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Date/Time	Monday, 25 July 2016 / 2:30PM – 4:30PM
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Chair	Manuel Roveri

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[1]Núcleo de Ciências Exatas, Universidade Federal de Alagoas, Arapiraca, Alagoas, Brasil; [2]Department of Computer Science, University of Leicester, University Road, Leicester, UK; [3]Centro de Informática, Universidade Federal de Pernambuco, Recife, Pernambuco, Brasil.

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[1]Politecnico di Milano, Milan, Italy; [2]Universit Svizzera Italiana, Lugano, Switzerland

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[1]Department of Architecture, Mashhad Branch, Islamic Azad University, Mashhad, Iran; [2]Department of Computer Engineering, Torbat-e-Jam Branch, Islamic Azad University, Torbat-e-Jam, Iran ; [3]Center for Intelligence Systems Research, Deakin University, Geelong 3217, Australia; [4]Chair in Engineering, Director — Centre for Intelligent Systems Research, Deakin University, 75, Pigdons Road, Waurn Ponds, Victoria 3216, Australia.

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Date/Time	Monday, 25 July 2016 / 2:30PM – 4:30PM
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[1]Department of Computer Science and Technology, East China Normal University, Shanghai, P.R.China ; [2]Shanghai Key Laboratory of Multidimensional Information Processing; [3]The 3rd Institute of Ministry of Public Security of China.

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Chair(S)	Bao-Liang Lu, Chin-Teng Lin

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[1]Graduate School of Information Science and Technology, Osaka University, Osaka, 5650871, Japan; [2]Institute of Scientific and Industrial Research (ISIR), Osaka University, Osaka, 567-0047, Japan.

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[1]Department of Computer Science, University of Hamburg, Hamburg, Germany.

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[1]Institut d'Électronique Fondamentale, Univ. Paris-Sud, CNRS, 91405 Orsay, France; [2]Institut d' Électronique, Microélectronique et Nanotechnologies, UMR CNRS 8520, Villeneuve d'Ascq, France.

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Venue	Room 217+219
Chair	Kunihiko Fukushima

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[1]Center for Informatics and Systems of the University of Coimbra, Polo II, 3030-290 Coimbra, Portugal; [2]EyeSee Solutions, Av 5 Outubro 293, 1600-035 Lisbon, Portugal; [3]CISUC — Department of Informatics Engineering, University of Coimbra, Portugal.

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[1]Louisiana State University; [2]NASA Ames Research Center; [3]Autopredictive Coding LLC; [4]Applied Materials

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[1]Department of Mathematics and Statistics of the University of Maryland, Baltimore County, USA; [2]Department of Computer Science, and Electrical Engineering of the University of Maryland, Baltimore County, USA.

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[1]Department of Computer Science and Engineering, Pohang University of Science and Technology, 77 Cheongam-ro, Nam-gu, Pohang 37673, Korea; [2]Access Network Lab, SK Telecom, Korea.

Session MM-7	Spiking Neural Networks II
Date/Time	Monday, 25 July 2016 / 2:30PM – 4:30PM
Venue	Room 224
Chair	Kazushi Ikeda

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[1]University of East London, London, UK; [2]Intelligent Voice Ltd, London, UK.

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[1]Department of Mechatronics Engineering, Istanbul Bilgi, University, Istanbul, Turkey; [2]Department of Electrical and Electronics Engineering,Bogazici University, Istanbul, Turkey and Harbin Institute of Technology, Harbin, China.

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Department of Electrical Engineering and Computer Science, Syracuse University, NY 13244, USA.

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School of Computer Science and Engineering, University of New South Wales, Sydney, NSW 2052, Australia.

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Venue	Room 208+209
Chair	Oscar Cordón

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Hui Li, YuanYuan Fan, Qingfu Zhang, Zongben Xu and Jingda Deng
School of Mathematics and Statistics, Xi'an Jiaotong University, China; Department of Computer Science, City University of Hong Kong, Hong Kong, China.

2:50PM **E-16173** **Analyzing coevolutionary games with dynamic fitness landscapes.....N/A**
Hendrik Richter
HTWK Leipzig University of Applied Sciences, Germany

3:10PM **F-16425** **On the Satisfaction of Moser-Navara Axioms for Fuzzy Inference Systems.....N/A**
Martin Stepnicka
University of Ostrava, IRAFM, Czech Republic

3:30PM **F-16143** **A Similarity-based Inference Engine for Non-Singleton Fuzzy Logic Systems.....N/A**
Christian Wagner, Amir Pourabdollah, Josie McCulloch, Robert John and Jonathan M. Garibaldi
University of Nottingham, United Kingdom

3:50PM **N-16838** **Adaptive Learning of Dynamic Movement Primitives through Demonstration.....1068**
Raj Samant, Laxmidhar Behera and Gaurav Pandey
Department of Electrical Engineering, Indian Institute of Technology, Kanpur, 208016, India.

4:10PM **N-16020** **Complex-Valued B-Spline Neural Network and its Application to Iterative Frequency-Domain Decision Feedback Equalization for Hammerstein Communication Systems.....4097**
Sheng Chen[1], Xia Hong[2], Emad Khalaf[3], Fuad E. Alsaadi[3] and Chris J. Harris[1]
[1]Electronics and Computer Science, University of Southampton, Southampton SO17 1BJ, UK. S. Chen is also with King Abdulaziz University, Jeddah 21589, Saudi Arabia; [2]School of Systems Engineering, University of Reading, Reading RG6 6AY, UK; [3]Electrical and Computer Engineering, Department, Faculty of Engineering, King Abdulaziz University, Jeddah, 21589, Saudi Arabia.

Session MP-1	IJCNN-39: Hybrid Neural Intelligent Systems
Date/Time	Monday, 25 July 2016 / 4:30PM – 6:30PM
Venue	Room 212
Chair	Patricia Melin

4:30PM **N-16526** **A Metagenomic Hybrid Classifier for Paediatric Inflammatory Bowel Disease.....1083**
Benjamin Wingfield[1], Sonya Coleman[1], T. M. McGinnity[1,2] and Anthony J. Bjourson[3]
[1]Intelligent Systems Research Centre, Magee Campus, United Kingdom; [2]School of Science & Technology, Nottingham Trent University, Nottingham, United Kingdom; [3]Northern Ireland Centre for Stratified Medicine, Derry/Londonderry, United Kingdom.

4:50PM **N-16720** **Background Modeling on Depth Video Sequences Using Self-Organizing Retinotopic Maps.....1090**
Mario I. Chacon-Murguia, Oscar Alejandro Chavez-Montes and Juan A. Ramirez-Quintana
Visual Perception Applications on Robotic Lab at Chihuahua Institute of Technology Mexico.

5:10PM **N-16885** **A Hybrid Neuro-Evolutive Algorithm for Neural Network Optimization.....1096**
Lídio Mauro Lima de Campos[1], Roberto Célio Limão de Oliveira[2] and Mauro Roisenberg[3]
[1]Prog.de Pós-Graduação em, Engenharia Elétrica, Universidade Federal do Pará-UFPA, Rua Augusto Corrêa 01-Guamá, Belém, Pará CEP 66075-100, Brasil; [2]Faculty of Computer Engineering, Federal University of Pará Universidade Federal do Pará-UFPA, Rua Augusto Corrêa 01-Guamá, Belém, Pará CEP 66075-100, Brasil; [3]Departamento de Informática e Estatística, Universidade Federal de Santa Catarina-UFSC, Florianópolis, SC, Brasil P.O. Box 476, USFC-CTC-INE, Campus Trindade. Florianópolis, SC, Brasil.

5:30PM **N-16324** **Repairing Blackbox Constraint Violations in Multi-Objective Optimisation by Use of Decision Trees.....1104**
Timothy Rawlins[1], Andrew Lewis[1] and Timoleon Kipouros[2]
[1]Griffith University, Australia; [2]Cambridge University, UK.

5:50PM **N-17020** **A Probabilistic and Dynamic Chart Pattern Recognition Hybrid System Applied to Foreign Exchange Rate Prediction.....1112**
Rodrigo F. B. de Brito and Adriano L. I. Oliveira
Informatics Center, Federal University of Pernambuco — UFPE, Recife, Brazil.

6:10PM **N-16571** **A Constructive Algorithm for Neural Networks Inspired on Decision Trees and Evolutionary Algorithms.....1120**
Marcus Vinıcius Mazega Figueredo, Emerson Cabrera Paraiso and Julio Cesar Nievola
PPGIA — PUCPR, Curitiba — PR — Brazil.

Session MP-2	Reservoir Networks
Date/Time	Monday, 25 July 2016 / 4:30PM – 6:30PM
Venue	Room 213
Chair	Derong Liu

4:30PM **N-16080** **Stochastic Hardware Implementation of Liquid State Machines.....1128**
Miquel L. Alomar, Vincent Canals, Antoni Morro, Antoni Oliver and Josep L. Rossello
Electronics Engineering Group / Physics Department, University of the Balearic Islands, Palma de Mallorca, Spain.

4:50PM **N-16086** **Diverse, Noisy and Parallel: A New Spiking Neural Network Approach for Humanoid Robot Control.....1134**
R. de Azambuja[1,2], A. Cangelosi[1] and S. V. Adams[1]
[1]School of Computing, Electronics and Mathematics, University of Plymouth, Plymouth, Devon, United Kingdom; [2]CAPES Foundation, Ministry of Education of Brazil, Brasilia, DF 70040-020, Brazil

5:10PM **N-16470** **An Experimental Evaluation of Echo State Network for Colour Image Segmentation.....1143**
Abdelkerim Souahlia[1], Ammar Belatreche[2], Abdelkader Benyettou[3] and Kevin Curran[4]
[1]Faculty of Sciences and Technology, University of Djelfa, Algeria; [2]Department of Computer Science and Digital Technologies, Northumbria University, UK; [3]Faculty of Mathematics and Computer Science, University of Sciences and Technology, Oran, Algeria; [4]Intelligent System Research Centre, University of Ulster, UK.

5:30PM **N-16549** **Neural Network based Denoised Methods For Retinal Fundus Images and MRI Brain Images.....1151**
Toufique Ahmed Soomro[1] and Junbin Gao[2]
[1]School of Computing and Mathematics, Charles Sturt University, Bathurst, NSW 2795, Australia; [2]The University Sydney Business School, The University of Sydney, Camperdown, NSW 2006, Australia.

5:50PM **N-16518** **AP-STDP: A Novel Self-Organizing Mechanism for Efficient Reservoir Computing.....1158**
Yingyezhe Jin and Peng Li
Department of Electrical and Computer Engineering, Texas A&M University, College Station, Texas, USA.

6:10PM **N-16441** **An Energy Efficient Decoding Scheme for Nonlinear MIMO-OFDM Network using Reservoir Computing.....1166**
Susanna Mosleh[1], Cenk Sahin[1], Lingjia Liu[1], R. Y. Zheng[2] and Yang Yi[1]
[1]Department of Electrical Engineering and Computer Science, the University of Kansas, Lawrence, KS, 66045 USA; [2]Department of Electrical and Computer Engineering, Missouri University of Science and Technology, MO, 65409, USA

Session MP-3	IJCNN-30: Biologically Inspired Computational Vision & Robotics
Date/Time	Monday, 25 July 2016 / 4:30PM – 6:30PM
Venue	Room 214
Chair	Khan Iftekharuddin

4:30PM **N-16192** **LGMD and DSNs Neural Networks Integration for Collision Predication.....1174**
Guopeng Zhang[1], Chun Zhang[2] and Shigang Yue[1]
[1]School of Computer Science, University of Lincoln, Lincoln, LN6-7TS, UK; [2]Institute of Microelectronics, Tsinghua University, Beijing, 100-084, China.

4:50PM **N-17076** **NFLB Dropout:Improve Generalization Ability by Dropping out the Best — A Biologically Inspired Adaptive Dropout Method For Unsupervised Learning.....1180**
Peijie Yin[1], Lu Qi[2], Xuanyang Xi[2], Bo Zhang[1] and Hong Qiaol[1,3]
[1]Institute of Applied Mathematics, Academy of Mathematics and Systems Science, Chinese Academy of Science, Beijing 100080, China; [2]State Key Lab of Management and Control for Complex Systems, Institute of Automation, Chinese Academy of Sciences, Beijing, 100190, China; [3]CAS Centre for Excellence in Brain Science and Intelligence Technology (CEBSIT), Shanghai 200031, China

5:10PM **N-17160** **Integrating Convolutional Neural Networks into a Sparse Distributed Representation Model based on Mammalian Cortical Learning.....1187**
Daniel E. Padilla and Mark D. McDonnell
Computational and Theoretical Neuroscience Laboratory, School of Information Technology and Mathematical Sciences, University of South Australia, Mawson Lakes, SA 5095, Australia.

5:30PM **N-16572** **Efficient Feature Extraction with Simultaneous Recurrent Network for Metric Learning.....1195**
M. Alam, L. Vidyaratne and K. M. Iftekharuddin
The Vision Lab at Department of Electrical and Computer Engineering, Old Dominion University, Norfolk, VA 23529, USA.

5:50PM **N-16958** **Deep Recurrent Neural Network for Seizure Detection.....1202**
L. Vidyaratne, A. Glandon, M. Alam and K. M. Iftekharuddin
The Vision Lab at Department of Electrical and Computer Engineering, Old Dominion University, Norfolk, VA 23529, USA.

6:10PM **N-16637** **Neuro-fuzzy Learning of Locust's Marching in a Swarm.....1208**
Gil Segal[1], Amiram Moshaiov[1], Guy Amichay[2] and Amir Ayali[1]
[1]School of Mechanical Engineering, Tel Aviv University, Tel Aviv, Israel; [2]Department of Zoology, Tel Aviv University, Tel Aviv, Israel.

Session MP-4	IJCNN-16: Applications of Machine Learning Techniques to Bioinformatics
Date/Time	Monday, 25 July 2016 / 4:30PM – 6:30PM
Venue	Room 215
Chair	Xingming Zhao

4:30PM **N-16529** **A Hybrid Sequential Feature Selection Approach for the Diagnosis of Alzheimer's Disease.....1216**
Yang Han and Xing-Ming Zhao
Department of Computer Science, Tongji University, Shanghai, 201804, China

4:50PM **N-16875** **Classification of GPCRs Proteins Using a Statistical Encoding Method.....1224**
Muhammad Javed Iqbal[1], Ibrahima Faye[2] and Brahim Belhaouari Samir[3]
[1]Department of Computer Science, University of Engineering and Technology Taxila, Pakistan; [2]Department of Fundamental and Applied Sciences & Centre for Intelligent Signal and Imaging Research, Universiti Teknologi PETRONAS, Malaysia; [3]College of Science, University of Sharjah, United Arab Emirates.

5:10PM **N-17094** **Prediction of Membrane Protein Structures using a Projection based Meta-cognitive Radial Basis Function Network.....1229**
R. Shamima and S. Suresh
School of Computer Engineering, Nanyang Technological University, Singapore.

5:30PM **N-17100** **Large-Scale Prediction of Drug-Target Interactions from Deep Representations.....1236**
Peng-Wei Hu, Keith C. C. Chan and Zhu-Hong You
Department of Computing, Hong Kong Polytechnic University, Hung Hom, Kowloon. Hong Kong.

5:50PM **N-16166** **Detecting Overlapping Protein Complexes in Weighted Protein-Protein Interaction Networks Using Pseudo-Clique Extension Based on Fuzzy Relation.....1244**
Buwen Cao[1], Jiawei Luo[1], Cheng Liang[1] and Shulin Wang[2]
[1]College of Computer Science and Electronic Engineering, Hunan University, Changsha 410082, China; [2]School of Information Science and Engineering, Shandong Normal University, Jinan 250014, China.

6:10PM **N-16804** **Clustering Based Active Learning for Biomedical Named Entity Recognition.....1253**
Xu Han[1], Chee Keong Kwoh[1] and Jung-jae Kim[2]
[1]School of Computer Engineering, Nanyang Technological University, 50 Nanyang Avenue, 639798, Singapore; [2]Institute for Infocomm Research, 1 Fusionopolis Way, 138632, Singapore.

Session MP-5	IJCNN-18: Neural Networks: Model and Application in Real World Problems
Date/Time	Monday, 25 July 2016 / 4:30PM – 6:30PM
Venue	Room 216
Chair(S)	Zhi-Hui Zhan, Jing-Hui Zhong, Yong Wee Foo

4:30PM **N-16428** **Simulating Robotic Cars Using Time-Delay Neural Networks.....1261**
Alberto F. De Souza[1], Jacson Rodrigues Correia da Silva[2], Filipe Mutz[3], Claudine Badue[1] and Thiago Oliveira-Santos[1]
[1]Departamento de Informática, Universidade Federal do Espírito Santo, Vitória, Brasil; [2]Departamento de Computação, Universidade Federal do Espírito Santo, Alegre, Brasil; [3]Coordenadoria de Informática, Instituto Federal do Espírito Santo, Vitória, Brasil.

4:50PM **N-16537** **Detecting Multiple Changes from Multi-Temporal Images by Using Stacked Denosing Autoencoder Based Change Vector Analysis.....1269**
Linzhi Su[1], Jiao Shi[2], Puzhao Zhang[1], Zhao Wang[1] and Maoguo Gong[1]
[1]Key Laboratory of Intelligent Perception and Image Understanding, Xidian University, Xian, China; [2]School of Electronics and Information, Northwestern Polytechnical University, Xian, China.

5:10PM **N-16904** **Detection and Classification of Power Quality Disturbances in Time Domain Using Probabilistic Neural Network.....1277**
Z. M. Chen, M. S. Li, T. Y. Ji and Q. H. Wu
School of Electric Power Engineering, South China University of Technology, Guangzhou, 510641, China.

5:30PM **N-16906** **Speciation and Diversity Balance for Genetic Algorithms and Application to Structural Neural Network Learning.....1283**
Yong Wee Foo[1,2], Cindy Goh[1] and Yun Li[1]
[1]School of Engineering, University of Glasgow, Glasgow, UK; [2]School of Engineering, Nanyang Polytechnic, Singapore

5:50PM **N-16956** **Application of Surrogate Models for the Optimization and Design of Chemical Processes.....1291**
Corina Nentwich and Sebastian Engell
Process Dynamics and Operations Group, Technische Universität Dortmund, Emil-Figge-Str. 70, 44227 Dortmund, Germany.

6:10PM **N-17005** **Self-Regulated Incremental Clustering with Focused Preferences.....1297**
Di Wang[1] and Ah-Hwee Tan[2]
[1]Joint NTU-UBC Research Centre of Excellence in Active Living for the Elderly (LILY) and Nanyang Technological University, 50 Nanyang Avenue, 639798, Singapore; [2]School of Computer Science and Engineering, Nanyang Technological University, 50 Nanyang Avenue, 639798, Singapore.

Session MP-6	Deep Neural Networks III
Date/Time	Monday, 25 July 2016 / 4:30PM – 6:30PM
Venue	Room 217+219
Chair	Jacek Zurada

4:30PM **N-16291** **Multi-Fidelity Matryoshka Neural Networks for Constrained IoT Devices.....1305**
Sam Leroux, Steven Bohez, Elias De Coninck, Tim Verbelen, Bert Vankeirsbilck, Pieter Simoens and Bart Dhoedt
Ghent University — iMinds, Gaston Crommenlaan 8/201, B-9050 Ghent, Belgium.

4:50PM **N-16726** **Clustering of Receptive Fields in Autoencoders.....1310**
Babajide O. Ayinde and Jacek M. Zurada
Electrical and Computer Engineering, University of Louisville, Louisville, KY 40218, USA

5:10PM **N-16946** **About Pyramid Structure in Convolutional Neural Networks.....1318**
Ihsan Ullah[1,2] and Alfredo Petrosino[1]
[1]CVPR Lab, Department of Science and Technology, University of Napoli `Parthenope', Naples, Italy; [2]Department of Computer Science, University of Milan, Milan, Italy

5:30PM **N-16459** **Deep Self-organizing Reservoir Computing Model for Visual Object Recognition.....1325**
Zhidong Deng[1], Chengzhi Mao[2] and Xiong Chen[1]
[1]State Key Laboratory of Intelligent Technology and Systems, Tsinghua National Laboratory for Information Science and Technology, Department of Computer Science; [2]Department of Electronic Engineering, Tsinghua University, Beijing 100084, China.

5:50PM **N-16356** **Convolutional Neural Network Based Sentiment Analysis using Adaboost Combination.....1333**
Yazhi Gao[1], Wenge Rong[1], Yikang Shen[2] and Zhang Xiong[1]
[1]School of Computer Science and Engineering, Beihang University, Beijing, 100191, China; [2]Sino-French Engineer School, Beihang University, Beijing, 100191, China.

6:10PM **N-16634** **Match Memory Recurrent Networks.....1339**
Spyridon Samothrakis[1], Maria Fasli[1], Tom Vodopivec[2] and Michael Fairbank[3]
[1]Institute for Analytics and Data Science, University of Essex, Wivenhoe Park, Colchester CO4 3SQ; [2]Faculty of Computer and Information Science, University of Ljubljana, Vecna pot 113, Ljubljana, Slovenia; [3]Computer Science and Electronic Engineering, University of Essex, Wivenhoe Park, Colchester CO4 3SQ.

