00AM *A Neuromorphic Architecture From Single Transistor Neurons With Organic Bistable Devices For Weights [no. 115]*  
Robert Nawrocki, Sean Shaheen and Richard Voyles
- 10:20AM *Two-phase GA parameter tuning method of CPGs for quadruped gaits [no. 372]*  
Jose Hugo Barron-Zambrano and Cesar Torres-Huitzil
- 10:40AM *A Neural Network Classifier for Notch Filter Classification of Sound-Source Elevation in a Mobile Robot [no. 172]*  
John Murray and Harry Erwin
- 11:00AM *Evolution of Robotic Neurocontrollers with Intrinsic Noise and their Behavior in Noisy Environments [no. 413]*  
Helmut Mayer
- 11:20AM *Unsupervised Feature Selection and Category Formation for Mobile Robot Vision [no. 88]*  
Hirokazu Madokoro, Masahiro Tsukada and Kazuhito Sato
- 11:40AM *Neural PD control with second-order sliding mode compensation for robot manipulators [no. 494]*  
Debbie Hernandez, Yu Wen and Marco Moreno-Armendariz
- 12:00PM *Robot Control with a Fully Tuned Growing Radial Basis Function Neural Network [no. 94]*  
Yi Luo, Yoo Hsiu Yeh and Abraham Ishihara

## **POST-CONFERENCE WORKSHOPS**

### **Thursday, August 4, 2:00PM-5:00PM**

**Workshop W-1: Autonomous Machine Learning**, Organizers: N. Srinivasa and A. Roy, Room: Monterey

**Workshop W-2: Concept Drift & Learning in Non-Stationary Environments**, Organizers: R. Polikar, C. Alippi, M. Roveri and H. He, Room: Carmel

**Workshop W-3: Cognition and the Fringe: Intuition, Feelings of Knowing, and Coherence**, Organizers: B. Mangan, B.J. Baars and U. Awret, Room: San Carlos

**Workshop W-4: Integral Biomathics**, Organizers: P. Simeonov and A. Ehresmann, Room: San Juan

**Workshop W-7: Results and Methods for the Neural Network Grand Forecasting Challenge on Time-Series Prediction**, Organizers: S. Crone and N. Kourentzes, Room: San Simeon

**Workshop W-8: Future Perspectives of Neuromorphic Memristor Science and Technology**, Organizers: R. Kozma and R. Pino, Room: San Martin

### **Friday, August 5, 9:00AM-12:00noon & 1:30PM-4:30PM**

**Workshop W-5: Neuromorphic Hardware: VLSI Spiking Neural Networks (SNN) and Bio-Sensors**, Organizers: S. Renaud, G. Indiveri, H. Chen and E. Culurciello, Room: Monterey

**Workshop W-6: IJCNN Competitions**, Organizers: I. Guyon and S. Crone, Room: Carmel