Session MP-7	IJCNN-35: Spiking Neural Networks
Date/Time	Monday, 25 July 2016 / 4:30PM – 6:30PM
Venue	Room 224
Chair	Nathan Scott

4:30PM **N-16179** **An Application Development Platform for Neuromorphic Computing.....1347**
Mark E. Dean[1], Jason Chan[1], Christopher Daffron[1], Adam Disney[1], John Reynolds[1], Garrett Rose[1], James S. Plank[1], J. Douglas Birdwell[1] and Catherine D. Schuman[2]
[1]Electrical Engineering and Computer Science, University of Tennessee, Knoxville, TN; [2]Computational Data Analytics, Oak Ridge National Laboratory, Oak Ridge, TN

4:50PM **N-16383** **Rate Coding vs. Temporal Coding — Is Optimum Between?.....1355**
Mikhail Kiselev
Department of Mathematics and Information Technologies, Chuvash State University, Cheboxary, Russia.

5:10PM **N-16725** **Longitudinal Study of Alzheimer's Disease Degeneration through EEG Data Analysis with a NeuCube Spiking Neural Network Model.....1360**
Elisa Capeccil[1,3], Zhhreh Gholami Doborjeh[1], Nadia Mammone[2], Fabio La Foresta[3], Francesco C. Morabito[3] and Nikola Kasabov[1]
[1]Auckland University of Technology – Knowledge Endingeering and Discovery Research Institute, AUT Tower, Level 7, Auckland, New Zealand; [2]IRCCS Centro Neurolesi Bonino-Pulejo, Messina, Italy; [3]DICEAM Department, Mediterranean University of Reggio Calabria, Italy

5:30PM **N-16787** **Which Method to Use for Optimal Structure and Function Representation of Large Spiking Neural Networks: A Case Study on the NeuCube Architecture.....1367**
Anne Abbott, Neelava Sengupta and Nikola Kasabov
KEDRI, Auckland University of Technology, Auckland, New Zealand.

5:50PM **N-16821** **Personalised Modelling on Integrated Clinical and EEG Spatio-Temporal Brain Data in the NeuCube Spiking Neural Network System.....1373**
Maryam Gholami Doborjeh and Nikola Kasabov
Knowledge Engineering and Discovery Research Institute, Auckland University of Technology, Auckland 1010, New Zealand.

6:10PM **N-16856** **Self-Repairing Mobile Robotic Car using Astrocyte-Neuron Networks.....1379**
Junxiu Liu[1], Jim Harkin[1], Liam McDaid[1], David M. Halliday[2], Andy M. Tyrrell[2] and Jon Timmis[2]
[1]School of Computing and Intelligent Systems, University of Ulster, Magee Campus, Derry, Northern Ireland, BT48 7JL, UK ; [2]Department of Electronics, University of York, Heslington, York, YO10 5DD, UK.

Session MP-18	Recent Advances in CI: Best Student Paper Competition
Date/Time	Monday, 25 July 2016 / 4:30PM – 6:30PM
Venue	Room 208+209
Chair	Yew Soon Ong

4:30PM **E-17092** **Evolvability as a Quality Criterion for Linear Deformation Representations in Evolutionary Optimization.....N/A**
Andreas Richter, Jascha Achenbach, Stefan Menzel and Mario Botsch
Bielefeld University, Germany; Honda Research Institute Europe, Germany

4:50PM **E-16367** **Social-Insect-Inspired Adaptive Task Allocation for Many-Core Systems.....N/A**
Matthew Rowlings, Andy Tyrrell and Martin Trefzer
University of York, United Kingdom

5:10PM **F-16508** **An Analytical Approach for Solving Type-1 and Type-2 Fully Fuzzy Linear Systems of Equations.....N/A**
Sheriff Sadiqbatcha and Saeed Jafarzadeh
California State University Bakersfield, United States

5:30PM **F-16137** **Measuring the Similarity between zSlices General Type-2 Fuzzy Sets with Non-Normal Secondary Membership Functions.....N/A**
Josie McCulloch and Christian Wagner
University of Nottingham, United Kingdom

5:50PM **N-16573** **Spin Torque Nano-Oscillator based Oscillatory Neural Network.....1387**
Chamika M. Liyanagedera[1], Karthik Yogendra[1], Kaushik Roy[1] and Deliang Fan[2]
[1]School of Electrical & Computer Engineering, Purdue University, West Lafayette, Indiana, 47907, USA; [2]School of Electrical and Computer Engineering, University of Central Florida, Orlando, Florida, 32816, USA

6:10PM **N-16558** **Detection of False Data Attacks in Smart Grid with Supervised Learning.....1395**
Jun Yan, Bo Tang and Haibo He
Department of Electrical, Computer, and Biomedical Engineering, University of Rhode Island, Kingston, Rhode 02881, Island.

Session TA-1	IJCNN-49: Machine Learning Methods Robust to Large Outliers I
Date/Time	Tuesday, 26 July 2016 / 8:00AM – 10:00AM
Venue	Room 212
Chair(s)	Badong Chen, Lei Sun

8:00AM **N-16444** **Multiple Adaptive Kernel Size KLMS for Beijing PM2.5 Prediction.....1403**
Zheng Cao[1], Shujian Yu[1], Guibiao Xu[2], Badong Chen[3] and José C. Príncipe[1]
[1]CNEL, Department of Electrical & Computer Engineering, University of Florida, Gainesville, FL, 32611, USA; [2]NLPR, Institute of Automation, Chinese Academy of Sciences, Beijing, 100190, China; [3]Institute of Artificial Intelligence & Robotics, Xi'an Jiaotong University, Xi'an, 710049, China.

8:20AM **N-16599** **A Dictionary Based Survival Error Compensation for Robust Adaptive Filtering.....1408**
Lei Sun[1], Badong Chen[2], Jie Yang[1], Ronghua Zhou[1], Qing Nie[1] and Aihua Wang[1]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, 100081, P.R. China; [2]Institute of Artificial Intelligence and Robotics, X'ian Jiaotong University, X'ian, 710049, P.R. China.

8:40AM **N-16165** **Robust Affine Iterative Closest Point Algorithm Based on Correntropy for 2D Point Set Registration.....1415**
Zongze Wu[1], Hongchen Chen[1] and Shaoyi Du[2]
[1]School of Electronic and Information Engineering, South China University of Technology, Guangzhou, China; [2]Institute of Artificial Intelligence and Robotics, X'ian Jiaotong University, Xi'an, China.

9:00AM **N-16724** **ADMM for Maximum Correntropy Criterion.....1420**
Fei Zhu[1], Abderrahim Halimi[2], Paul Honeine[3], Badong Chen[4] and Nanning Zheng[4]
[1]Institut Charles Delaunay (CNRS), Université de Technologie de Troyes, France; [2]School of Engineering and Physical Sciences, Heriot-Watt University, U.K; [3]LITIS lab, Université de Rouen, France; [4]Institute of Artificial Intelligence and Robotics, X'ian Jiaotong University, X'ian, China.

9:20AM **N-16250** **Generalized Correntropy Induced Loss Function for Deep Learning.....1428**
Liangjun Chen, Hua Qu and Jihong Zhao
The School of Electronic and Information Engineering, Xi'an Jiaotong University, Xi'an, 710049, P.R. China.

9:40AM **N-16275** **Robust Bounded Logistic Regression in the Class Imbalance Problem.....1434**
Guibiao Xu[1], Bao-Gang Hu[1] and Jose C. Principe[2]
[1]NLPR, Institute of Automation, Chinese Academy of Sciences, Beijing, 100190, China; [2]CNEL, Department of Electrical & Computer Engineering, University of Florida, Gainesville, FL, 32611, USA.

Session TA-2	Supervised Learning
Date/Time	Tuesday, 26 July 2016 / 8:00AM – 10:00AM
Venue	Room 213
Chair	Ana Carolina Lorena

8:00AM **N-16239** **Large Scale Metric Learning.....1442**
Zay Maung Maung Aye, Kotagiri Ramamohanarao and Benjamin I. P. Rubinstein
Department of Computing and Information Systems, The University of Melbourne, Parkville, Victoria 3052, Australia.

8:20AM **N-16500** **Measuring the Complexity of Regression Problems.....1450**
Aron I. Maciel[1], Ivan G. Costa[2] and Ana C. Lorena[3]
[1]Instituto de Ciência e Tecnologia (ICT), Universidade Federal de São Paulo (UNIFESP), Sao José dos Campos-SP, Brazil; [2]IZKF Research Group Bioinformatics, RWTH Aachen University, Aachen, Germany; [3]ML Research Group, ICT — UNIFESP, São José dos Campos-SP, Brazil.

8:40AM	**N-16700**	**Enhancing Multi-label Classification Based on Local Label Constraints and Classifier Chains.....1458** Benhui Chen[1,2], Weite Li[3], Yuqing Zhang[1] and Jinglu Hu[3] *[1]School of Computer and Control Engineering, University of Chinese Academy of Sciences, Beijing 101408, China; [2]School of Mathematics and Computer Science, Dali University, Dali, Yunnan Province, China; [3]Graduate School of Information, Production and Systems, Waseda University, Kitakyushu-shi, Fukuoka, Japan.*
9:00AM	**N-16293**	**Supervised Radar Signal Classification.....1464** Ivan Jordanov[1], Nedyalko Petrov[2] and Alessio Petrozziello[1] *[1]School of Computing, University of Portsmouth, Portsmouth, UK; [2]GSTT/KCL Comprehensive, Biomedical Research Centre, King's College, London, UK.*
9:20AM	**N-16244**	**Optimizing Neural-network Learning Rate by Using a Genetic Algorithm with Per-epoch Mutations.....1472** Yasusi Kanada *Media Research Department, Center for Technology Innovation System Engineering, Hitachi, Ltd., 1-280 Higashi-koigakubo, Kokubunji, Tokyo 185-8601, Japan.*
9:40AM	**N-16739**	**Spatially Constrained Location Prior for Scene Parsing.....1480** Ligang Zhang, Brijesh Verma, David Stockwell and Sujan Chowdhury *Centre for Intelligent Systems, School of Engineering and Technology, Central Queensland University, Brisbane, Queensland, Australia.*

Session TA-3	IJCNN-13: Advances in Computational Intelligence for Applied Time Series Forecasting (ACIATSF)
Date/Time	Tuesday, 26 July 2016 / 8:00AM – 10:00AM
Venue	Room 214
Chair(s)	Sven Crone, Cristian Rodriguez Rivero

8:00AM	**N-16342**	**Clustering Based Methods for Solar Power Forecasting.....1487** Zheng Wang[1], Irena Koprinska[1] and Mashud Rana[2] *[1]School of Information Technologies, University of Sydney, Sydney, NSW, Australia; [2]Australian Energy Research Institute, University of New South Wales, Sydney, NSW, Australia.*
8:20AM	**N-16559**	**An Adaptive Forecasting Strategy with Hybrid Ensemble Models.....1495** Joerg D. Wichard *Scidalis GmbH, Germany*
8:40AM	**N-17158**	**Meta-Learning with Neural Networks and Landmarking for Forecasting Model Selection—An Empirical Evaluation of Different Feature Sets Applied to Industry Data.....1499** Mirko Kück[1], Sven F. Crone[2] and Michael Freitag[3] *[1]BIBA — Bremer Institut für Produktion und Logistik GmbH, University of Bremen, Bremen, Germany; [2]Research Centre for Forecasting, Lancaster University Management School, Lancaster, United Kingdom; [3]University of Bremen, Faculty of Production Engineering, BIBA — Bremer Institut für Produktion und Logistik GmbH, University of Bremen, Bremen, Germany.*

9:00AM	**N-16922**	**An Automatic Calibration Framework Applied on a Metaheuristic Fuzzy Model for the CIF Competition.....1507** Vitor N. Coelho[1], Igor M. Coelho[2], Ivan R. Meneghini[1], Marcone J. F. Souza[3] and Frederico G. Guimarães[4] *[1]Graduate Program in Electrical Engineering, Universidade Federal de Minas Gerais, Av. Antonio Carlos 6627, 31270-901, Belo Horizonte, MG, Brazil; [2]Department of Computer Science, State University, of Rio de Janeiro, Rio de Janeiro, Brazil; [3]Department of Computer Science, Universidade Federal de Ouro Preto, Ouro Preto, MG, Brazil; [4]Departament of Electrical Engineering, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil.*
9:20AM	**N-17155**	**Feature Selection of Autoregressive Neural Network Inputs for Trend Time Series Forecasting.....1515** Sven F. Crone[1] and Stephan Häger[2] *[1]Lancaster University Management School, Department of Management Science, Lancaster, United Kingdom; [2]iqast Intelligent Forecasting Systems, RSG Software GmbH, Hamburg, Germany.*
9:40AM	**N-16128**	**Recurrent Neural Network Based Prediction of Indian Summer Monsoon Using Global Climatic Predictors.....1523** Moumita Saha and Pabitra Mitra *Department of Computer Science and Engineering, Indian Institute of Technology Kharagpur, India.*

Session TA-4	IJCNN-36: Online Real-Time Learning Strategies for Large Data Streams I
Date/Time	Tuesday, 26 July 2016 / 8:00AM – 10:00AM
Venue	Room 215
Chair	Mahardhika Pratama

8:00AM	**N-16167**	**A Comparative Study of HTM And Other Neural Network Models for Online Sequence Learning with Streaming Data.....1530** Yuwei Cui, Chetan Surpur, Subutai Ahmad and Jeff Hawkins *Numenta, Inc, Redwood City, CA, United States*
8:20AM	**N-16354**	**Detection of Event Onset using Twitter.....1539** Satya Katragadda[1], Ryan Benton[2], Shahid Virani[1] and Vijay Raghavan[3] *[1]The Center for Advanced Computer Studies, University of Louisiana at Lafayette, Lafayette, USA; [2]School of Computing, University of South Alabama, Mobile, USA; [3]The Center for Visual and Decision Informatics, University of Louisiana at Lafayette, Lafayette, USA.*
8:40AM	**N-16809**	**Predicting the Sentiment of SaaS Online Reviews Using Supervised Machine Learning Techniques.....1547** Asma Musabah Alkalbani[1], Ahmed Mohamed Ghamry[2], Farookh Khadeer Hussain and Omar Khadeer Hussain *[1]Decision Support and e-Service Intelligence Lab, Center of Quantum Computation and Intelligent Systems, School of Software, University of Technology, Sydney, NSW 2007, Australia; [2]School of Business, University of New South Wales Canberra (UNSW Canberra), Australian Defence Force Academy, Canberra, ACT, 2602.*

9:00AM **N-17034** **CD-TDS: Change Detection in Transactional Data Streams for Frequent Pattern Mining.....1554**
Yun Sing Koh
Department of Computer Science, The University of Auckland, Private Bag 92019, Auckland 1142, New Zealand.

9:20AM **N-16506** **Sentiment Classification Using Comprehensive Attention Recurrent Models.....1562**
Yong Zhang[1], Meng Joo Er[1], Rajasekar Venkatesan[1], Ning Wang[2] and Mahardhika Pratama[3]
[1]School of Electrical and Electronic Engineering, Nanyang Technological University, 50 Nanyang Ave, 639798, Singapore; [2]Marine Engineering College, Dalian Maritime University, Dalian, 116026, China; [3]Department of Computer Science and IT, La Trobe university, Melbourne, Victoria, 3086, Australia.

9:40AM **N-16350** **Tweet Modeling with LSTM Recurrent Neural Networks for Hashtag Recommendation.....1570**
Jia Li, Hua Xu, Xingwei He, Junhui Deng and Xiaomin Sun
State Key Laboratory of Intelligent Technology and Systems, Tsinghua National Laboratory for Information Science and Technology, Department of Computer Science and Technology, Tsinghua University, Beijing, 100084, China.

Session TA-5	IJCNN-03: Machine Learning Methods Applied to Vision and Robotics
Date/Time	Tuesday, 26 July 2016 / 8:00AM – 10:00AM
Venue	Room 216
Chair(s)	Jose Garcia-Rodriguez, Jorge Azorin

8:00AM **N-16727** **PointNet: A 3D Convolutional Neural Network for Real-Time Object Class Recognition.....1578**
A. Garcia-Garcia[1], F. Gomez-Donoso[2], J. Garcia-Rodriguez[1], S. Orts-Escolano[1], M. Cazorla[2] and J. Azorin-Lopez[1]
[1]Department of Computer Technology, University of Alicante, Spain; [2]Department of Computer Science and Artificial Intelligence, University of Alicante, Spain.

8:20AM **N-17006** **Group Activity Description and Recognition based on Trajectory Analysis and Neural Networks.....1585**
Jorge Azorin-Lopez[1], Marcelo Saval-Calvo[1], Andres Fuster-Guillo[1], Jose Garcia-Rodriguez[1], Miguel Cazorla[2] and Maria Teresa Signes-Pont[1]
[1]Computer Technology Department, University of Alicante, Alicante, Spain; [2]Computer Science and Artificial Intelligence Department, University of Alicante, Alicante, Spain

8:40AM **N-16525** **Evolutionary Cellular Automata Based Approach to High-dimensional Image Segmentation for GPU Projection.....1593**
B. Priego[1], R. J. Duro[1], J. López-Fandiño[1], D. B. Heras[2] and F. Argüello[2]
[1]Integrated Group for Engineering Research, Universidade da Coruña, Spain; [2]Centro Singular de Investigación en Tecnoloxías da Información (CITIUS), Universidade de Santiago de Compostela, Spain.

9:00AM **N-17057** **Probabilistic Human Mobility Model in Indoor Environment.....1601**
Bo Tang[1], Chao Jiang[2], Haibo He[1], and Yi Guo[2]
[1]Department of Electrical, Computer and Biomedical Engineering at the University of Rhode Island, Kingston, RI, USA; [2]Department of Electrical and Computer Engineering at the Stevens Institute of Technology, Hoboken, NJ, USA.

9:20AM **N-16635** **Computing the 2-D Image Euler Number by an Artificial Neural Network.....1609**
Humberto Sossa[1], Ángel Carreón[1], Elizabeth Guevara[1] and Raúl Santiago[2]
[1]Instituto Politécnico Nacional-CIC, Av. Juan de Dios Bátiz S/N, Gustavo A. Madero 07738, Mexico City, Mexico; [2]Instituto Tecnológico de León, Av. Tecnológico S/N, Frac. Julián de Obregón, León, Guanajuato, Mexico.

9:40AM **N-16777** **Facial Expression Recognition Based on Motion Estimation.....1617**
Hemir da Cunha Santiago, Tsang Ing Ren and George D. C. Cavalcanti
Centro de Informática, Universidade Federal de Pernambuco, Recife, Brazil.

Session TA-6	Deep Learning I
Date/Time	Tuesday, 26 July 2016 / 8:00AM – 10:00AM
Venue	Room 217+219
Chair	Guillermo Cabrera

8:00AM **N-16139** **Assessing Diffusion of Spatial Features in Deep Belief Networks.....1625**
Hasari Tosun[1], Ben Mitchell[2] and John Sheppard[1]
[1]Department of Computer Science, Montana State University, ; [2]Department of Computer Science, Johns Hopkins University.

8:20AM **N-16502** **Deep Learning with Random Neural Networks.....1633**
Erol Gelenbe and Yongha Yin
Intelligent Systems and Networks Group, Electrical & Electronic Engineering Department, Imperial College, London SW7 2AZ, UK

8:40AM **N-16692** **A Deep Quasi-Linear Kernel Composition Method for Support Vector Machines.....1639**
Weite Li[1,2], Jinglu Hu[1] and Benhui Chen[3]
[1]Graduate School of Information, Product and Systems, Waseda University, 2-7 Hibikino, Wakamatsu, Kitakyushu-shi, Fukuoka, 808-0135, Japan; [2]School of Electrical Engineering, University of Electronic Science and Technology of China, Chengdu, Sichuan, 611731, China; [3]School of Mathematics and Computer Science, Dali University, Dali, Yunnan Province, China.

9:00AM **N-16283** **Node Label Matching Improves Classification Performance in Deep Belief Networks.....1646**
Allan Campbell, Vic Ciesielski and A. K. Qin
School of Computer Science and Information Technology, RMIT University, Melbourne, 3000, Victoria.

9:20AM **N-26024** **Deep Inverse Regression with Modified Document Probability for Text Classification.....1654**
Ruoxu Ren[1], Li Ma[1] and Kay Chen Tan[2]
[1]Rolls-Royce Singapore, 6 Seletar Aerospace Rise, 797575; [2]Department of Electrical and Computer Engineering, National University of Singapore, 4 Engineering Drive 3, 117583, Singapore.

9:40AM **N-16826** **Person Re-identification Based on Deep Spatiotemporal Features and Transfer Learning.....1660**
Shengke Wang, Cui Zhang, Lianghua Duan, Lina Wang, Shan Wu and Long Chen
Department of Computer Science and Technology, Ocean University of China, 238 Songling Road, Qingdao, 266100, China.

Session TA-7	IJCNN-27: Extreme Learning Machines I
Date/Time	Tuesday, 26 July 2016 / 8:00AM – 10:00AM
Venue	Room 224
Chair	Jonathan Wu, Ajay Patrikar

8:00AM **N-16123** **Towards Using Reservoir Computing Networks for Noise-Robust Image Recognition.....1666**
Azarakhsh Jalalvand, Wesley De Neve, Rik Van de Walle and Jean-Pierre Martens
Data Science Lab, ELIS, Ghent University-iMinds, B9000 Ghent, Belgium.

8:20AM **N-16218** **Improving Accuracy of Gaussian Mixture Model Classifiers with Additional Discriminative Training.....1673**
Ajay M. Patrikar[1] and John. P. Baker[2]
[1]Leidos, Inc., Arlington, VA, USA; [2]Johns Hopkins University Applied Physics Laboratory, Laurel, MD, USA.

8:40AM **N-16221** **Heterogeneous Extreme Learning Machines.....1678**
Julio J. Valdés
National Research Council Canada, Information and Communications Technologies, Ottawa, Ontario, Canada.

9:00AM **N-16269** **Automatic Seizure Detection Using a Novel EEG Feature Based on Nonlinear Complexity.....1686**
Jiang-Ling Song and Rui Zhang
Medical Big Data Research, Center, Northwest University, Xi'an, 710069, China.

9:20AM **N-16494** **Multi-Modal Local Receptive Field Extreme Learning Machine for Object Recognition.....1696**
Fengxue Li[1], Huaping Liu[2], Xinying Xu[1] and Fuchun Sun[2]
[1]Department of Electronic Information, Taiyuan University of Technology, Jinzhong, 030600, Shanxi, P.R. China; [2]Department of Computer Science and Technology, Tsinghua University, State Key Lab. of Intelligent Technology and Systems, China.

9:40AM **N-16504** **Fast Training of Convolutional Neural Network Classifiers Through**

Extreme Learning Machines.....1702
Youngwoo Yoo and Se-Young Oh
Department of Electrical Engineering, Pohang University of Science and Technology (POSTECH), Pohang, South Korea.

Session	[Plenary] Dynamic Mapping and Interfacing with the Human Brain, Prof. Bin He
Date/Time	Tuesday, 26 July 2016 / 1:00PM – 2:00PM
Venue	Room Ballroom A
Chair	Plamen Angelov

Session TM-1	IJCNN-49: Machine Learning Methods Robust to Large Outliers II
Date/Time	Tuesday, 26 July 2016 / 2:30PM – 4:30PM
Venue	Room 212
Chair(s)	Badong Chen, Lei Sun

2:30PM **N-16386** **Topology Preserving Dictionary Learning for Pattern Classification.....1709**
Jun Guo[1], Yanqing Guo[1,2], Bo Wang[2], Xiangwei Kong[2] and Ran He[1,2,3]
[1]School of Information and Communication Engineering, Dalian University of Technology, Dalian 116024, China ; [2]The Center for Research on Intelligent Perception and Computing, National Laboratory of Pattern Recognition, Institute of Automation, Chinese Academy of Sciences, Beijing 100190, China; [3]CAS Center for Excellence in Brain Science and Intelligence Technology, Chinese Academy of Sciences, Beijing 100190, China.

2:50PM **N-16564** **A Novel Entropy Optimized Kernel Least-Mean Mixed-Norm Algorithm.....1716**
Xiong Luo[1,2], Jing Deng[1,2], Ji Liu[1,2], Ayong Li[3] Weiping Wang[1,2] and Wenbing Zhao[4]
[1]School of Computer and Communication Engineering, University of Science and Technology Beijing, Beijing, 100083, China; [2]Beijing Key Laboratory of Knowledge Engineering for Materials Science, Beijing, 100083, China; [3]Donlinks School of Economics and Management, University of Science and Technology Beijing, Beijing, 100083, China; [4]Department of Electrical Engineering and Computer Science, Cleveland State University, Cleveland, Ohio, 44115, USA

3:10PM **N-16577** **Generalized Correntropy Matching Pursuit: A Novel, Robust Algorithm for Sparse Decomposition.....1723**
Carlos A. Loza and Jose C. Principe
Computational NeuroEngineering, Laboratory (CNEL), University of Florida, Gainesville, FL.

3:30PM	**N-16879**	**Robust Image Registration with Rotation, Scale and Translation Using Best-Buddies Pairs.....1728** Shuang Luo[1], Yang Yang[1,2], Shaoyi Du[1] and Qian Kou[1] *[1]School of Electronic and Information Engineering, Xi'an Jiaotong University, Xi'an, China; [2]Xi'an Jiaotong University Suzhou Institute, Suzhou, China*
3:50PM	**N-16661**	**Extended Kalman Filter under Maximum Correntropy Criterion.....1733** Xi Liu, Hua Qu, Jihong Zhao and Badong Chen *School of Electronic and Information Engineering, Xi'an Jiaotong University, Xi'an, China.*
4:10PM	**N-16616**	**Kernel Adaptive Filtering under Generalized Maximum Correntropy Criterion.....1738** Yicong He[1], Fei Wang[1], Jing Yang[1], Haijun Rong[2] and Badong Chen[1] *[1]Institute of Artificial Intelligence and Robotics, Xi'an Jiaotong University, Xi'an, 710049, China; [2]State Key Laboratory for Strength and Vibration of Mechanical Structures, X'ian Jiaotong University, Xi'an, 710049, China*

Session TM-2	Supervised Learning II
Date/Time	Tuesday, 26 July 2016 / 2:30PM – 4:30PM
Venue	Room 213
Chair	Bonny Banerjee

2:30PM	**N-26050**	**A Time Window Neural Network Based Framework for Remaining Useful Life Estimation.....1746** Pin Lim[1], Chi Keong Goh[1] and Kay Chen Tan[2] *[1]Rolls Royce Singapore Pte Ltd, Advance Technology Center, 6 Seletar Aerospace Rise, 797575, Singapore; [2]Department of Electrical and Computer Engineering, National University of Singapore, 119077, Singapore.*
2:50PM	**N-17074**	**Human Skeleton Matching for E-learning of Dance Using A Probabilistic Neural Network.....1754** Sriparna Saha[1], Rimita Lahiri[1], Amit Konar[1], Bonny Banerjee[2] and Atulya K. Nagar[3] *[1]Electronics & Tele-Communication Department Engineering, Jadavpur University, Kolkata, India; [2]Electrical & Computer Engineering Department, The University of Memphis, United States of America; [3]Mathematics and Computer Science Department, Liverpool Hope University, United Kingdom.*
3:10PM	**N-16042**	**Manifold Optimization for Nonnegative Coefficient Logistic Regression.....1762** Xia Hong[1] and Junbin Gao[2] *[1]Department of Computer Science, School of Mathematical and Physical Sciences, University of Reading, Reading, RG6 6AY, UK; [2]Discipline of Business Analytics, The University of Sydney Business School, The University of Sydney, NSW 2006, Australia.*

3:30PM	**N-16554**	**Online Data Centering Modifications for Adaptive Filtering with NLMS Algorithm.....1767** Matous Cejnek and Ivo Bukovsky *Adaptive Signal Processing and Informatics Computational Centre (ASPICC), Department of Instrumentation and Control, Faculty of Mechanical Engineering, Czech Technical University, Technicka 4, Prague, Czech Republic*
3:50PM	**N-16109**	**Semi-hierarchical naÏve Bayes classifier.....1772** Hasna Njah[1], Salma Jamoussi[1] and Walid Mahdi[2] *[1]Multimedia InfoRmation System and Advanced Computing Laboratory (MIRACL), University of Sfax, Tunisia; [2]College of Computers and Information Technology, Taif University, Saudi Arabia.*
4:10PM	**N-17106**	**Discriminant Vector Tranformations in Neural Network Classifiers.....1780** Soumitro Swapan Auddy, Kanishka Tyagi, Son Nguyen and Michael Manry *Department of Electrical Engineering, The University of Texas at Arlington, Arlington, USA.*

Session TM-3	IJCNN-01: Mind, Brain and Cognitive Algorithms
Date/Time	Tuesday, 26 July 2016 / 2:30PM – 4:30PM
Venue	Room 214
Chair	Leonid Perlovsky

2:30PM	**N-17153**	**Gödel vs. Aristotle: Algorithmic Complexity, Models of the Mind, and Top Representations.....1787** Leonid Perlovsky *Department of Psychology, Northeastern University, Boston, MA USA.*
2:50PM	**N-16085**	**Unsupervised Transfer Learning via Low-Rank Coding for Image Clustering.....1795** Sheng Li and Yun Fu *ECE, College of Engineering, Northeastern University, Boston, MA, USA.*
3:10PM	**N-16449**	**Super-intelligence Challenges and Lossless Visual Representation of High-Dimensional Data.....1803** Boris Kovalerchuk *Department of Computer Science, Central Washington University, Ellensburg, WA, USA.*
3:30PM	**N-17061**	**Toward a Neuro-developmental Theory of Decision Attribute Weighting.....1811** Daniel S. Levine *Department of Psychology, University, of Texas at Arlington, Arlington, TX 76019-0528, USA.*
3:50PM	**N-17080**	**Brains as Optimal Emergent Turing Machines.....1817** Juyang Weng *Department of Computer Science and Engineering, Cognitive Science Program, and Neuroscience Program, Michigan State University East*

Lansing, Michigan, 48824, USA

4:10PM **N-17171** **Divergent Thinking in a Neurodynamical Model of Ideation.....1825**
Mei Mei and Ali A. Minai
Department of Electrical Engineering, and Computing Systems, University of Cincinnati, Cincinnati OH 45221, USA.

Session TM-4	IJCNN-36: Online Real Time Learning Strategies for Large Data Streams II
Date/Time	Tuesday, 26 July 2016 / 2:30PM – 4:30PM
Venue	Room 215
Chair	Meng Joo Er

2:30PM **N-17069** **A Novel Online Real-time Classifier for Multi-label Data Streams.....1833**
Rajasekar Venkatesan[1], Meng Joo Er[1], Shiqian Wu[2] and Mahardhika Pratama[3]
[1]School of EEE, Nanyang Technological University Singapore; [2]School of Machinery and Automation, Wuhan University of Science and Technology, China; [3]Department of Computer Science and IT, La Trobe University, Australia.

2:50PM **N-16191** **Evolving Type-2 Recurrent Fuzzy Neural Network.....1841**
Mahardhika Pratama[1], Edwin Lughofer[2], Meng Joo Er[3], Wenny Rahayu[1] and Tharam Dillon[1]
[1]Department of Computer Science and IT, La Trobe University, Melbourne, Australia; [2]Department of Knowledge-based Mathematical System, Johannes Kepler University, Linz, Austria; [3]School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore.

3:10PM **N-16189** **Functionally Expanded Streaming Data as Input to Classification Processes Using Ensembles of Constructive Neural Networks.....1849**
João Roberto Bertini Junior[1] and Maria do Carmo Nicoletti[2]
[1]C.S. Department — UFSCar, S. Carlos, SP, Brazil; [2]C.S. Department — UFSCar & FACCAMP, S. Carlos & C. L. Paulista, SP, Brazil.

3:30PM **N-16426** **Mahalanobis Distance Metric Learning Algorithm for Instance-based Data Stream Classification.....1857**
Jorge Luis Rivero Perez[1], Bernardete Ribeiro[2] and Carlos Morell Perez[3]
[1]Department of Informatics Engineering, Faculty of Science and Technology, University of Coimbra, Portugal; [2]Department of Informatics Engineering, CISUC-University of Coimbra, Portugal; [3]Department of Computer Sciences, Faculty of Computer Sciences, Central University of Las Villas, Cuba.

3:50PM **N-16910** **Deep Neural Network for Online Writer Identification using Beta-Elliptic Model.....1863**
Thameur Dhieb, Wael Ouarda, Houcine Boubaker and Adel M. Alimi
REGIM-Lab.: REsearch Groups in Intelligent Machines, University of Sfax, National School of Engineers (ENIS), BP 1173, Sfax, 3038, Tunisia.

4:10PM **N-16733** **A Boosting-like Online Learning Ensemble.....1871**
Roberto Souto Maior de Barros[1], Silas Garrido T. de Carvalho Santos[1] and

Paulo Mauricio Gonçalves Júnior[2]
[1]Centro de Informática, Universidade Federal de Pernambuco, Recife, Brazil; [2]Instituto Federal de Educação, Ciência e Tecnologia de Pernambuco, Recife, Brazil.

Session TM-5	IJCNN-23: Research on Large Scale Clustering Algorithms
Date/Time	Tuesday, 26 July 2016 / 2:30PM – 4:30PM
Venue	Room 216
Chair	Yiming Zhang, Shaohe Lv, Xin Niu

2:30PM **N-16280** **Large Scale Spatial Temporal Data Visualization based on Spark and 3D Volume Rendering.....1879**
Bo Mao, Zhengchun Yu and Jie Cao
College of Information Engineering, Nanjing University of Finance & Economics, Nanjing, China.

2:50PM **N-16320** **Learning from Wireless: a Prospective Approach to Human-Centered Computing.....1883**
Yong Lu, Shaohe Lv, Xue Yang, Xiaodong Wang, Minne Li and Xingming Zhou
Science and Technology on Parallel and Distributed Processing Laboratory, National University of Defense Technology, Changsha, Hunan, China.

3:10PM **N-16476** **Hermes: An Optimization of HyperLogLog Counting in Real-time Data Processing.....1890**
Yunxiang Zhao[1], Songtao Guo[2] and Yuanyuan Yang[3]
[1]National Lab for Parallel and Distributed Processing; [2]Southwest University; [3]Stony Brook University.

3:30PM **N-16728** **A Mobile Recommendation System based on Logistic Regression and Gradient Boosting Decision Trees.....1896**
Yaozheng Wang, Dawei Feng, Dongsheng Li, Xinyuan Chen, Yunxiang Zhao and Xin Niu
National Lab for Parallel and Distributed Processing, School of Computer Science, National University of Defense Technology, Changsha 410003, China.

3:50PM **N-16808** **Speeding-up the Prototype Based Kernel k-means Clustering Method for Large Data Sets.....1903**
T. Hitendra Sarma[1], P. Viswanath[2] and Atul Negi[3]
[1]Srinivasa Ramanujan Institute of Technology, Ananthapur, A.P., India; [2]Indian Institute of Information Technology-Chittoor, Sri City, A.P., India; [3]University of Hyderabad, Hyderabad, Telangana, India.

4:10PM **N-16289** **Centrality Clustering-Based Sampling for Big Data Visualization.....1911**
Tam Thanh Nguyen and Insu Song
School of Business/IT, James Cook University Australia, Singapore Campus, Singapore.

Session TM-6	Deep Learning II
Date/Time	Tuesday, 26 July 2016 / 2:30PM – 4:30PM

Venue	Room 217+219
Chair	Minho Lee, John Sheppard

2:30PM **N-16591** **Adaptive Driver Assistance System based on Traffic Information Saliency Map.....1918**
Jihun Kim, Seonggyu Kim, Rammohan Mallipeddi, Giljin Jang and Minho Lee
School of Electronics Engineering, Kyungpook National University, Taegu, Korea.

2:50PM **N-16261** **Exploring Multimodal Video Representation for Action Recognition.....1924**
Cheng Wang, Haojin Yang and Christoph Meinel
Hasso Plattner Institute, University of Potsdam, Prof.-Dr.-Helmert-Str. 2-3, 14482 Potsdam, Germany.

3:10PM **N-16570** **Learning a Metric for Class-conditional KNN.....1932**
Daniel Jiwoong Im[1] and Graham W. Taylor[2]
[1]Janelia Research Campus, HHMI, ; [2]School of Engineering, University of Guelph, Guelph, Canada.

3:30PM **N-16077** **Sparsely Connected Autoencoder.....1940**
Kavya Gupta and Angshul Majumdar
IIIT Delhi, New Delhi, India.

3:50PM **N-16939** **Empirical Investigation of the Low Temperature Energy Function of the Restricted Boltzmann Machine Using a 1000 qubit D-Wave 2X.....1948**
Yaroslav Koshka, Dilina Perera, Spencer Hall and M. A. Novotny
Mississippi State University, Mississippi State, MS 39762, USA.

4:10PM **N-16311** **Deep Kernel-SVM Network.....1955**
Ilyes Rebai[1], Yassine BenAyed[1] and Walid Mahdi[2]
[1]Multimedia InfoRmation System, and Advanced Computing Laboratory, University of Sfax, Sfax, Tunisia; [2]CIT College, Computer Science Department, Taif University, KSA.

Session TM-7	IJCNN-27: Extreme Learning Machines II

Date/Time	Tuesday, 26 July 2016 / 2:30PM – 4:30PM
Venue	Room 224
Chair(s)	Amaury Lendasse, Vijay Manikandan

2:30PM **N-16524** **Direct Heuristic Dynamic Programming Design with Extreme Learning Machine.....1961**

Xiong Luo[1,2], Yixuan Lv[1,2], Weiping Wang[1,2], Mi Zhou[1,2] and Wenbing Zhao[3]
[1]School of Computer and Communication Engineering, University of Science and Technology Beijing, Beijing, 100083, China; [2]Beijing Key Laboratory of Knowledge Engineering for Materials Science, Beijing, 100083, China; [3]Department of Electrical Engineering and Computer Science, Cleveland State University, Cleveland, Ohio, 44115, USA

2:50PM **N-16681** **Least Mean p-Power Extreme Learning Machine for Obstacle Avoidance of a Mobile Robot.....1968**

Jing Yang[1], Pengpeng Chen[1], Hai-Jun Rong[3] and Badong Chen[3]
[1]Institute of Control Engineering, School of Electronic and Information Engineering, Xi'an Jiaotong University, Xi'an, 710049, China; [2]State Key Laboratory for Strength and Vibration of Mechanical Structures, School of Aerospace, Xi'an Jiaotong University, Xi'an, 710049, China; [3]Institute of Artificial Intelligence and Robotics, School of Electronic and Information Engineering, Xi'an Jiaotong University, Xi'an, 710049, China.

3:10PM **N-16710** **Prediction of Photoplethysmogram Signals Using Sequential ELM.....1977**

Amita P. Mahuli, B. Niranjana Krupa and Koshy George
PES Centre for Intelligent Systems, PES University Campus, Bangalore, India.

3:30PM **N-16765** **Stacked Tensor Subspace Learning for Hyperspectral Image Classification.....1985**

Yantao Wei[1] and Yicong Zhou[2]
[1]School of Educational Information Technology, Central China Normal University, Wuhan, 430079, China; [2]Department of Computer and Information Science, University of Macau, Macao, China.

3:50PM **N-16769** **Anomaly Detection in Aviation Data using Extreme Learning Machines.....1993**

Vijay Manikandan Janakiraman[1] and David Nielsen[2]
[1]UARC/NASA Ames Research Center, Moffett Field, CA 94035, USA; [2]MORI Associates/NASA Ames Research Center, Moffett Field, CA 94035, USA.

4:10PM **N-16783** **Construction of Multi-class Classifiers by Extreme Learning Machine Based One-Class Classifiers.....2001**

Chandan Gautam, Aruna Tiwari and Sriram Ravindran
Department of Computer Science and Engineering, Indian Institute of Technology Indore, India.

Session TP-1	Attractor and Oscillatory Neural Networks
Date/Time	Tuesday, 26 July 2016 / 4:30PM – 6:30PM

Venue	Room 212
Chair	Robert Kozma

4:30PM **N-16303** **In the Quest of Efficient Hardware Implementations of Dynamic Neural Fields: An Experimental Study on the Influence of the Kernel Shape.....2008**
Benoît Chappet de Vangel[1] and Jérémy Fix[2]
[1]Université de Lorraine, 54000 Nancy, France ; [2]UMI 2958, Georgia Tech — CNRS, CentraleSupélec, Université Paris-Saclay, 57070 METZ, France.

4:50PM **N-16957** **Synchronization Detection in Networks of Coupled Oscillators for Pattern Recognition.....2015**
Damir Vodenicarevic[1], Nicolas Locatelli[1], Julie Grollier[2] and Damien Querlioz[1]
[1]Institut d'Électronique Fondamentale, Univ. Paris-Sud, CNRS, 91405 Orsay, France; [2]Unite Mixte de Physique CNRS/Thales and Universite Paris-Sud, 1 Ave. A. Fresnel, 91767 Palaiseau, France

5:10PM **N-26056** **Modeling Quasi-Periodic Lightcurves using Neuropercolation.....2023**
Catalina Elzo[1,2], Pablo A. Estevez[1,2] and Robert Kozma[3]
[1]Department of Electrical Engineering, University of Chile, Tupper 2007, Santiago, Chile; [2]Millennium Institute of Astrophysics, Chile; [3]Department of Mathematical Sciences, University of Memphis, Memphis, TN, 38152, USA.

5:30PM **N-16676** **Analysis of Various Periodic Orbits in Simple Dynamic Binary Neural Networks.....2031**
Ryuji Sato[1], Kazuma Makita[2] and Toshimichi Saito[2]
[1]Major in Electrical and Electronics Engineering, Graduate School, Hosei University, Koganei-shi, Tokyo, 184-8584, Japan; [2]Department of Electrical and Electronics Engineering, Hosei University, Koganei-shi, Tokyo, 184-8584, Japan.

5:50PM **N-16310** **On the Design of Phase Locked Loop Oscillatory Neural Networks: Mitigation of Transmission Delay Effects.....2039**
Rongye Shi, Thomas C. Jackson, Brian Swenson, Soummya Kar and Lawrence Pileggi
Department of Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, PA 15213 USA.

6:10PM **N-16581** **Reliable Storage and Recall of Aperiodic Spatiotemporal Activity Patterns Using Scaffolded Attractors.....2047**
M. Furqan Afzal and Ali A. Minai
Department of Electrical Engineering, and Computing Systems, University of Cincinnati, Cincinnati, OH 45221, USA

Session TP-2	Brain Machine Interfaces
Date/Time	Tuesday, 26 July 2016 / 4:30PM – 6:30PM

Venue	Room 213
Chair	Hubert Cecotti

4:30PM **N-16915** **Estimation of Effective Fronto-Parietal Connectivity during Motor Imagery using Partial Granger Causality Analysis.....2055**
Dheeraj Rathee, Hubert Cecotti, Girijesh Prasad
Intelligent Systems Research Centre, School of Computing and Intelligent Systems, Ulster University, Derry/Londonderry, Northern Ireland, UK.

4:50PM **N-16438** **An EEG-Based Brain-Computer Interface for Emotion Recognition.....2063**
Jiahui Pan[1], Yuanqing Li[2] and Jun Wang[3]
[1]School of Software, South China Normal University, Guangzhou, China; [2]School of Automation Science and Engineering, South China University of Technology, Guangzhou, China; [3]Computer Science Department, City University of Hong Kong, Hong Kong, China.

5:10PM **N-16592** **Verification of Fraudulent PIN Holders by Brain Waves.....2068**
Hiromichi Iwasa, Teruki Horie and Yasuo Matsuyama
Department of Computer Science and Engineering, Waseda University, Tokyo, 169-8555, Japan.

5:30PM **N-16598** **A Study on Relationship Between Age and Oddball-Task Difficulty on Peak Latency of P300.....2076**
Kentaro Takakura, Tomohiro Yoshikawa and Takeshi Furuhashi
Graduate School of Engineering, Nagoya University, Japan.

5:50PM **N-16695** **Spectral Analysis and Artificial Neural Network Based Classification of Three Mental States for Brain Machine Interface Applications.....2081**
Trongmun Jiralerspong, Sato Fumiya, Chao Liu and Jun Ishikawa
Department of Robotics and Mechatronics, Tokyo Denki University, Tokyo, Japan.

6:10PM **N-16798** **Decimation Filter with Common Spatial Pattern and Fishers Discriminant Analysis for Motor Imagery Classification.....2090**
Shiu Kumar[1,2], Ronesh Sharma[1,2], Alok Sharma[2,3,4] and Tatsuhiko Tsunoda[3,4,5]
[1]School of Electrical & Electronics Engineering, Fiji National University, ; [2]School of Engineering & Physics, The University of the South Pacific, Suva, Fiji; [3]RIKEN Center for Integrative Medical Sciences; [4]CREST, JST, Yokohama, 230-0045, Japan; [5]Medical Research Institute, Tokyo Medical and Dental University, Tokyo, 113-8510, Japan

Session TP-3	Temporal Data Analysis, Prediction and Forecasting, Time Series Analysis
Date/Time	Tuesday, 26 July 2016 / 4:30PM – 6:30PM

Venue	Room 214
Chair	Manuel Roveri

4:30PM **N-16961** **Hidden Markov Model Inference in an Associative Memory Architecture.....2096**
Jussi H. Poikonen, Mika Laiho, Eero Lehtonen and Timo Knuutila
Technology Research Center, University of Turku, Finland.

4:50PM **N-17108** **Predictive Planning with Neural Networks.....2110**
Russell Ainslie[1], John McCall[1], Sid Shakya[2] and Gilbert Owusu[2]
[1]School of Computing Science and Digital Media, Robert Gordon University, Aberdeen, UK; [2]Business Modelling and Operational Transformation Practice, British Telecom, Adastral Park, Ipswich, UK

5:10PM **N-16985** **Derivative Based Prediction with Look Ahead.....2118**
Tomáš Bartoň[1] and Petr Musilek[1,2]
[1]Department of Electrical and Computer Engineering, University of Alberta, Edmonton AB, Canada; [2]Faculty of Electrical Engineering and Computer Science, VSB-Technical University, Ostrava, Czech Republic

5:30PM **N-16343** **Online Time Series Prediction with Meta-Cognition.....2124**
Koshy George[1] and Prabhanjan Mutalik[2]
[1]PES Centre for Intelligent Systems, Department of Telecommunication Engineering, PES Institute of Technology (now, PES University) Bangalore, India; [2]PES Centre for Intelligent Systems, PES University Campus, Bangalore, India.

5:50PM **N-16605** **Multi-Step-Ahead Forecasting using Kernel Adaptive Filtering.....2132**
Sergio Garcia-Vega[1,2], German Castellanos-Dominguez[2], Michel Verleysen[1] and John A. Lee[1]
[1]Machine Learning Group — ICTEAM, Université Catholique de Louvain, Louvain-la-Neuve, Belgium; [2]Signal Processing and Recognition Group, Universidad Nacional de Colombia, Manizales, Colombia.

Session TP-4	IJCNN-19: Ordinal Regression and Ranking
Date/Time	Tuesday, 26 July 2016 / 4:30PM – 6:30PM
Venue	Room 215
Chair	Pedro A. Gutierrez

4:30PM **N-16736** **Learning and Ensembling Lexicographic Preference Trees with Multiple Kernels.....2140**
Kelwin Fernandes[1], Jaime S. Cardoso[1] and Hector Palacios[2]
[1]INESC TEC, Porto, Portugal, Faculty of Engineering, University of Porto; [2]Universitat Pompeu Fabra, Barcelona, Spain.

4:50PM **N-16868** **Exploiting Monotonicity Constraints to Reduce Label Noise: An Experimental Evaluation.....2148**

Ad Feelders and Tijmen Kolkman
Department of Information and Computing Sciences, Universiteit Utrecht, The Netherlands.

5:10PM **N-16117** **Tackling the Ordinal and Imbalance Nature of a Melanoma Image Classification Problem.....2156**
M. Pérez-Ortiz[1], A. Sáez[2], J. Sánchez-Monedero[1], P. A. Gutiérrez[3] and C. Hervás-Martínez[3]
[1]Department of Quantitative Methods, Universidad Loyola Andalucía, 14004 Crdoba, Spain; [2]Department of Signal Theory and Communications, University of Seville, 41092 Seville, Spain; [3]Department of Computer Science and Numerical Analysis, University of Córdoba, 14071 Córdoba, Spain.

5:30PM **N-16170** **Combination of Uncertain Ordinal Expert Statements: The Combination Rule EIDMR and its Application to Low-Voltage Grid Classification with SVM.....2164**
Sebastian Breker[1] and Bernhard Sick[2]
[1]EnergieNetz Mitte GmbH, Kassel, Germany; [2]Intelligent Embedded Systems, University of Kassel, Germany.

5:50PM **N-16600** **Representing Ordinal Input Variables in the Context of Ordinal Classification.....2174**
P. A. Gutiérrez[1], M. Pérez-Ortiz[2], J. Sánchez-Monedero[2] and C. Hervés-Martínez[1]
[1]Department of Computer Science and Numerical Analysis, Universidad de Córdoba, 14071 Córdoba, Spain; [2]Department of Quantitative Methods, Universidad Loyola Andalucía, 14004 Córdoba, Spain.

6:10PM **N-16731** **Tackling Class Imbalance with Ranking.....2182**
Ricardo Cruz[1], Kelwin Fernandes[1,2], Jaime S. Cardoso[1,2] and Joaquim F. Pinto Costa[3]
[1]INESC TEC, Portugal; [2]Faculty of Engineering, University of Porto, Portugal; [3]Faculty of Sciences, University of Porto, Portugal.

Session TP-5	IJCNN-15: Machine Learning with Incompletely Labeled Data
Date/Time	Tuesday, 26 July 2016 / 4:30PM – 6:30PM
Venue	Room 216
Chair(S)	Min-Ling Zhang, Yang Yu

4:30PM **N-16065** **Transfer Learning for Image Classification with Incomplete Multiple Sources.....2188**
Zhengming Ding[1], Ming Shao[1] and Yun Fu[1,2]
[1]Department of Electrical and Computer Engineering, Northeastern University, Boston, MA, 02115; [2]College of Computer and Information Science, Northeastern University, Boston, MA, 02115

4:50PM **N-16401** **A Community Discovery Approach in Multi-label Data.....2196**
Na Li, Zhisong Pan, MingChu Jiang, Yanyan Zhang and Haimin Yang
College of Command Information Systems, PLA University of Science and Technology, Nanjing 210007, China.

5:10PM **N-16411** **Crowdsourcing of Network Data.....2204**
Ding Wang[1], Prakash Mandayam Comar[2] and Pang-Ning Tan[1]

[1]*Department of Computer Science and Engineering, Michigan State University;* [2]*Amazon, USA*

5:30PM **N-16712** **A Robust UCB Scheme for Active Learning in Regression from Strategic Crowds.....2212**

Divya Padmanabhan[1], Satyanath Bhat[1], Dinesh Garg[2], Shirish Shevade[1] and Y. Narahari[1]
[1]*Indian Institute of Science, Bangalore, India;* [2]*IBM India Research Labs, Bangalore, India*

5:50PM **N-16155** **Discriminative Kernel Transfer Learning via $l_{2,1}$- Norm Minimization.....2220**

Lei Zhang[1], Sunil Kr. Jha[2], Tao Liu[1] and Guangshu Pei[3]
[1]*College of Communication Engineering, Chongqing University, Chongqing 400044, China;* [2]*University of Information Science and Technology "St. Paul the Apostle", 6000 Ohrid, Macedonia;* [3]*Graduate School of Chongqing University, Chongqing 400044, China.*

6:10PM **N-16535** **A Non-parametric Approach for Learning from Crowds.....2228**

Jiayi Fu[1], Jinhong Zhong[1], Yunfeng Liu[2], Zhenyu Wang[3] and Ke Tang[1]
[1]*USTC-Birmingham Joint Research Institute in Intelligent Computation and Its Applications (UBRI), School of Computer Science and Technology, University of Science and Technology of China, Hefei, 230027, China ;* [2]*Department of Internal Search Platform, Tencent Inc., Shenzhen, 518000, China;* [3]*Newford Research Institute of Advanced Technology, Wenzhou, Zhejiang, China.*

Session TP-6	IJCNN-12: Deep Learning for Brain-Like Computing and Pattern Recognition
Date/Time	Tuesday, 26 July 2016 / 4:30PM – 6:30PM
Venue	Room 217+219
Chair	Guoqiang Zhong

4:30PM **N-16877** **Deep Hashing Learning Networks.....2236**

Guoqiang Zhong, Hui Xu, Pan Yang, Sijiang Wang and Junyu Dong
Department of Computer Science and Technology, Ocean University of China, 238 Songling Road, Qingdao, 266100, China.

4:50PM **N-16205** **Relational Fisher Analysis: A General Framework for Dimensionality Reduction.....2244**

Guoqiang Zhong[1], Yaxin Shi[1] and Mohamed Cheriet[2]
[1]*Department of Computer Science and Technology, Ocean University of China, 238 Songling Road, Qingdao, 266100, China;* [2]*Synchromedia Laboratory for Multimedia Communication in Telepresence, École de Technologie Supérieure, Montréal, Québec H3C 1K3, Canada.*

5:10PM **N-16609** **Scalable Large Margin Online Metric Learning.....2252**

Guoqiang Zhong[1], Yan Zheng[1], Sheng Li[2] and Yun Fu[2]
[1]*Department of Computer Science and Technology, Ocean University of China, Qingdao, 266100, China;* [2]*Department of ECE, Northeastern University.*

5:30PM **N-16195** **Sparse Alignment for Video Analysis in Discriminant Tensor Space.....2260**

Chengcheng Jia[1], Ming Shao[1] and Yun Fu[1,2]

[1]Department of Electrical and Computer Engineering, College of Engineering, Northeastern University, Boston, MA 02115, USA; [2]College of Engineering, College of Computer and Information Science, Northeastern University, Boston, MA 02115, USA

5:50PM **N-17073** **Vision-based Vehicle Detecting and Counting for Traffic Flow Analysis.....2267**

Zhimei Zhang[1,2], Kun Liu[3], Feng Gao[1], Xianyun Li[2] and Guodong Wang[3]
[1]Department of Computer Science and Technology, Ocean University of China, Qingdao, China; [2]College of Data Science and Software Engineering, Qingdao University, Qingdao, China; [3]College of Computer Science and Technology, Qingdao University, Qingdao, China

6:10PM **N-17107** **Loop Closure Detection for Visual SLAM Using PCANet Features.....2274**

Yifan Xia, Jie Li, Lin Qi and Hao Fan
Department of Computer Science and Technology, Ocean University of China, Qingdao, China.

Session TP-7	IJCNN-27: Extreme Learning Machines III
Date/Time	Tuesday, 26 July 2016 / 4:30PM – 6:30PM
Venue	Room 224
Chair(S)	Guang-Bin Huang, Mark McDonnell

4:30PM **N-16126** **Learning Boltzmann Machine with EM-like Method.....2282**

Jinmeng Song and Chun Yuan
Department of Computer Science and Technology, Tsinghua University, Beijing 100084, China.

4:50PM **N-16815** **On the Importance of Pair-Wise Feature Correlations for Image Classification.....2290**

Mark D. McDonnell[1], Robby G. McKilliam[2] and Philip de Chazal[3]
[1]Computational and Theoretical Neuroscience Laboratory, Institute for Telecommunications Research, School of Information Technology & Mathematical Sciences, University of South Australia, Mawson Lakes, Australia; [2]Myriota Pty. Ltd., Adelaide, Australia; [3]Charles Perkins Centre, Faculty of Engineering and I.T., School of Electrical and Information Engineering, University of Sydney, Sydney, Australia.

5:10PM **N-16447** **Smile Detection Using Pair-wise Distance Vector and Extreme Learning Machine.....2298**

Dongshun Cui[1], Guang-Bin Huang[2] and Tianchi Liu[2]
[1]Energy Research Institute @NTU (ERI@N), Interdisciplinary Graduate School, Nanyang Technological University, 639798, Singapore; [2]School of Electrical and Electronic Engineering, Nanyang Technological University, 639798, Singapore.

5:30PM **N-16538** **Two-Stage Structured Learning Approach for Stable Occupancy**

Detection.....2306
Tianchi Liu[1], Yue Li[1], Zuo Bai[2], Jaydeep De[2], Cao Vinh Le[2], Zhiping Lin[1], Shih-Hsiang Lin[2], Guang-Bin Huang[1] and Dongshun Cui[3]
[1]School of Electrical and Electronic Engineering, Nanyang Technological University, 639798, Singapore; [2]Delta Research Centre, Delta Electronics, Inc; [3]Interdisciplinary Graduate School, Nanyang Technological University, 639798, Singapore

5:50PM **N-16863** **Multivariate Electricity Consumption Prediction with Extreme Learning Machine.....2313**
Hui Song, A. K. Qin and Flora D. Salim
Computer Science and Information Technology, RMIT University, Melbourne, VIC 3000, Australia.

6:10PM **N-16924** **ELM Meets RAE-ELM: A Hybrid Intelligent Model for Multiple Fault Diagnosis and Remaining Useful Life Predication of Rotating Machinery.....2321**
Zhi-Xin Yang and Peng-Bo Zhang
Department of Electromechanical Engineering, Faculty of Science and Technology, University of Macau, Macau SAR, China.

Session WA-1	Recurrent Neural Networks
Date/Time	Wednesday, 27 July 2016 / 8:00AM – 10:00AM
Venue	Room 212
Chair	Jinde Cao

8:00AM **N-16027** **Finite-Time Stability Analysis of Fractional Order Delayed Memristive Neural Networks.....2329**
Ruoxia Li, Jinde Cao and Ying Wan
Department of Mathematics, Southeast University, Nanjing, China.

8:20AM **N-16312** **Periodic and Partly Periodic Oscillation in Hopfield Recurrent Neural Networks with Time-Varying Input and Delays.....2336**
Chunhua Feng[1] and Réjean Plamondon[2]
[1]College of Mathematics and Statistics, Guangxi Normal University, Guilin, Guangxi, 541004, P.R. China; [2]Départment de Génie, Électrique, École Polytechnique de Montréal, Montréal, QC, H3C 3A7, Canada.

8:40AM **N-16129** **Accommodative Neural Filters.....2344**
James Ting-Ho Lo[1] and Yu Guo[2]
[1]Department of Mathematics and Statistics, University of Maryland Baltimore County, Baltimore 21250, USA; [2]School of Electronic and Information Engineering, Xian Jiaotong University, Xian 710049, China.

9:00AM **N-16248** **Dynamics of Structured Complex Recurrent Hopfield Networks.....2352**
Rama Murthy Garimella[1], Anil Rayala[1] and Sai Dileep Munugoti[2]
[1]International Institute of Information Technology, Hyderabad, India; [2]Indian Institute of Technology, Guwahati, India.

9:20AM	**N-16767**	**Recurrent Neural Identification on Xilinx System Generator using V7 FPGA for a 2DOF Robot Manipulator.....2359** G. Ulises Dávalos[1], Carlos E. Castañeda[1], P. Esquivel[2], F. Jurado Z.[3] and Onofre A. Morfín[3] *[1]University Center of Los Lagos, University of Guadalajara, Lagos de Moreno, Jalisco México; [2]Technological Institute of la Laguna, Torreón Coahuila, México; [3]Autonomous University of Ciudad, Juárez Chihuahua, México.*
9:40AM	**N-16734**	**Modified Elman Neural Network Based Neural Adaptive Inverse Control of Rate-Dependent Hysteresis.....2366** Liang Deng[1,4,5], Rudolf J. Seethaler[1], Yang Quan Chen[2], Ping Yang[1,5], Qiming Cheng[1,5] and Ning Yang[1,5] *[1]College of Automation Engineering, Shanghai University of Electric Power, Shanghai, China; [2]School of Engineering, The University of British Columbia, Kelowna, Canada; [3]3School of Engineering, University of California, Merced, Merced, United States; [4]Institute of Smart Grid Technology, Shanghai University of Electric Power, Shanghai, China; [5]Shanghai Engineering Research Center of Intelligent Management and Control for Power Process, Shanghai University of Electric Power, Shanghai, China.*

Session WA-2	Unsupervised Learning and Clustering I
Date/Time	Wednesday, 27 July 2016 / 8:00AM – 10:00AM
Venue	Room 213
Chair	Jim Bezdek

8:00AM	**N-16067**	**Unsupervised Mining of Under-resourced Speech Corpora for Tone Features Classification.....2374** Moses E. Ekpenyong and Udoinyang G. Inyang *Department of Computer Science, University of Uyo, Nigeria.*
8:20AM	**N-16142**	**Adaptive Objective Function of ICA by Gaussian Approximation in Second-Order Polynomial Feature Space.....2382** Yoshitatsu Matsuda and Kazunori Yamaguchi *Department of General Systems Studies, The University of Tokyo, 3-8-1, Komaba, Meguroku, Tokyo, 153-8902, Japan.*
8:40AM	**N-16146**	**Achieving Stable Subspace Clustering by Post-Processing Generic Clustering Results.....2390** Duc-Son Pham[1], Ognjen Arandjelović[2] and Svetha Venkatesh[3] *[1]Department of Computing, Curtin University, Australia; [2]School of Computer Science, University of St Andrews, United Kingdom; [3]School of Information Technology, Deakin University, Australia*
9:00AM	**N-16270**	**Fast Entropy Clustering of Sparse High Dimensional Binary Data.....2397** Marek Śmieja, Szymon Nakoneczny and Jacek Tabor *Faculty of Mathematics and Computer Science, Jagiellonian University, Lojasiewicza 6, 30-348 Kraków, Poland.*

9:20AM **N-26020** **Autonomous Data Density based Clustering Method.....2405**
Plamen P. Angelov[1], Xiaowei Gu[1], German Gutierrez[2], Jose Antonio Iglesias[2] and Araceli Sanchis[2]
[1]School of Computing and Communications, InfoLab21, Lancaster University, Lancaster, LA1 4WA, UK; [2]Computer Science Department, Carlos III University of Madrid, Madrid, Spain.

9:40AM **N-16018** **Random Projection below the JL Limit.....2414**
James Bezdek[1], Xiuyi Ye, Mihail Popescu[2], James Keller[1] and Alina Zare[1]
[1]University of Missouri, ECE Department, Columbia, MO, USA; [2]University of Missouri, HMI Department, Columbia, MO, USA.

Session WA-3	IJCNN-14: Advanced Supervised Learning Techniques and its Applications
Date/Time	Wednesday, 27 July 2016 / 8:00AM – 10:00AM
Venue	Room 214
Chair	Min-Ling Zhang, Bing Han

8:00AM **N-16161** **Tag Correlation and User Social Relation based Microblog Recommendation.....2424**
Huifang Ma[1], Meihuizi Jia[1], Xianghong Lin[1] and Fuzhen Zhuang[2]
[1]College of Computer Science and Engineering, Northwest Normal University, Lanzhou, Gansu, 730070; [2]Key Laboratory of Intelligent Information Processing, Institute of Computing Technology, Chinese Academy of Sciences, Beijing, 100190, China.

8:20AM **N-16256** **Embedded Locality Discriminant GPLVM for Dimensionality Reduction.....2431**
Bing Han[1,2], Lixia Zhang[1], Xinbo Gao[1], Xiaojing Zhao[1] and Dacheng Tao[3]
[1]School of Electronic Engineering, Xidian University Xian, Chain; [2]State Key Laboratory of Remote Sensing Science; [3]Quantum Computation and Intelligent Systems (QCIS) and the Faculty of Engineering and Information Technology (FEIT), University of Technology Sydney, Sydney, NSW 2007, Australia

8:40AM **N-16360** **Sketch Metric Learning.....2439**
Yuting Mai[1], Weihong Li[1], Yongyi Tang[1], Xixi Bi[2] and Wei-Shi Zheng[1]
[1]School of Data and Computer Science, Sun Yat-sen University, China; [2]Station of Automation, 95826 Force, China

9:00AM **N-16562** **Cost-Sensitive One-vs-One Ensemble for Multi-Class Imbalanced Data.....2447**
Bartosz Krawczyk
Department of Systems and Computer Networks, Wrocław University of Technology, Wrocław, Poland.

9:20AM **N-16696** **Granular Multiple Birth Support Vector Machine based on Weighted Linear Loss.....2453**
Shifei Ding and Xiekai Zhang
School of Computer Science and Technology, China University of Mining and Technology, Xuzhou, China and Key Laboratory of Intelligent Information Processing, Institute of Computing Technology Chinese Academy of Science, Beijing, 100190, China

9:40AM **N-16698** **Tagging Chinese Microblogger via Sparse Feature Selection.....2460**

Di Shang[1], Xin-Yu Dai[1], Shujian Huang[1], Yi Li[2] and Jiajun Chen[1]
[1]National Key Laboratory for Novel Software Technology; Nanjing University, Nanjing, 210023, China; [2]AdMaster Inc., China

Session WA-4	IJCNN-41: Incremental Machine Learning: Methods and Applications
Date/Time	Wednesday, 27 July 2016 / 8:00AM – 10:00AM
Venue	Room 215
Chair	Seiichi Ozawa

8:00AM **N-16400** **Incremental Nearest Neighborhood Graph for Data Stream Clustering.....2468**
Ibrahim Louhi[1], Lydia Boudjeloud-Assala[1] and Thomas Tamisier[2]
[1]Université de Lorraine, Laboratoire d'Informatique Thorique et Appliquée, LITA-EA 3097, Metz, F-57045, France; [2]Luxembourg Institute of Science and Technology, Belvaux, L-4422, Luxembourg, Germany.

8:20AM **N-16485** **Anomaly Detection in Non-stationary Data: Ensemble based Self-Adaptive OCSVM.....2476**
Zahra Ghafoori[1], Sarah M. Erfani[1], Sutharshan Rajasegarar[2], Shanika Karunasekera[1] and Christopher A. Leckie[1]
[1]Department of Computing and Information Systems, The University of Melbourne, Melbourne, Australia; [2]School of Information Technology, Deakin University, Geelong, Australia.

8:40AM **N-16909** **Adaptive and Scalable Android Malware Detection through Online Learning.....2484**
Annamalai Narayanan, Liu Yang, Lihui Chen and Liu Jinliang
Nanyang Technological University, Singapore.

9:00AM **N-16648** **Unsupervised Incremental STDP Learning Using Forced Firing of Dormant or Idle Neurons.....2492**
Jason M. Allred and Kaushik Roy
School of Electrical and Computer Engineering, Purdue University, West Lafayette, Indiana 47907, USA.

9:20AM **N-16292** **Neural Field: Supervised Apportioned Incremental Learning (SAIL).....2500**
Justin Lovinger and Iren Valova
Computer and Information Science, University of Massachusetts Dartmouth, N. Dartmouth, MA, USA.

9:40AM **N-16633** **Improving the Incremental Gaussian Mixture Neural Network Model for Spatial Interpolation and Geostatistical Simulation.....2507**
Sérgio Aurélio Ferreira Soares[1], Guenther Schwedersky Neto[2] and Mauro Roisenberg[1]
[1]L3C — Connectionism and Cognitive Science Lab, UFSC — Federal University of Santa Catarina, Florianópolis, SC, Brazil ; [2]Petrobras Exploration and Production — Geologic Technology, Rio de Janeiro, RJ, Brazil.

Session WA-5	IJCNN-10: 11 Human-like Visual Semantic Learning from Image Data
Date/Time	Wednesday, 27 July 2016 / 8:00AM – 10:00AM
Venue	Room 216
Chair(s)	Zhaoxiang Zhang, Xiang Bai

8:00AM **N-16566** **Face Super Resolution for VLQ Facial Images via Parent patch Matching.....2515**
Liang Chen[1], Ruimin Hu[2], Zhen Han[2], Zhongyuan Wang[2], Qing Li[3] and Zheng Lu[3]
[1]NERCMS, School of Computer, Wuhan University and Department of Computer Science, City University of Hong Kong, Hong Kong, China; [2]NERCMS, School of Computer, Wuhan University, Wuhan, China; [3]MERC, Department of Computer Science, City University of Hong Kong, Hong Kong, China

8:20AM **N-16859** **Accurate Object Tracking by Combining Correlation Filters and Keypoints.....2522**
Xin Zhang, Zifeng Wang, Guisong Xia and Liangpei Zhang
State Key Lab. LIESMARS, Wuhan University, Wuhan, 430079, China.

8:40AM **N-17082** **Spatiotemporal Saliency Based on Location Prior Model.....2526**
Liuyi Hu[1], Zhongyuan Wang[1,2], Mang Ye[1], Jing Xiao[1,2] and Ruimin Hu[1,2]
[1]National Engineering Research Center for Multimedia Software, School of Computer, Wuhan University, Wuhan, China; [2]Research Institute of Wuhan University, Shenzhen, China

9:00AM **N-16308** **Facial Skin Beautification Via Sparse Representation Over Learned Layer Dictionary.....2534**
Xi Lu, Xiaobin Chang, Xiaohua Xie, Jian-Fang Hu and Wei-Shi Zheng
School of Data and Computer Science, Sun Yat-sen University, China.

9:20AM **N-16866** **Learning Perceptual Texture Similarity and Relative Attributes from Computational Features.....2540**
Jianwen Lou[1], Lin Qi[1], Junyu Dong[1], Hui Yu[2] and Guoqiang Zhong[1]
[1]College of Information Science and Engineering, Ocean University of China, Qingdao, China; [2]School of Creative Technologies, University of Portsmouth, London, UK

9:40AM **N-16306** **Artificial Swarm Intelligence vs Human Experts.....2547**
Louis Rosenberg
[1]Unanimous A.I., San Francisco, CA, 94115.

Session WA-6	Applications of Deep Networks I
Date/Time	Wednesday, 27 July 2016 / 8:00AM – 10:00AM
Venue	Room 217+219
Chair	Robert Sabourin

8:00AM **N-16132** **Fault Analysis of High Speed Train with DBN Hierarchical Ensemble.....2552**
Chao Guo[1], Yan Yang[1], Hong Pan[1], Tianrui Li[1] and Weidong Jin[2]
[1]School of Information Science and Technology, Southwest Jiaotong University, Chengdu, China; [2]School of Electrical Engineering, Southwest Jiaotong University, Chengdu, China

8:20AM **N-16315** **Breast Cancer Histopathological Image Classification using Convolutional Neural Networks.....2560**
Fabio Alexandre Spanhol[1,2], Luiz S. Oliveira[2], Caroline Petitjean[3] and Laurent Heutte[3]
[1]Federal University of Technology — Parana, Toledo, PR — Brazil; [2]Federal University of Parana, VRI Lab. Curitiba, PR — Brazil; [3]University of Rouen, LITIS Lab, Saint Etienne du Rouvray, France.

8:40AM **N-16370** **Predicting Users Multi-Interests With Network Embedding in Health-Related Topics.....2568**
Zhipeng Jin[1], Ruoran Liu[1], Qiudan Li[1], Daniel D. Zeng[1,2], YongCheng Zhan[2] and Lei Wang[1]
[1]The State Key Laboratory of Management and Control for Complex Systems, Institute of Automation, Chinese Academy of Sciences Beijing 100190, China; [2]Department of Management Information Systems, University of Arizona, Tucson, Arizona, USA.

9:00AM **N-16037** **Writer-independent Feature Learning for Offline Signature Verification using Deep Convolutional Neural Networks.....2576**
Luiz G. Hafemann[1], Robert Sabourin[1] and Luiz S. Oliveira[2]
[1]Lab. d'imagerie, de vision et d'intelligence artificielle, École de Technologie Supérieure, Université du Québec, Montreal, Canada; [2]Department of Informatics, Federal University of Parana, Curitiba, PR, Brazil.

9:20AM **N-16796** **Deep Convolutional Neural Networks for Detection of Rail Surface Defects.....2584**
Shahrzad Faghih-Roohi[1], Siamak Hajizadeh[2], Alfredo Núñez[2], Robert Babuska[1] and Bart De Schutter[1]
[1]Delft Center for Systems and Control, Delft University of Technology, Mekelweg 2, 2628 CD Delft, The Netherlands; [2]Section of Railway Engineering, Delft University of Technology, Stevinweg 1, 2628 CN Delft, The Netherlands.

9:40AM **N-16522** **Airport Detection from Remote Sensing Images Using Transferable Convolutional Neural Networks.....2590**
Peng Zhang[1], Xin Niu[1], Yong Dou[1] and Fei Xia[2]
[1]National Laboratory for Parallel and Distributed Processing, National University of Defense Technology, Changsha, China; [2]Electronic Engineering College, Navy Engineering University, Wuhan, China.

Session WA-7	IJCNN-27: Extreme Learning Machines IV
Date/Time	Wednesday, 27 July 2016 / 8:00AM – 10:00AM
Venue	Room 224
Chair(s)	Donald Wunsch, Yuanlong Yu

8:00AM **N-16982** **A Pruning Algorithm for Extreme Learning Machine based on Sparse Coding.....2596**
Yuanlong Yu and Zhenzhen Sun
College of Mathematics and Computer Science, Fuzhou University, Fuzhou, Fujian, 350116, China.

8:20AM **N-17099** **Stochastic Resonance induced Continuous Activation Functions in a Neural Network Consisting of Threshold Elements.....2603**
Shuhei Ikemoto, Fabio Dalla Libera and Koh Hosoda
Graduate School of Engineering Science, Osaka University, Osaka, Japan.

8:40AM **N-17119** **A Coarse-to-Fine Feature Selection Method for Accurate Detection of Cerebral Small Vessel Disease.....2609**
Yiqiang Chen[1,2], Meiyu Huang[1,2], Chunyu Hu[1,2], Yicheng Zhu[3], Fei Han[3] and Chunyan Miao[4]
[1]Beijing Key Laboratory of Mobile Computing and Pervasive Device, Institute of Computing Technology, Chinese Academy of Sciences, Beijing, 100190, China; [2]University of Chinese Academy of Sciences, Beijing, 100190, China; [3]Peking Union Medical College Hospital, Beijing, 100730, China; [4]Joint NTU-UBC Research Centre of Excellence in Active Living for the Elderly (LILY), Nanyang Technological University, Singapore

9:00AM **N-17125** **Combined Nonlinear Visualization and Classification: ELMVIS++C.....2617**
Andrey Gritsenko[1,2], Anton Akusok[1,2], Yoan Miche[4], Kaj-Mikael Björk[5], Stephen Baek[1,4] and Amaury Lendasse[1,2]
[1]Department of Mechanical and Industrial Engineering, The University of Iowa, Iowa City, Iowa, USA; [2]Iowa Informatics Initiative, The University of Iowa, Iowa City, Iowa, USA; [3]Public Digital Arts Cluster, The University of Iowa, Iowa City, Iowa, USA; [4]Nokia Solutions and Networks Group, Espoo, Finland; [5]Risklab at Arcada University of Applied Sciences, Helsinki, Finland

9:20AM **N-17164** **Word Based Dialect Classification using Extreme Learning Machines.....2625**
Muhammad Rizwan, Babafemi O. Odelowo and David V. Anderson
School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, Georgia.

9:40AM **N-17167** **Video Anomaly Detection based on ULGP-OF Descriptor and One-class ELM.....2630**
Siqi Wang, En Zhu, Jianping Yin
College of Computer, National University of Defense Technology, Changsha, China.

Session	[Plenary] – Fragility of Interconnected Cyber-Physical Systems, Prof. Marios Polycarpou
Date/Time	Wednesday, 27 July 2016 / 1:00PM – 2:00PM
Venue	Room Ballroom A
Chair	Derong Liu

Session WM-1	Self-organizing Maps & LVQ
Date/Time	Wednesday, 27 July 2016 / 2:30PM – 4:30PM
Venue	Room 212
Chair	Thomas Villmann

2:30PM **N-16943** **Automated Topological Co-Clustering Using Fuzzy Features Partition.....2638**
Nistor Grozavu[1], Guóenaël Cabanes[1], Hatim Chahdi[2] and Nicoleta Rogovschi[3]
[1]LIPN-UMR, 7030, Université Paris 13, Sorbonne Paris Cité, 99, av. J-B Clément, 93430, Villetaneuse, France; [2]UMR Espace-Dev, IRD — Université de Montpellier, Maison de la Télédétection, 500 Rue J.F. Breton, 34093 Montpellier, FRANCE; [3]LIPADE, Paris Descartes University, 45 rue des Saintes-Peres, 75006 Paris, France.

2:50PM **N-16846** **Validating the Stable Clustering of Songs in a Structured 3D SOM.....2646**
Arnulfo Azcarraga[1], Arturo Caronongan[1], Rudy Setiono[2] and Sean Manalili[3]
[1]De La Salle University, Philippines; [2]School of Computing, National University of Singapore, Singapore; [3]Carlson Wagonlit Travel, Makati, Philippines.

3:10PM **N-17063** **Density Based Self Organizing Incremental Neural Network For Data Stream Clustering.....2654**
Baile Xu, Furao Shen and Jinxi Zhao
National Key Laboratory for Novel Software Technology, Department of Computer Science and Technology, Nanjing University, China.

3:30PM **N-16853** **Using Semantic Relatedness Measures with Dynamic Self-Organizing Maps for Improved Text Clustering.....2662**
Nilupulee Nathawitharana, Damminda Alahakoon and Daswin De Silva
La Trobe Business School, La Trobe University, Bundoora Victoria, 3086 Australia.

3:50PM **N-16478** **Adaptive Tangent Distances in Generalized Learning Vector Quantization for Transformation and Distortion Invariant Classification Learning.....2672**
Sascha Saralajew[1] and Thomas Villmann[2]
[1]Dr. Ing. h.c. F. Porsche AG, Weissach, Germany; [2]University of Applied Sciences Mittweida, Computational Intelligence Group, Mittweida, Germany.

4:10PM **N-16279** **Encoding Auditory-Visual Interactions in a Neural Model of Sensory Abnormalities in Autism.....2680**
Gerardo Noriega
RMS Instruments, Mississauga, Ontario, Canada.

Session WM-2	Unsupervised Learning and Clustering II
Date/Time	Wednesday, 27 July 2016 / 2:30PM – 4:30PM
Venue	Room 213
Chair	Cesare Alippi

2:30PM **N-16134** **Adaptive Transferred-profile Likelihood Learning.....2687**
Son N. Tran and Artur d'Avila Garcez
Department of Computer Science, City University London, London, EC1V 0HB, UK.

2:50PM **N-16567** **Visual Data Completion via Local Sensitive Low Rank Tensor Learning.....2693**
Qing-Yi Liu[1], Lin Zhu[1], De-Shuang Huang[1], Gang Wang[1], Xiao-Ping Zhang[1], Li Shang[2] and Zhi-Kai Huang[3]
[1]Institute of Machine Learning and Systems Biology, College of Electronics and Information Engineering, Tongji University Caoan Road 4800, Shanghai, 201804, China; [2]Department of Communication Technology, College of Electronic Information Engineering, Suzhou Vocational University, Suzhou, 215104, Jiangsu, China; [3]College of Mechanical and Electrical Engineering, Nanchang Institute of Technology, Nanchang, 330099, Jiangxi, China

3:10PM **N-16237** **ELM based Multiple Kernel *k*-means with Diversity-Induced Regularization.....2699**
Yang Zhao, Yong Dou, Xinwang Liu and Teng Li
National University of Defense Technology, National Laboratory for Parallel and Distributed Processing, Changsha, China.

3:30PM **N-16905** **Mixture Modeling with Compact Support Distributions for Unsupervised Learning.....2706**
Ambedkar Dukkipati, Debarghya Ghoshdastidar and Jinu Krishnan
Department of Computer Science and Automation, Indian Institute of Science, Bangalore, 560012, India.

3:50PM **N-16967** **Multi-Source Multi-View Clustering via Discrepancy Penalty.....2714**
Weixiang Shao[1], Jiawei Zhang[1], Lifang He[2] and Philip S. Yu[1]
[1]University of Illinois at Chicago; [2]Shenzhen University, China.

4:10PM **N-16624** **Clustering-based Feature Selection for Black-Box Weather Temperature Prediction.....2722**
Zahra Karevan and Johan A. K. Suykens
[1]KU Leuven, ESAT-STADIUS, Kasteelpark Arenberg 10, B-3001 Leuven, Belgium.

Session WM-3	IJCNN-33: Computational Intelligence and Machine Learning for Power Grid Security and Power System Applications
Date/Time	Wednesday, 27 July 2016 / 2:30PM – 4:30PM
Venue	Room 214
Chair	Qinglai Wei

2:30PM **N-16503** **Comparative Studies of Power Grid Security with Network Connectivity and Power Flow Information Using Unsupervised Learning.....2730**
Shiva Poudel[1], Zhen Ni[1], Xiangnan Zhong[2] and Haibo He[2]
[1]Electrical Engineering and Computer Science Department, South Dakota State University, Brookings, SD, 57007, USA; [2]Department of Electrical, Computer, and Biomedical Engineering, University of Rhode Island, Kingston, RI, 02881, USA.

2:50PM **N-16638** **Weighted Vote Algorithm Combination Technique for Anomaly Based Smart Grid Intrusion Detection Systems.....2738**
Joris Lueckenga[1], Dominik Engel[1] and Robert Green[2]
[1]Josef Ressel Center for User-Centric, Smart Grid Privacy, Security and Control, Salzburg University of Applied Sciences Salzburg, Austria; [2]Department of Computer Science, Bowling Green State University, Bowling Green, OH 43403, USA

3:10PM **N-16288** **Enhanced SVR Ensembles for Wind Power Prediction.....2743**
Wei Lee Woon[1] and Oliver Kramer[2]
[1]Electrical Engineering and Computer Science, Masdar Institute of Science and Technology, Abu Dhabi, UAE; [2]Department of Computing Science, University of Oldenburg, D-26111 Oldenburg, Germany.

3:30PM **N-16944** **Whole-House Non-Intrusive Appliance Load Monitoring via Multi-Label Classification.....2749**
Ding Li and Scott Dick
Department of Electrical and Computer Engineering, University of Alberta, Edmonton, AB, T6G 2V4, Canada.

3:50PM **N-16902** **Induction Motor Torque Control via Discrete-Time Neural Sliding Mode.....2756**
Eduardo Quintero-Manriquez[1], Edgar N. Sanchez[1] and Ramon A. Felix[2]
[1]CINVESTAV-IPN, Unidad Guadalajara, Av. del Bosque 1145, Zapopan, Jalisco, México; [2]FIME, Universidad de Colima, Carretera Coquimatlán km 9, Colima, México.

4:10PM **N-16810** **A Least Squares Enhanced Smart DFT Technique for Frequency Estimation of Unbalanced Three-Phase Power Systems.....2762**
Yili Xia[1], Kai Wang[1], Wenjiang Pei[1], Zoran Blazic[2] and Danilo P. Mandic[3]
[1]School of Information Science and Engineering, Southeast University, Nanjing 210096, P.R. China; [2]Elektroprenos BiH a.d., 78000 Banjaluka, BiH; [3]Department of Electrical and Electronic Engineering, Imperial College London, SW7 2AZ London, UK.

Session WM-4	IJCNN-22: Sequential Learning with Neural Networks and Learning Systems
Date/Time	Wednesday, 27 July 2016 / 2:30PM – 4:30PM
Venue	Room 215
Chair(s)	Huanhuan Chen, Giacomo Boracchi

2:30PM **N-16069** **Decision Making with Long Delays Using Networks of Flip-Flop Neurons.....2767**
Pavan Holla and Srinivasa Chakravarthy
Department of Biotechnology, IIT Madras, India.

2:50PM **N-16405** **kNN Ensembles with Penalized DTW for Multivariate Time Series Imputation.....2774**
Stefan Oehmcke[1,2], Oliver Zielinski[2] and Oliver Kramer
[1]Computational Intelligence Group, Department of Computing Science, University Oldenburg, Germany; [2]Institute for Chemistry and Biology of the Marine Environment, University Oldenburg, Germany.

3:10PM **N-16437** **Sequential Appearance-Based Global Localization Using an Ensemble of kNN-DTW Classifiers.....2782**
Avelino Forechi[1,2], Alberto Ferreira De Souza[2], Claudine Badue[2] and Thiago Oliveira-Santos[2]
[1]Coordenadoria de Engenharia Mecânica, Instituto Federal do Espírito Santo, Aracruz, Espírito Santo, 29192733, Brazil; [2]Departamento de Informática — Centro Tecnológico, Universidade Federal do Espírito Santo, Vitória, Espírito Santo, 29075910, Brazil.

3:30PM **N-16926** **Neural Turing Machine for Sequential Learning of Human Mobility Patterns.....2790**
Jan Tkačík and Pavel Kordík
Faculty of Information Technology, Czech Technical University in Prague.

3:50PM **N-16359** **Analysis of Sequence to Sequence Neural Networks on Grapheme to Phoneme Conversion Task.....2798**
Sivanand Achanta, Ayushi Pandey and Suryakanth V. Gangashetty
Speech and Vision Laboratory, IIIT, Hyderabad, India

4:10PM **N-17165** **GTM Mixture through Time for Sequential Data.....2805**
Rakia Jaziri[1], Faicel Chamroukhi[2], Mustapha Lebbah[3] and Younès Bennani[3]
[1]Data Science Department — LINCOLN Consulting group; [2]Lab of mathematics Paul Painlevé — UMR CNRS 8524 and the Information Sciences and Systems Lab - UMR, CNRS 7296; [3]The Computer Science Lab of Paris Nord — UMR CNRS 7030, France

Session WM-5	Anomaly & Fault Detection, Concept Drift
Date/Time	Wednesday, 27 July 2016 / 2:30PM – 4:30PM
Venue	Room 216
Chair	Marios Polycarpou

2:30PM **N-16645** **Regularized Covariance Matrix Estimation with High Dimensional Data for Supervised Anomaly Detection Problems.....2811**
Daniel Nikovski and Kiran Byadarhaly
Mitsubishi Electric Research Laboratories, Cambridge, MA 02139, USA.

2:50PM **N-17174** **A Cognitive Fault-Detection Design Architecture.....2819**
Georgios M. Milis, Demetrios G. Eliades, Christos G. Panayiotou and Marios M. Polycarpou
KIOS Research Center for Intelligent Systems and Networks, Department of Electrical and Computer Engineering, University of Cyprus, Nicosia, Cyprus.

3:10PM **N-16043** **An Alternative Sensor Cloud Architecture for Vital Signs Monitoring.....2827**
Sara Ghanavati, Jemal Abawajy and Davood Izadi
Parallel and Distributed Computing Lab, School of Information Technology, Deakin University, Geelong, Australia.

3:30PM **N-16216** **Benchmarking a Coevolutionary Streaming Classifier under the Individual Household Electric Power Consumption Dataset.....2834**
Alexander Loginov, Malcolm I. Heywood and Garnett Wilson
Dalhousie University, Faculty of Computer Science, 6050 University Avenue, Halifax, NS, Canada.

3:50PM **N-16996** **Minimum Description Length Principle applied to Structure Adaptation for Classification under Concept Drift.....2842**
Pierre-Alexandre Murena[1] and Antoine Cornuéjols[2]
[1]LTCI CNRS, Télécom ParisTech, Université Paris-Saclay, 46 rue Barrault, 75013 Paris, France; [2]UMR MIA-Paris, AgroParisTech, INRA, Université Paris-Saclay, 16 rue Claude Bernard, 75005 Paris, France.

4:10PM **N-16071** **System Identification Models and Using Neural Networks for Ground Source Heat Pump with Ground Temperature Modeling.....2850**
Ahmet Kose and Eduard Petlenkov
Department of Computer Control, Tallinn University of Technology, Ehitajate tee 5, 19086 Tallinn, Estonia.

Session WM-6	Applications of Deep Networks II
Date/Time	Wednesday, 27 July 2016 / 2:30PM – 4:30PM
Venue	Room 217+219
Chair	Plamen Angelov

2:30PM **N-16078** **Real-time Reconstruction of EEG Signals from Compressive Measurements via Deep Learning.....2856**
Angshul Majumdar[1] and Rabab Ward[2]
[1]IIIT Delhi, New Delhi, India; [2]University of British Columbia, Vancouver, Canada.

2:50PM **N-16215** **Binary Codes for Tagging X-Ray Images via Deep De-Noising Autoencoders.....2864**
Antonio Sze-To[1], H. R. Tizhoosh[2] and Andrew K. C. Wong[1]
[1]Systems Design Engineering, University of Waterloo, Waterloo, Ontario, N2L 3G1, Canada; [2]KIMIA Lab, University of Waterloo, Waterloo, Ontario, N2L 3G1, Canada.

3:10PM **N-16423** **Generating Binary Tags for Fast Medical Image Retrieval Based on Convolutional Nets and Radon Transform.....2872**
Xinran Liu[1], H. R. Tizhoosh[2] and J. Kofman[1,2]
[1]Department of Systems Design Engineering, University of Waterloo, Waterloo, ON, N2L 3G1, Canada; [2]Centre for Bioengineering and Biotechnology, University of Waterloo, Waterloo, ON, N2L 3G1, Canada.

3:30PM **N-26029** **A General Purpose Intelligent Surveillance System For Mobile Devices using Deep Learning.....2879**
Antreas Antoniou and Plamen Angelov
School of Computing and Communications, Lancaster University, Lancaster, UK.

3:50PM **N-16550** **A Trajectory-Based Approach for Object Detection from Video.....2887**
Chunhui Jiang[1], Guiying Li[1], Junlong Liu[1], Yunfeng Liu[2] and Ke Tang[1]
[1]USTC-Birmingham Joint Research Institute in Intelligent Computation and Its Applications (UBRI), School of Computer Science and Technology, University of Science and Technology of China Hefei, 230027, China; [2]Department of Internal Search Platform, Tencent Inc., Shenzhen 518060, China

4:10PM **N-16163** **Fast Classifier Learning under Bounded Computational Resources using Partitioned Restricted Boltzmann Machines.....**2894
Hasari Tosun and John Sheppard
Department of Computer Science, Montana State University

Session WM-7	IJCNN-27: Extreme Learning Machines V
Date/Time	Wednesday, 27 July 2016 / 2:30PM – 4:30PM
Venue	Room 224
Chair	Julio Valdes, Weizhong Yan

2:30PM **N-16068**

An Ensemble of Extreme Learning Machine for Prediction of Wind Force and Moment Coefficients in Marine Vessels.....2901

N. Krishna Kumar[1], R. Savitha[2] and Abdullah Al Mamun[1]
[1]School of Electrical and Computer Engineering, National University of Singapore, 4 Engineering Drive 3, 117576, Singapore; [2]Institute of Infocomm Research, Agency for Science Technology and Research, 1 Fusionopolis way, 138632, Singapore.

2:50PM **N-16110**

One-Class Extreme Learning Machines for Gas Turbine Combustor Anomaly Detection.....2909

Weizhong Yan
Machine Learning Lab, GE Global Research Center, Niskayuna, 12309, New York.

3:10PM **N-16220**

Extreme Learning Machines for Approximating Nonlinear Dimensionality Reduction Mappings: Application to Haptic Handwritten Signatures.....2915

Julio J. Valdés[1], Fawaz A. Alsulaiman[2] and Abdulmotaleb El Saddik[3]
[1]National Research Council Canada, Information and Communications Technologies, Ottawa, Ontario, Canada; [2]King Saud University, College of Computer and Information Sciences, Riyadh, Saudi Arabia; [3]School of Electrical Engineering and Computer Science (EECS), University of Ottawa, Ottawa, Ontario, Canada.

3:30PM **N-17058**

Online Neuro-Identification of Nonlinear Systems using Extreme Learning Machine.....2923

Emerson Grzeidak[1], José A. R. Vargas[2] and Sadek C.A. Alfaro[2]
[1]Central Bank of Brazil, Accounting and Settlement Division, Brasilia, Brazil; [2]Department of Electrical Engineering, University of Brasilia, Brasilia, Brazil.

3:50PM **N-17064**

Clinical Narrative Classification using Discriminant Word Embeddings with ELM.....2931

Paula Lauren[1], Guangzhi Qu[1], Feng Zhang[2] and Amaury Lendasse[3]
[1]CSE Department, Oakland University, Rochester, MI, USA; [2]China University of Geosciences, Wuhan, China; [3]Department of MIE, The University of Iowa, Iowa City, IA, USA.

4:10PM **N-17078**

Modular Expansion of the Hidden Layer in Single Layer Feedforward Neural Networks.....2939

Migel D. Tissera and Mark D. McDonnell
Computational and Theoretical Neuroscience Laboratory, School of Information Technology and Mathematical Sciences, University of South Australia. Mawson Lakes, SA 5095, Australia

Session WP-1	IJCNN-40: CI for Safer and Smarter Societies
Date/Time	Wednesday, 27 July 2016 / 4:30PM – 6:30PM
Venue	Room 212
Chair	Seiichi Ozawa

4:30PM **N-16408** **Towards Personalized and Context-Aware Reminder Service for People with Dementia.....2946**

Seiki Tokunaga[1], Hiroyasu Horiuchi[1], Hiroki Takatsuka[1], Sachio Saiki[1],Shinsuke Matsumoto[2], Masahide Nakamura[1] and Kiyoshi Yasuda[3]
[1]Graduate School of System Informatics, Kobe University, 1-1 Rokkodai-cho, Nada-ku, Kobe 657-8501, Japan; [2]Graduate School of Information Science and Technology, Osaka University, 1-5, Yamadaoka, Suita, Osaka, 565-0871, Japan; [3]Chiba Rosai Hospital, 2-16 Tatsumidai-higashi, Ichihara 290-0003, Japan.

4:50PM **N-16463** **A Comparison of Autoencoder and Statistical Features for Cattle Behaviour Classification.....2954**

Ashfaqur Rahman[1], Daniel Smith[1], James Hills[3], Greg Bishop-Hurley[2], Dave Henry[2] and Richard Rawnsley[3]
[1]Data61, CSIRO, Australia; [2]Agriculture Flagship, CSIRO, Australia; [3]Tasmanian Institute of Agriculture, University of Tasmania, Australia

5:10PM **N-16652** **MMMs-induced *k*-member Co-clustering for *k* -anonymization of Cooccurrence Information.....2961**

Katsuhiro Honda[1], Hikaru Sakamoto[1], Seiki Ubukata[1] and Akira Notsu[1]
Graduate School of Engineering, Osaka Prefecture University, Sakai, Osaka 599-8531, Japan.

5:30PM **N-16674** **Extraction of Interaction Information Between Breeding Cows with GPS and Its Application to Estrus Detection.....2967**

Kengo Matsumoto[1], Kenji Oyama[1], Takeshi Honda[2] and Takenao Ohkawa[3]
[1]Graduate School of System Informatics, Kobe University, Kobe, 657-8501, Japan; [2]Food Resources Education and Research Center, Kobe University, Kasai, 6752103, Japan; [3]Graduate School of System Informatics, Kobe University, Kobe, 657-8501, Japan.

5:50PM **N-16788** **A Method of Detecting Interaction Between Breeding Cows from Time-series Birds Eye Pictures of Pasture.....2973**

Yoji Hosomi[1], Kenji Oyama[2], Takeshi Honda[2] and Takenao Ohkawa[1]
[1]Graduate School of System Informatics, Kobe University, Kobe, 6578501, Japan; [2]Food Resources Education and Research Center, Kobe University, Kasai, 6752103, Japan .

6:10PM **N-17132** **A Neural Network Model for Detecting DDoS Attacks Using Darknet Traffic Features.....2979**

Siti Hajar Aminah Ali[1], Seiichi Ozawa[2], Tao Ban[3] Junji Nakazato[3] and Jumpei Shimamura[4]
[1]Universiti Tun Hussein Onn Malaysia; [2]Kobe University; [3]National Institute of Information and Communications Technology; [4]Clwit Inc.

Session WP-2	Unsupervised Learning and Clustering III
Date/Time	Wednesday, 27 July 2016 / 4:30PM – 6:30PM
Venue	Room 213
Chair	Donald Wunsch

4:30PM **N-16997** **Biclustering ARTMAP Collaborative Filtering Recommender System.....2986**
Islam Elnabarawy[1], Donald C. Wunsch[2] and Ashraf M. Abdelbar[3]
[1]Computer Science Department, Missouri University of Science & Technology, Rolla, Missouri 65409; [2]Electrical & Computer Engineering Department, Missouri University of Science & Technology, Rolla, Missouri 65409; [3]Mathematics & Computer Science Department, Brandon University, Brandon, Manitoba. Canada.

4:50PM **N-16721** **LVC: Local Variance-based Clustering.....2992**
Rania Ibrahim, Ahmed Elbagoury, Mohamed S. Kamel and Fakhri Karray
University of Waterloo, Waterloo, Ontario, N2L 3G1, Canada.

5:10PM **N-17148** **Skew-Normal Mixture of Experts.....3000**
Faicel Chamroukhi
Lab of mathematics Paul Painlevé — UMR, CNRS 8524 and the Information Sciences and Systems Lab — UMR , CNRS, 7296, France.

5:30PM **N-16589** **Learning Compact Binary Codes from Higher-Order Tensors via Free-Form Reshaping and Binarized Multilinear PCA.....3008**
Haiping Lu[1], Jianxin Wu[2] and Yu Zhang[3]
*[1]Department of Computer Science, Hong Kong Baptist University, China ; [2]National Key Lab for Novel Software Technology, Nanjing University, China; [3]Bioinformatics Institute, A*STAR, Singapore.*

5:50PM **N-16927** **LRI: A Low Rank Approach to Non-Local Sparse Representation for Image Interpolation.....3016**
Mingli Zhang[1], Qiang Qux[2], Sadegh Nobari[2] and Christian Desrosiers[1]
[1]Software and IT Engineering, École de Technologie Supérieure Montreal, H3C 1K3, Canada; [2]Data Science and Information Systems (Dainfos) Lab, Innopolis University, Russia

6:10PM **N-17102** **An Information Theoretic ART for Robust Unsupervised Learning.....3023**
Leonardo Enzo Brito da Silva[1,2] and Donald C. Wunsch II[1]
[1]Applied Computational Intelligence Laboratory, Department of Electrical and Computer Engineering, Missouri University of Science and Technology, Rolla, MO, USA; [2]CAPES Foundation, Ministry of Education of Brazil, Brasília, DF, Brazil

Session WP-3	Signal Processing, Image Processing, and Multimedia
Date/Time	Wednesday, 27 July 2016 / 4:30PM – 6:30PM
Venue	Room 214
Chair	Ognjen Arandjelovic

4:30PM **N-16130** **Descriptor Transition Tables for Object Retrieval using Unconstrained Cluttered Video Acquired using a Consumer Level Handheld Mobile Device.....3030**
Warren Rieutort-Louis and Ognjen Arandjelović
University of Cambridge, United Kingdom.

4:50PM **N-16173** **Image Segmentation Based on Prototypes Extraction and Merging of Clusters in Multiple Spaces.....3038**
Xiaofeng Shi, Furao Shen and Jinxi Zhao
The National Key Laboratory for Novel Software Technology, Department of Computer Science and Technology, Nanjing University, China.

5:10PM **N-16309** **Automatic Detection of Bike-riders without Helmet using Surveillance Videos in Real-time.....3046**
Kunal Dahiya, Dinesh Singh and C. Krishna Mohan
Visual Learning and Intelligence Group (VIGIL), Department of Computer Science and Engineering, Indian Institute of Technology, Hyderabad, India.

5:30PM **N-16340** **Log-Demons with Driving Force for Large Deformation Image Registration.....3052**
Le Zhang and Ying Wen
Shanghai Key Laboratory of Multidimensional Information Processing, Department of Computer Science and Technology, East China Normal University, Shanghai, 200062, China.

5:50PM **N-16704** **Gait Fingerprinting-based User Identification on Smartphones.....3060**
Muhammad Ahmad[1], Adil Mehmood Khan[1], Joseph Alexander Brown[2], Stanislav Protasov[3] and Asad Masood Khattak[4]
[1]Machine Learning and Knowledge Representation Lab, Innopolis University, Innopolis, Republic of Tatarstan, 420500, Russia; [2]Artificial Intelligence in Game Development Lab, Innopolis University, Innopolis, Republic of Tatarstan, Russia; [3]Machine Learning and Knowledge Representation Lab, Innopolis University, Innopolis, Republic of Tatarstan, Russia; [4]College of Technological Innovation, Zayed University, 144-534, UAE.

6:10PM **N-17103** **Non-Negative Matrix Factorization for Non-Parametric and Unsupervised Image Clustering and Segmentation.....3068**
Dimah Dera[1], Nidhal Bouaynaya[1], Robi Polikar[1] and Hassan M. Fathallah-Shaykh[2]
[1]Department of Electrical and Computer Engineering, Rowan University, Glassboro, NJ 08028; [2]Departments of Neurology, Mathematics, Electrical, Mechanical and Biomedical Engineering, University of Alabama, Birmingham, AL 35294, USA

Session WP-4	IJCNN-25: Distributed Learning Algorithms for Neural Networks and Learning Systems
Date/Time	Wednesday, 27 July 2016 / 4:30PM – 6:30PM
Venue	Room 215
Chair(s)	Massimo Panella, Simone Scardapane

4:30PM **N-16406** **A Convergent and Fully Distributable SVMs Training Algorithm.....3076**
Andrea Manno[1], Simone Sagratella[2] and Lorenzo Livi[3]
[1]Dipartimento di Elettronica, Informazione e Bioingegneria, of the Politecnico Milano, via Ponzio 34/5, 20133 Milano, Italy; [2]Department of Computer, Control and Management Engineering Antonio Ruberti, Sapienza University of Rome, Via Ariosto 25, 00185 Roma, Italy; [3]Department of Computer Science Ryerson University 350, Victoria Street, Toronto, ON, M5B 2K3, Canada.

4:50PM **N-17033** **Weight Exchange in Distributed Learning.....3081**
Julian Dorner[1], Samuel Favrichon[2] and Arif Selcuk Ogrenci[3]
[1]HTW Berlin, Berlin, Germany; [2]Universite de Technologie de Compiegne, Compiegne, France; [3]Kadir Has University, Istanbul, Turkey

5:10PM **N-17086** **A Lite Cellular Generalized Neuron Network for Frequency Prediction of Synchronous Generators in a Multimachine Power System.....3085**
Yawei Wei[1] and Ganesh Kumar Venayagamoorthy[2]
[1]Real-Time Power and Intelligent Systems Laboratory, The Holcombe Department of Electrical and Computer Engineering, Clemson University, Clemson, SC, 29634, USA; [2]Eskom Centre of Excellence in HVDC Engineering, University of KwaZulu-Natal, Durban, South Africa.

5:30PM **N-16691** **Distributed Spectral Clustering based on Euclidean Distance Matrix Completion.....3093**
Simone Scardapane, Rosa Altilio, Massimo Panella and Aurelio Uncini
Department of Information Engineering, Electronics and Telecommunications (DIET), "Sapienza" University of Rome, Via Eudossiana 18, 00184 Rome, Italy.

5:50PM **N-16491** **Distributed Variance Regularized Multitask Learning.....3101**
Michele Donini[1], David Martinez-Rego[2], Martin Goodson[3], John Shawe-Taylor[1] and Massimiliano Pontil[2,4]
[1]University of Padova, Padova, Italy; [2]University College London, Malet Place, London, WC1E 6BT, UK; [3]Skimlinks, London, UK; [4]Istituto Italiano di Tecnologia, Via Morego, Genoa, Italy

6:10PM **N-16262** **Distributed Mean Shift Clustering with Approximate Nearest Neighbours.....3110**
Gaël Beck, Tarn Duong, Hanene Azzag and Mustapha Lebbah
Computer Science Laboratory (LIPN), University Paris-North — Paris 13, F-93430, Villetaneuse, France.

Session WP-5	IJCNN-34: Smart Educational Techniques in Big Data Age
Date/Time	Wednesday, 27 July 2016 / 4:30PM – 6:30PM
Venue	Room 216
Chair(s)	Guandong Xu, Gang Li and Wu He

4:30PM **N-16481** **Learning Space Model for Educational Social Networks.....3116**
Tam Thanh Nguyen and Insu Song
School of Business/IT, James Cook University Australia, Singapore Campus, Singapore.

4:50PM **N-16685** **Evolutionary Lazy Learning for Naive Bayes Classification.....3124**
Yu Bai[1], Haishuai Wang[1], Jia Wu[1], Yun Zhang[2], Jing Jiang[1] and Guodong Long[1]
[1]Centre for Quantum Computation & Intelligent Systems (QCIS), Faculty of Engineering and Information Technology, University of Technology Sydney, Australia; [2]School of Computer Science and Engineering, University of New South Wales, Australia.

5:10PM **N-16887** **Dropout Prediction in MOOCs Using Behavior Features and Multi-view Semi-supervised Learning.....3130**
Wentao Li[1,2], Min Gaol[1,3], Hua Li[1,2], Qingyu Xiongl[1,3], Junhao Wenl[1,3] and Zhongfu Wu[1,2]
[1]Key Laboratory of Dependable Service Computing in Cyber Physical Society (Chongqing University), Ministry of Education, Chongqing, 400044, China; [2]College of Computer Science, Chongqing University, Chongqing 400044, China; [3]School of Software Engineering, Chongqing University, Chongqing 400044, China

5:30PM **N-17042** **Using Data Mining to Extract Knowledge from Student Evaluation Comments in Undergraduate Courses.....3138**
Anna Koufakou, Justin Gosselin and Dahai Guo
Florida Gulf Coast University, Software Engineering Department, 10501 FGCU Blvd, S., Ft Myers, FL, USA.

5:50PM **N-17043** **Reducing Cold Start Problems in Educational Recommender Systems.....3143**
Stanislav Kuznetsov, Pavel Kordík, Tomáš Řehořek, Josef Dvořák and Petr Kroha
Faculty of Information Technology, Czech Technical University in Prague.

6:10PM **N-16596** **Multimedia Recommendation System Using Adaptive Resonance Theory Neural Model for Digital Storytelling.....3150**
Ju-Youn Park, Woo-Ri Ko and Jong-Hwan Kim
School of Electrical Engineering, KAIST, Daejeon 305-701, Republic of Korea.

Session WP-6	Applications of Deep Networks III
Date/Time	Wednesday, 27 July 2016 / 4:30PM – 6:30PM
Venue	Room 217+219
Chair	Fakhri Karray

4:30PM **N-16479** **Aspect-based Opinion Summarization with Convolutional Neural Networks.....3157**
Haibing Wu, Yiwei Gu, Shangdi Sun and Xiaodong Gu
Department of Electronic Engineering, Fudan University, Shanghai 200433, China.

4:50PM **N-16425** **Enhancing Bidirectional Association between Deep Image Representations and Loosely Correlated Texts.....3164**
Qiuwen Chen, Qinru Qiu
Department of Electrical Engineering and Computer Science, Syracuse University, NY 13244, USA.

5:10PM **N-17004** **Three Convolutional Neural Network-based Models for Learning Sentiment Word Vectors Towards Sentiment Analysis.....3172**
Man Lan[1,2], Zhihua Zhang[1], Yue Lu[1,2] and Ju Wu[3]
[1]Department of Computer Science and Technology, East China Normal University, Shanghai, P.R. China; [2]Shanghai Key Laboratory of Multidimensional Information Processing; [3]The 3rd Institute of Ministry of Public Security of China, Shanghai, P.R. China.

5:30PM **N-16159** **Deep Auto-encoder in Model Reduction of Lage-scale Spatiotemporal Dynamics.....3180**
Mingliang Wang[1], Han-Xiong Li[1,2] and Wenjing Shen[1]
[1]Department of Systems Engineering and Engineering Management, City University of Hong Kong, Hong Kong SAR, China; [2]State Key Laboratory of High Performance Complex Manufacturing, School of Mechanical and Electrical Engineering, Central South University, Changsha, China.

5:50PM **N-16233** **Multi-patch Deep Features for Power Line Insulator Status Classification from Aerial Images.....3187**
Zhenbing Zhao, Guozhi Xu, Yincheng Qi, Ning Liu and Tiefeng Zhang
School of Electrical and Electronic Engineering, North China Electric Power University, Baoding, China.

6:10PM **N-17029** **Big-Data-Generated Traffic Flow Prediction Using Deep Learning and Dempster-Shafer Theory.....3195**
Ridha Soua, Arief Koesdwiady and Fakhri Karray
Centre for Pattern Analysis and Machine Intelligence (CPAMI), Department of Electrical and Computer Engineering, University of Waterloo Waterloo ON, N2L 3G1, Canada.

Session WP-7	Support Vector Machines and Kernel Methods
Date/Time	Wednesday, 27 July 2016 / 4:30PM – 6:30PM
Venue	Room 224
Chair	Barbara Hammer

4:30PM **N-16287** **A Null Space Based One Class Kernel Fisher Discriminant.....3203**
F. Dufrenois and J. C. Noyer
SYVIP team, LISIC, Calais, France.

4:50PM **N-16972** **Fast Kernel-based Method for Anomaly Detection.....3211**
Anh Le[1], Trung Le[1], Khanh Nguyen[1], Van Nguyen[1], Thai Hoang Le[2] and Dat Tran[3]
[1]Faculty of Information Technology, HCMc University of Pedagogy, Vietnam; [2]Faculty of Information Technology, VNUHCM — University of Science, Vietnam; [3]Faculty of Education Science Technology and Mathematics, University of Canberra, Australia

5:10PM **N-16711** **Sparse Least Squares Support Vector Regression via Multiresponse Sparse Regression.....3218**
David Clifte da S. Vieira, Ajalmar R. Rocha Neto and Antonio Wendell de O. Rodrigues
Department of Teleinformatics, Federal Institute of Ceará (IFCE), Fortaleza, Ceará, Brazil.

5:30PM **N-16999** **Fuzzy Kernel Stochastic Gradient Descent Machines.....3226**
Tuan Nguyen[1], Phuong Duong[1], Trung Le[1], Anh Le[1], Viet Ngo[1], Dat Tran[2] and Wanli Ma[2]
[1]Faculty of Information Technology, HCMc University of Pedagogy, Vietnam; [2]Faculty of Education Science Technology and Mathematics, University of Canberra, Australia

5:50PM **N-17097** **Second Order Design of Multiclass Kernel Machines.....3233**
Yilong Hao, Kanishka Tyagi, Rohit Rawat and Michael Manry
Department of Electrical Engineering, The University of Texas at Arlington, Arlington, Texas, USA.

6:10PM **N-16801** **Offline Arabic Handwritten Recognition System with Dropout Applied in Deep Networks based-SVMs.....3241**
Mohamed Elleuch[1], Raouia Mokni[2] and Monji Kherallah[3]
[1]National School of Computer Science (ENSI), University of Manouba, Manouba, Tunisia; [2]Faculty of Economics and Management of Sfax, University of Sfax, Sfax, Tunisia; [2]Faculty of Sciences, University of Sfax, Sfax, Tunisia.

Session HA-1	IJCNN-04: Machine Learning for Computer Vision I
Date/Time	Thursday, 28 July 2016 / 8:00AM – 10:00AM
Venue	Room 212
Chair	Brijesh Verma

8:00AM **N-16740** **Aggregating Pixel-level Prediction and Cluster-level Texton Occurrence within Superpixel Voting for Roadside Vegetation Classification.....3249**
Ligang Zhang, Brijesh Verma, David Stockwell and Sujan Chowdhury
Centre for Intelligent Systems, School of Engineering and Technology, Central Queensland University, Brisbane, Queensland, Australia.

8:20AM **N-16120** **Non-parametric Hidden Conditional Random Fields for Action Classification.....3256**
Natraj Raman and S. J. Maybank
Department of Computer Science and Information Systems, Birkbeck, University of London, London, UK.

8:40AM **N-16211** **Manifold Locality Constrained Low-Rank Representation and Its Applications.....3264**
Cong-Zhe You[1], Xiao-Jun Wu[1], Vasile Palade[2] and Abdulrahman Altahhan[2]
[1]School of IoT Engineering, Jiangnan University, Wuxi, China; [2]School of Computing, Electronics and Maths, Coventry University, Coventry, United Kingdom.

9:00AM **N-16373** **Sparse Hierarchical Nonparametric Bayesian Learning for Light Field Representation and Denoising.....3272**
Xing Sun[1], Nan Meng[1], Zhimin Xu[2], Edmund Y. Lam[1] and Hayden K.-H. So[1]
[1]Department of Electrical and Electronic Engineering, The University of Hong Kong, Pokfulam, Hong Kong; [2]Tianjin Sharpnow Technology Co. Ltd., China

9:20AM **N-16395** **Riemannian Optimization with Subspace Tracking for Low-rank Recovery.....3280**
Qian Li[1], Wenjia Niu[1], Gang Li[2], Jianlong Tan[1], Gang Xiong[1] and Li Guo[1]
[1]Institute of Information Engineering, Chinese Academy of Sciences, Beijing, China; [2]School of Information Technology, Deakin University, Australia.

9:40AM **N-16818** **Classification from a Riemannian Graph Embedding Viewpoint.....3288**
Antonio Robles-Kelly[1], Lin Gu[2] and Ran Wei[1]
*[1]National ICT Australia (NICTA), Locked Bag 8001, Canberra ACT 2601, Australia; [2]A*STAR Singapore, Bioinformatics Institute, Singapore.*

Session HA-2	Information Theoretic Learning
Date/Time	Thursday, 28 July 2016 / 8:00AM – 10:00AM
Venue	Room 213
Chair(s)	Jose Principe, Pablo Estevez

8:00AM **N-16639** **Information Theoretic-Learning Auto-Encoder.....3296**
Eder Santana, Matthew Emigh and Jose C Principe
University of Florida

8:20AM **N-16981** **Study of Learning Entropy for Onset Detection of Epileptic Seizures in EEG Time Series.....3302**
Ivo Bukovsky[1], Matous Cejnek[1], Jan Vrba[1] and Noriyasu Homma[2]
[1]Department of Instrumentation and Control, Faculty of Mechanical Engineering, CTU, Prague, Czech Republic; [2]Tohoku University, Graduate School of Medicine, Sendai, Japan.

8:40AM **N-16445** **Distributed Information-Theoretic Metric Learning in Apache Spark.....3306**
Yuxin Su[1,2], Haiqin Yang[1,2], Irwin King[1,2] and Michael Lyu[1,2]
[1]Shenzhen Key Laboratory of Rich Media Big Data Analytics and Applications, Shenzhen Research Institute, The Chinese University of Hong Kong, Shenzhen, China; [2]Department of Computer Science and Engineering, The Chinese University of Hong Kong, Shatin, Hong Kong

9:00AM **N-16501** **One-Class Classification Through Mutual Information Minimization.....3314**
Lorenzo Livi and Cesare Alippi
Department of Electronics, Information, and Bioengineering, Politecnico di Milano, Piazza Leonardo da Vinci 32, 20133 Milano, Italy and Universitá della Svizzera Italiana, Via G. Buffi 13, 6904 Lugano, Switzerland.

9:20AM **N-26054** **Correntropy Based Filtering for Supernova Detection.....3322**
Pablo Huentelemul[1,3], Pablo A. Estévezl[1,3] and Francisco Förster[2,3]
[1]Department of Electrical Engineering, Universidad de Chile, Chile; [2]Center for Mathematical Modeling, Universidad de Chile, Chile; [3]Millennium Institute of Astrophysics, Chile.

9:40AM **N-17041** **Unsupervised Entropy-Based Selection of Data Sets for Improved Model Fitting.....3330**
Pedro M. Ferreira
LaSIGE, Faculdade de Ciências, Universidade de Lisboa, Portugal.

Session HA-3	Probabilistic Methods and Gaussian Processes
Date/Time	Thursday, 28 July 2016 / 8:00AM – 10:00AM
Venue	Room 214
Chair	Wieslaw Palka

8:00AM **N-16277** **Manifold Gaussian Processes for Regression.....3338**
Roberto Calandra[1], Jan Peters[1,2], Carl Edward Rasmussen[3] and Marc Peter Deisenroth[4]
[1]Intelligent Autonomous Systems Lab, Technische Universität Darmstadt, Germany; [2]Max Planck Institute for Intelligent Systems, Tübingen, Germany; [3]Department of Engineering, University of Cambridge, United Kingdom; [4]Department of Computing, Imperial College London, United Kingdom

8:20AM **N-16187** **Clustering of Gaussian Distributions.....3346**
Przemysław Spurek and Wiesław Pałka
Faculty of Mathematics and Computer Science, Jagiellonian University, Łojasiewicza 6, 30-348 Kraków, Poland.

8:40AM **N-16911** **Gaussian Process Kernels for Popular State-Space Time Series Models.....3354**
Alexander Grigorievskiy and Juha Karhunen
Department of Computer Science, Aalto University, Konemiehentie 2, Espoo, Finland.

9:00AM **N-16896** **Stochastic Collapsed Variational Bayesian Inference for Biterm Topic Model.....3364**
Narutaka Awaya, Jun Kitazono, Toshiaki Omori and Seiichi Ozawa
Graduate School of Engineering, Kobe University, 1-1, Rokkoudai, Nada, Kobe, Hyogo, Japan.

9:20AM **N-16593** **Content-based Image Retrieval by using Deep Kernel Machine with Gaussian Mixture Model.....3371**
Mohammad Ahangar Kiasari[1], Minho Lee[1] and Jixiang Shen[2]
[1]School of Electronics Engineering, Kyungpook National University, Taegu, Republic of Korea; [2]Network Management Center, China Mobile Group Guangdong Co., Ltd, Shenzhen, China.

9:40AM **N-17104** **Nonparametrically Guided Autoencoder with Laplace Approximation For Dimensionality Reduction.....3378**
Xinwei Jiang[1], Xin Song[1], Junbin Gao[2], Zhihua Cai[1] and Dongmei Zhang[1]
[1]Hubei Key Laboratory of Intelligent Geo-Information Processing, School of Computer Science, China University of Geosciences, Wuhan, 430074, China; [2]Discipline of Business Analytics, The University of Sydney Business School, The University of Sydney, NSW 2006, Australia.

Session HA-4	IJCNN-20: Computational Intelligence Algorithms for Digital Audio Applications
Date/Time	Thursday, 28 July 2016 / 8:00AM – 10:00AM
Venue	Room 215
Chair	Stefano Squartini

8:00AM **N-16617** **Combining Evolution Strategies and Neural Network procedures for Compression Driver design.....3385**
Michele Gasparini[1], Fabio Vesperini[1], Stefania Cecchi[1], Stefano Squartini[1], Francesco Piazza[1] and Romolo Toppi[2]
[1]A3lab, DII, Universitá Politecnica delle Marche, Ancona, Italy; [2]Faital Spa, Milano, Italy.

8:20AM **N-16689** **Deep Neural Networks for Multi-Room Voice Activity Detection: Advancements and Comparative Evaluation.....3391**
Fabio Vesperini, Paolo Vecchiotti, Emanuele Principi, Stefano Squartini and Francesco Piazza
Department of Information Engineering, Università Politecnica delle Marche, Via Brecce Bianche, 60131, Ancona, Italy.

8:40AM **N-16149** **Filterbank Learning for Deep Neural Network Based Polyphonic Sound Event Detection.....3399**
Emre Cakir, Ezgi Can Ozan and Tuomas Virtanen
Tempere University of Technology, Finland.

9:00AM **N-16832** **Comparing Time and Frequency Domain for Audio Event Recognition Using Deep Learning.....3407**
Lars Hertel[1], Huy Phan[1,2] and Alfred Mertins[1]
[1]Institute for Signal Processing, University of Luebeck, Germany; [2]Graduate School for Computing in Medicine and Life Sciences, University of Luebeck, Germany

9:20AM **N-16429** **Convolutional RNN: An Enhanced Model for Extracting Features from Sequential Data.....3412**
Gil Keren[1] and Björn Schuller[1,2]
[1]Chair of Complex and Intelligent Systems, University of Passau, Passau, Germany; [2]Machine Learning Group, Imperial College London, UK.

9:40AM **N-16536** **Design of Hybrid Nonlinear Spline Adaptive Filters for Active Noise Control.....3420**
Vinal Patel[1], Danilo Comminiello[2], Michele Scarpiniti[2], Nithin V. George[1] and Aurelio Uncini[2]
[1]Department of Electrical Engineering, Indian Institute of Technology Gandhinagar, Gujarat, India; [2]Department of Information Engineering, Electronics and Telecommunications (DIET), "Sapienza" University of Rome, 00184 Rome, Italy.

Session HA-5	IJCNN-51: Advanced Methods in Optimization and Machine Learning for Multimedia Computing I
Date/Time	Thursday, 28 July 2016 / 8:00AM – 10:00AM
Venue	Room 216
Chair(s)	Yuping Wang, Yan Liu

8:00AM **N-16272** **A New Parallel MRI Image Reconstruction Model with Elastic Net Regularization.....3426**
Bing-Jiang Qiu[1], Wen-Sheng Chen[1,2], Bo Chen[1,2] and Bin-Bin Pan[1,2]
[1]College of Mathematics and Statistics, Shenzhen University, China; [2]Shenzhen Key Laboratory of Media Security, Shenzhen University, China

8:20AM **N-16278** **Empirical Study of Effect of Grouping Strategies for Large Scale Optimization.....3433**
Haiyan Liu, Yuping Wang, Xuyan Liu and Shiwei Guan
School of Computer Science and Technology, Xidian University, Xi'an, Shanxi, 710071, China.

8:40AM **N-17150** **Efficient Single Image Dehazing via Scene-adaptive Segmentation and Improved Dark Channel Model.....3440**
He Zhang[1], Xin Liu[1] and Yiu-ming Cheung[2,3]
[1]Department of Computer Science and Technology, Huaqiao University, Xiamen, P.R. China; [2]Department of Computer Science, Hong Kong Baptist University, Hong Kong SAR, China; [3]United International College, BNU — HKBU, Zhuhai, China.

9:00AM **N-16357** **Block Kernel Nonnegative Matrix Factorization and Its Application to Face Recognition.....3446**
Wen-Sheng Chen[1,2], Yugao Li[1], Binbin Pan[1,2] and Chen Xu[3]
[1]College of Mathematics and Statistics, Shenzhen University, China; [2]Shenzhen Key Laboratory of Media Security, Shenzhen University, China; [3]Institute of Intelligent Computing Science, Shenzhen University, China.

9:20AM **N-16544** **A Pseudoinverse Incremental Algorithm for Fast Training Deep Neural Networks with Application to Spectra Pattern Recognition.....3453**
Ke Wang[1], Ping Guoy[1,2], Qian Yin[2], A-Li Luo[3] and Xin Xin[1]
[1]School of Computer Science and Technology, Beijing Institute of Technology, Beijing, 100081, P.R. China; [2]Image Processing and Pattern Recognition Laboratory, Beijing Normal University, Beijing, 100875, P.R. China; [3]Key Laboratory of Optical Astronomy, National Astronomical Observatories, Chinese Academy of Sciences, Beijing, 100012, P.R. China.

9:40AM **N-16650** **Life Stage Based Recommendation in E-commerce.....3461**
Bin Guo, Kai Dou and Li Kuang
School of Software, Central South University, Changsha, 410075, China.

Session HA-6	Feature Selection, Extraction, and Aggregation I
Date/Time	Thursday, 28 July 2016 / 8:00AM – 10:00AM
Venue	Room 217+219
Chair	Roberto Battiti

8:00AM **N-16968** **X-MIFS: Exact Mutual Information for Feature Selection.....3469**
Mauro Brunato and Roberto Battiti
DISI — University of Trento, Italy.

8:20AM **N-16677** **Semi-Supervised Co-Selection: Features and Instances by a Weighting Approach.....3477**
Raywat Makkhongkaew, Khalid Benabdeslem and Haytham Elghazel
University of Lyon1 — LIRIS, 43, Bd du 11 Novembre 1918, Villeurbanne, Cedex 69622, France.

8:40AM **N-16770** **Internet Traffic Classification based on Min-Max Ensemble Feature Selection.....3485**
Yinxiang Huang[1], Yun Li[1] and Baohua Qiang[2]
[1]School of Computer Science & Technology, Nanjing University of Posts and Telecommunications, Nanjing, China; [2]Key Laboratory of Cloud Computing and Complex System, Guilin University of Electronic Technology, Guilin, China.

9:00AM **N-16462** **Clustering Algorithm Using Rough Set Theory for Unsupervised Feature Selection.....3493**
Fannia Pacheco[1], Mariela Cerrada[2,4], Chuan Li[3,4], René Vinicio Sánchez[4], Diego Cabrera[4] and José Valente de Oliveira[5]
[1]GIDTEC-Mechanical Engineering Department, Universidad Politécnica Salesiana, Ecuador; [2]Universidad de Los Andes, Mérida, Venezuela; [3]National Research Base of Intelligent Manufacturing Service, Chongqing Technology and Business University, Chongqing, China; [4]GIDTEC; [5]CEOT, Universidade do Algrave, Faro, Portugal.

9:20AM **N-16435** **A Brief Review of Document Image Retrieval Methods: Recent Advances.....3500**
Fahimeh Alaei[1], Alireza Alaei[1], Michael Blumenstein[2] and Umapada Pal[3]
[1]School of ICT, Griffith University, Australia; [2]University of Technology, Sydney, Australia; [3]CVPR Unit, Indian Statistical Institute, India.

9:40AM **N-16527** **Class-Dependent Feature Selection Algorithm for Text Categorization.....3508**
Rogério C. P. Fragoso Roberto H. W. Pinheiro and George D. C. Cavalcanti
Centro de Informática (CIn) of the Universidade Federal, de Pernambuco (UFPE), Brazil.

Session HA-7	IJCNN-29: Reinforcement Learning and Approximate Dynamic Programming for Optimization in Dynamic Environment
Date/Time	Thursday, 28 July 2016 / 8:00AM – 10:00AM
Venue	Room 224
Chair(s)	Daoyi Dong, Dongbin Zhao

8:00AM **N-16451** **Adaptive Optimal Tracking Control of Unknown Nonlinear Systems Using System Augmentation.....3516**
Yongfeng Lv[1], Jing Na[1], Qinmin Yang[2] and Guido Herrmann[1]
[1]Faculty of Mechanical and Electrical Engineering, Kunming University of Science and Technology, 650500, Kunming, China; [2]Department of Control Science and Engineering, Zhejiang University, Hangzhou, 310027, China; [3]Department of Mechanical Engineering, University of Bristol, BS8 1TR, UK

8:20AM **N-16758** **Context-Switching and Adaptation: Brain-Inspired Mechanisms for Handling Environmental Changes.....3522**
Eric Chalmers, Edgar Bermudez Contreras, Brandon Robertson, Artur Luczak and Aaron Gruber
Canadian Centre for Behavioural Neuroscience, University of Lethbridge, Alberta, Canada.

8:40AM **N-26006** **Adaptive Dynamic Programming Based Fault Compensation Control for Nonlinear Systems with Actuator Failures.....3530**
Bo Zhao[1], Derong Liu[2], Yuanchun Li[3] and Guang Shi[1]
[1]State Key Laboratory of Management, and Control for Complex Systems, Institute of Automation, Chinese, Academy of Sciences, Beijing 100190, China; [2]School of Automation and Electrical Engineering, University of Science and Technology Beijing, Beijing 100083, China; [3]Department of Control Science and Engineering, Changchun University of Technology, Changchun 130012, China.

9:00AM **N-17068** **Policy Iteration for Optimal Switching with Continuous-time Dynamics.....3536**
Tohid Sardarmehni[1] and Ali Heydari[2]
[1]Mechanical Engineering at South Dakota School of Mines & Technology, Rapid City, SD, USA; [2]Department of Mechanical Engineering, South Dakota School of Mines & Technology, Rapid City, SD, USA.

9:20AM **N-26010** **Optimal Self-Learning Control Scheme for Discrete-Time Nonlinear Systems Using Local Value Iteration.....3544**
Qinglai Wei[1] and Derong Liu[2]
[1]The State Key Laboratory of Management and Control, for Complex Systems, Institute of Automation, Chinese Academy of Sciences, Beijing, 100190, China; [2]School of Automation and Electrical Engineering, University of Science and Technology, Beijing, Beijing, 100083, China.

9:40AM **N-16773** **A General Adaptive Dynamic Programming Approach with Experience Replay.....3550**
Bin Wang[1], Dongbin Zhao[2], Jin Cheng[1], Yuan Xu[1] and Yueyang Li[1]
[1]School of Electrical Engineering, University of Jinan, Jinan, China; [2]The State Key Laboratory of Management and Control for Complex Systems, Institute of Automation, Chinese Academy of Sciences, Beijing, China.

Session	[Plenary] – Collective Neurodynamic Optimization Approaches to Constrained Optimization, Prof. Jun Wang
Date/Time	Thursday, 28 July 2016 / 1:00PM – 2:00PM
Venue	Room Ballroom A
Chair	Hussein Abbass

Session	Poster – Machine Learning
Date/Time	Thursday, 28 July 2016 / 2:00PM – 2:30PM
Venue	Room Ballroom D
Chair	Jong-Hwan Kim

P301 **N-16778** **Class-wise Deep Dictionaries for EEG Classification.....3556**
Prerna Khurana[1], Angshul Majumdar[1] and Rabab Ward[2]
[1]IIIT Delhi, New Delhi, India; [2]University of British Columbia, Vancouver, Canada.

P302 **N-16358** **Density-dependent Quantized Kernel Least Mean Square.....3564**
Bao Xi[1], Lei Sun[2], Badong Chen[1], Jianji Wang[1], Nanning Zheng[1] and José C. Príncipe[1]
[1]School of Electrical and Information Engineering, Xi'an Jiaotong University, Xi'an, 710049, P.R. China; [2]School of Information and Electronics, Beijing Institute of Technology, Beijing, 100081, P.R. China.

P303 **N-16397** **Scalable Focussed Entity Resolution.....3570**
B. N. Ranganath and Shalabh Bhatnagar
Department of Computer Science and Automation, Indian Institute of Science, Bangalore, India.

P304 **N-17083** **Pain Recognition and Intensity Classification Using Facial Expressions.....3578**
W. A. Shier and S. Yanushkevich
Biometric Technologies Laboratory, Department of Electrical and Computing Engineering, University of Calgary, Alberta, Canada.

P305 **N-17037** **Hierarchical Classification for Dealing with The Class Imbalance Problem.....3584**
Mohamed Bader-El-Den, Eleman Teitei and Mo Adda
School of Computing, University of Portsmouth, Portsmouth PO1 3HE, UK.

P306 **N-16465** **Grasp the Implicit Features: Hierarchical Emotion Classification based on Topic Model and SVM.....3592**
Fan Zhang, Hua Xu, Jiushuo Wang, Xiaomin Sun and Junhui Deng
State Key Laboratory of Intelligent Technology and Systems, Tsinghua National Laboratory for Information Science and Technology, Department of Computer Science and Technology, Tsinghua University, Beijing, 100084, China.

P307 **N-16209** **Face Recognition using Locality Sparsity Preserving Projections.....3600**
Ying Wen, Shicheng Yang, Lili Hou and Hongda Zhang
Shanghai Key Laboratory of Multidimensional Information Processing, Department of Computer Science and Technology, East China Normal University, Shanghai, 200241, China.

P308 **N-16862** **Feature Space Distance Metric Learning for Discriminant Graph Embedding.....3608**
Bo Li, Zhang-Tao Fan and Xiao-Long Zhang
School of Computer Science and Technology, Wuhan University of Science and Technology, Wuhan, Hubei, China and Hubei Province Key Laboratory of Intelligent Information Processing and Real-time Industrial System, Wuhan, Hubei, China.

P309 **N-16377** **Superpixel-Based Sparse Representation Classifier for Hyperspectral Image.....3614**
Min Han[1], Chengkun Zhang[1] and Jun Wang[1,2]
[1]Faculty of Electronic Information and Electrical Engineering, Dalian University of Technology, Dalian, China; [2]Department of Computer Science, City University of Hong Kong, Hong Kong, China

P310 **N-16523** **Low Level Visual Feature Extraction by Learning of Multiple Tasks for Convolutional Neural Networks.....3620**
Hidenori Ide[1] and Takio Kurita[2]
[1]Faculty of Engineering, Hiroshima University; [2]Department of Information Engineering, Hiroshima University, Japan.

P311 **N-16847** **Deep Random Vector Functional Link Network for Handwritten Character Recognition.....3628**
Hubert Cecotti
School of Computing and Intelligent Systems, Ulster University, Londonderry, Northern Ireland, UK.

P312 **N-16049** **Neural Network-Based Event-Triggered Control Design of Nonlinear Continuous-Time Systems with Variable Sampling.....3634**
Songlin Hu[1], Dong Yue[1], Xiuxia Yin[2] and Xiangpeng Xie[1]
[1]Institute of Advanced Technology, Nanjing University of Posts and Telecommunications, Nanjing, 210023, P.R. China; [2]Department of Mathematics, School of Science, Nanchang University, Nanchang, Jiangxi, 330031, P.R. China

P313 **N-16785** **A Network-based Approach to Detect Spammer Groups.....3642**
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[1]Decision Support and e-Service Intelligence Lab, Centre for Quantum Computation and Intelligent Systems, Faculty of Engineering and Information Technology, University of Technology, Sydney. Sydney, Australia; [2]School of Software, University of Technology Sydney, Sydney, Australia.

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[1]Qatar Computing Research Institute, Hamad Bin Khalifa University, Doha, Qatar; [2]KU Leuven, ESAT-STADIUS, Kasteelpark Arenberg 10, B-3001 Leuven, Belgium

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[1]Czech Technical University in Prague, Faculty of Nuclear Sciences and Physical Engineering, Department of Software Engineering, Trojanova 13, Prague, Czech Republic; [2]Czech Technical University in Prague, Faculty of Mechanical Engineering, Department of Instrumentation and Control Engineering, Trojanova 4, Prague, Czech Republic; [3]Technical University in Košice, Faculty of Manufacturing Technologies, Department of Mathematics, Informatics and Cybernetics, Bayerova 1, Prague, Solvakia.

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[1]Faculty of Computing, Federal University of Uberlândia, Uberlândia, 38400-902, Brazil; [2]Department of Computing and Mathematics, University of São Paulo, Ribeirão Preto, 14040-901, Brazil; [3]Department of Computer Science, University of Surrey, Guildford, GU2 7XH, United Kingdom.

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[1]School of Computing and Mathematics, Charles Sturt University, Bathurst, NSW 2795, Australia; [2]Discipline of Business Analytic, The University of Sydney Business School, NSW 2006, Australia.

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[1]Graduate Program in Informatics (PPGIa), Pontifícia Universidade Católica do Paraná (PUCPR), Curitiba, Brazil ; [2]Graduate Program in Psychology, Universidade do Contestado (UnC), Porto União, Brazil.

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[1]Graduate School of Information, Product and Systems, Waseda University, 2-7 Hibikino, Wakamatsu, Kitakyushu-shi, Fukuoka, 808-0135, Japan; [2]School of Electrical Engineering, University of Electronic Science and Technology of China, Chengdu, Sichuan, 611731, China

P342 **N-16531** **Ensemble Minimum Sum of Squared Similarities Sampling for Nyström-Based Spectral Clustering.....3851**
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[1]College of Computer Science and Technology, Beijing University of Technology, Beijing, 100124, China; [2]Beijing Key Laboratory of Trusted Computing, Beijing 100124, China; [3]National Engineering Laboratory for Critical Technologies of Information Security Classified Protection, Beijing, 100124, China; [4]Beijing Key Laboratory on Integration and Analysis of Large-scale Stream Data, Beijing, 100124, China

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[1]Department of Computer Science Electrical Engineering, University of Missouri at Kansas City, Kansas City, MO 64110, ; [2]Machine Vision at Intelligrated systems, St Louis, MO, 63132; [3]Biometrics and Computer Vision Scientist at EyeVerify, 1712 Main Street, Kansas City, MO; [4]Department of Computer Science, and Engineering at Michigan State University, East Lansing, MI 48824; [5]Director of the Glaucoma Service and Associate, Professor of Ophthalmology at the University of Missouri — Kansas City (UMKC) School of Medicine, Kansas City, MO 64110.

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[1]Department of Electrical and Electronic Engineering, Shijiazhuang Tiedao University, Shijiazhuang, China; [2]Department of Computer Science and Technology, Tsinghua University, Beijing, China; [3]State Key Lab. of Intelligent Technology and Systems, Tsinghua University, TNLIST, Beijing, China; [4]Samsung Research Institute, Beijing, China.

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[1]Politeknik Perkapalan, Negeri Surabaya (PPNS), Jalan Teknik Kimia Kampus ITS Sukolilo, Surabaya, 60111, Indonesia; [2]Graduate School of Information Production and Systems Waseda University, Kitakyushu, 808-0135.

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[1]Automation and Control Engineering Department, Universidade Federal de Ouro Preto, Ouro Preto, MG, 35400-000, Brazil; [2]Computing Department, Universidade Federal de Ouro Preto, Ouro Preto, MG, 35400-000, Brazil; [3]Department of Informatics, Universidade Federal do Paraná, Curitiba, PR, 81531-990, Brazil

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[1]Department of Computer Science and Technology, Harbin Institute of Technology Shenzhen Graduate School, Shenzhen, China; [2]UT Health Science Center at Houston, University of Texas, USA

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[1]Department of IEEM, National Tsing Hua University, Hsinchu, Taiwan; [2]School of Information Technology, University of Sydney, NSW, Australia; [3]Department of Information Management Central Police University, Taoyuan, Taiwan

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[1]Centre for Quantum Computation & Intelligent Systems (QCIS), Faculty of Engineering and Information Technology, University of Technology Sydney, Australia; [2]Institute of Information Engineering, Chinese Academy of Sciences, Beijing, China; [3]School of Software Engineering, Beijing Jiaotong University, Beijing, China; [4]School of Computer and Information Technology, Beijing Jiaotong University, Beijing, China.

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Siqi Deng[1,4], Kan Gao[2], Changying Du[1], Wenjing Mal[1,3], Guoping Long[1] and Yucheng Li[1]
[1]Laboratory of Parallel Software and Computational Science, Institute of Software, Chinese Academy of Sciences, Beijing, 100190, China; [2]Information Center of China Association for Science and Technology, Beijing, 100863, China; [3]State Key Lab of Computer Science, Institute of Software, Chinese Academy of Sciences, Beijing, 100190, China; [4]University of Chinese Academy of Sciences, Beijing, 100049, China

P358 **N-17151** **An Experimental Study on New Features for Activity of Daily Living Recognition.....3958**
Daniele Ferretti[1], Emanuele Principi[1], Stefano Squartini[1] and Luigi Mandolini[2]
[1]Department of Information Engineering, Universitá Politecnica delle Marche, Via Brecce Bianche, 60131, Ancona, Italy; [2]MAC Srl, Via XX Settembre 21, 62019, Recanati (MC), Italy.

P359 **N-16580** **A Principal Curve-based Method for Data Clustering.....3966**
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Engineering Department, Federal University of Lavras, Lavras, Minas Gerais, 37200000, Brazil.

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Department of Electrical Engineering, POSTECH, Pohang, Korea.

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Venue	Room 212
Chair	Brijesh Verma

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2:50PM **N-16890** **Multi-target Osteosarcoma MRI Recognition with Texture Context Features Based on CRF.....3978**
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[1]School of Communication Engineering, Jilin University, Changchun, China; [2]School of Computer Science and Technology, Changchun Normal University, Changchun, China; [3]School of Computing and Information Systems, Athabasca University, Alberta, Canada; [4]School of Software, Hefei University of Technology, Hefei, China

3:10PM **N-17007** **Human Activity Recognition Based on Mid-Level Representations in Video Surveillance Applications.....3984**
Slim Abdelhedi, Ali Wali and Adel M. Alimi
REGIM: REsearch Groups in Intelligent Machines, University of Sfax, National Engineering School of Sfax (ENIS), BP 1173, Sfax, 3038, Tunisia.

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Srikanta Pal[1], J. Christophe Burie[1], Umapada Pal[2] and Jean Marc Ogier[1]
[1]Laboratoire L3i, Université de La Rochelle, France; [2]CVPR Unit, Indian Statistical Institute, India.

3:50PM	**N-16490**	**Theoretical Motion Functions for Video Analysis, with a Passive Navigation Example.....4001** Jacqueline Christmas *Computer Science Department, University of Exeter, Exeter, EX4 4QF, UK.*

Session HM-2	Semi-supervised and Transfer Learning
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Chair	Celso de Sousa

2:30PM	**N-16059**	**Multi-Label Semi-Supervised Learning using Regularized Kernel Spectral Clustering.....4009** Siamak Mehrkanoon and Johan A. K. Suykens *Department of Electrical Engineering ESAT-STADIUS, KU Leuven, B-3001 Leuven, Belgium.*
2:50PM	**N-16144**	**An Inductive Semi-supervised Learning Approach for the Local and Global Consistency Algorithm.....4017** Celso A. R. de Sousa *Instituto de Ciências Matemáticas e de Computação, Universidade de São Paulo, São Carlos, Brazil.*
3:10PM	**N-16184**	**Exploiting the Value of Class Labels in Topic Models for Semi-Supervised Document Classification.....4025** Hossein Soleimani and David J. Miller *School of Electrical Engineering and Computer Science, Pennsylvania State University, University Park, Pennsylvania 16803. USA*
3:30PM	**N-16952**	**Semi-supervised Auto-encoder Based on Manifold Learning.....4032** Yawei Li[1,2], Lizuo Jin[1], A. K. Qin[2], Changyin Sun[1], Yew Soon Ong[3] and Tong Cui[4] *[1]Southeast University, Nanjing, Jiangsu, 210096, China; [2]RMIT University, Melbourne, Victoria, 3000, Australia; [3]Nanyang Technological University, 50 Nanyang Avenue, 639798, Singapore; [4]The 28th Research Institute of CETC, Nanjing, Jiangsu, 210007, China*
3:50PM	**N-17084**	**Resp- *k* NN: A Probabilistic *k* -Nearest Neighbor Classifier for Sparsely Labeled Data.....4040** Adrian Calma, Tobias Reitmaier and Bernhard Sick *Intelligent Embedded Systems, University of Kassel, Germany.*
4:10PM	**N-16200**	**Active Transfer Learning and Selective Instance Transfer with Active Learning for Motor Imagery based BCI.....4048** Ibrahim Hossain, Abbas Khosravi and Saeid Nahavandhi *Centre for Intelligent Systems Research, Deakin University. Australia.*

Session HM-3	Mixture Models, Ensemble Learning and other Meta-learning or Committee Algorithms
Date/Time	Thursday, 28 July 2016 / 2:30PM – 4:30PM
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Chair(s)	Yong Liu, Adriano L.I. Oliveira

2:30PM **N-16108** **Generalized Cascade Classification Model with Customized Transformation Based Ensembles.....4056**
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Department of Computing Science, Carl von Ossietzky University, Oldenburg, Germany.

2:50PM **N-16595** **Ensemble LSDD-based Change Detection Tests.....4064**
Li Bu[1], Cesare Alippi[2] and Dongbin Zhao[1]
[1]The State Key Laboratory of Management and Control for Complex Systems, Institute of Automation, Chinese Academy of Sciences, Beijing, China; [2]Politecnico di Milano, Milano, Italy and Università Svizzera Italiana, Lugano, Switzerland.

3:10PM **N-16747** **How to Confine Errors in Negative Correlation Learning.....4070**
Yong Liu
School of Computer Science and Engineering, The University of Aizu, Aizu-Wakamatsu, Fukushima 965-8580, Japan

3:30PM **N-16750** **A Dynamic Channel Selection Algorithm for the Classification of EEG and EMG Data.....4076**
Ahmed Al-Ani[1], Irena Koprinska[2], Ganesh R. Naik[1] and Rami N. Khushaba[1]
[1]Faculty of Engineering and IT, University of Technology Sydney, Australia; [2]School of Information Technologies, University of Sydney, Australia.

3:50PM **N-17036** **A Disagreement-based Active Matrix Completion Approach with Provable Guarantee.....4082**
Chao Lan[1], Yujie Deng[2] and Jun Huan[1]
[1]EECS Department, University of Kansas, Lawrence, Kansas, 66045; [2]EECS Department and Department of Mathematics, University of Kansas, Lawrence, Kansas, 66045.

4:10PM **N-16992** **Copulas-Based Ensemble of Artificial Neural Networks for Forecasting Real World Time Series.....4089**
Ricardo T. A. de Oliveira[1], Thaíze Fernandes O. de Assis[2], Paulo Renato A. Firmino[3], Tiago A. E. Ferreira[2] and Adriano L. I. Oliveira[1]
[1]Centro de Informatica, Universidade Federal de Pernambuco, Recife, 50740560, Brazil; [2]Department of Statistics and Informatics, Federal Rural University of Pernambuco, Recife, 52171900, Brazil; [3]Center for Science and Technology, Federal University of Cariri, Juazeiro do Norte, 63048080, Brazil.

Session HM-4	IJCNN-17: Complex-Valued Neural Networks I
Date/Time	Thursday, 28 July 2016 / 2:30PM – 4:30PM
Venue	Room 215
Chair	Yasuaki Kuroe

2:30AM **N-16935** **EEG-based Mind Driven Type Writer by Fuzzy Radial Basis Function Neural Classifier.....1076**

Snehalika Lall[1], Anuradha Saha[1], Amit Konar[1], Mousumi Laha[1], Anca L. Ralescu[2], Kalyan Kumar Mallik[1], Atulya K. Nagar[3]

[1]Jadavpur University, Electronics & Telecommunication Engineering Department, Kolkata-700032, India; [2]Department of Computer Science, University of Cincinnati; [3]Department of Math and Computer Science Liverpool Hope University, Liverpool, UK.

2:50PM **N-16380** **Proposal of Polarization State Prediction Using Quaternion Neural Networks for Fading Channel Prediction in Mobile Communications.....4105**

Maoki Hikosaka, Tianben Ding and Akira Hirose

Department of Electrical Engineering and Information Systems, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8654, Japan.

3:10PM **N-16587** **Feature Extraction for Classification Method using Principal Component based on Conformal Geometric Algebra.....4112**

Minh Tuan Pham[1], Phuc Hao Do[1] and Kanta Tachibana[2]

[1]Danang University of Science and Technology, IT Faculty, 54, Nguyen Luong Bang, Danang, Vietnam, ; [2]Kogakuin University, Tokyo, Japan.

3:30PM **N-16601** **How Complex-Valued Multilayer Perceptron Can Predict the Behavior of Deterministic Chaos.....4118**

Seiya Satoh[1] and Ryohei Nakano[2]

[1]National Institute of Advanced Industrial Science and Technology, Aomi, Koto-ku, Tokyo 135-0064, Japan; [2]Computer Science Department, Chubu University, Matsumoto-cho, Kasugai 487-8501, Japan.

3:50PM **N-16754** **GPU Simulator of Multilayer Neural Network Based on Multi-Valued Neurons.....4125**

Christian Hacker[1], Igor Aizenberg[2] and Jeff Wilson[3]

[1]Texas A&M University-Texarkana, Texarkana, TX, USA; [2]Manhattan College, Riverdale, NY, USA; [3]Dallas, TX, USA.

4:10PM **N-17045** **Retrieval Performance of Hopfield Associative Memory with Complex-Valued and Real-Valued Neurons.....4133**

Toshifumi Minemoto[1], Teijiro Isokawa[1], Nobuyuki Matsui[1], Masaki Kobayashi[2] and Haruhiko Nishimura[3]

[1]Graduate School of Engineering, University of Hyogo, 2167 Shosha, Himeji, Hyogo, 671-2280, Japan; [2]University of Yamanashi, 4-3-11, Takeda, Kofu,Yamanashi, 400-8511, Japan; [3]Graduate school of Applied Informatics, University of Hyogo, 7-1-28 Minatojima-Minamicho, Chuo-ku, Kobe, Hyogo, 650-0047, Japan.

Session HM-5	IJCNN-51: Advanced Methods in Optimization and Machine Learning for Multimedia Computing II
Date/Time	Thursday, 28 July 2016 / 2:30PM – 4:30PM
Venue	Room 216
Chair(s)	Yiu-Ming Cheung, Ping Guo

2:30PM **N-16686** **Quality Preserved Data Summarization for Fast Hierarchical Clustering.....4139**
Yiqun Zhang[1], Yiu-ming Cheung[1,2,3] and Yang Liul[1,3]
[1]Department of Computer Science, Hong Kong Baptist University(HKBU), Hong Kong SAR, China; [2]The United International College, BNU-HKBU, Zhuhai, China; [3]HKBU Institute of Research and Continuing Education, Shenzhen, China.

2:50PM **N-16690** **Kernel Selection with Evolutionary Algorithm for Multiple Kernel Independent Component Analysis.....4147**
Peng Wu[1,2], Qian Yin[1] and Ping Guo[1]
[1]Image Processing and Pattern Recognition Laboratory, Beijing Normal University, Beijing, 100875, China; [2]Shandong Provincial Key Laboratory of Network based Intelligent Computing, University of Jinan, Jinan, 250022, China

3:10PM **N-16694** **Object Proposals Using SVM-based Integrated Model.....4154**
Wenjing Geng, Shuzhen Li, Tongwei Ren and Gangshan Wu
State Key Laboratory for Novel Software Technology, Nanjing University, Nanjing 210023, China.

3:30PM **N-16699** **Image Stitching with Single-hidden layer Feedforward Neural Networks.....4162**
Min Yan, Qian Yin and Ping Guo
Image Processing and Pattern Recognition Laboratory, Beijing Normal University, Beijing, 100875, China.

3:50PM **N-16768** **Solving Constrained Optimization Using Decomposition-based EMO Algorithm.....4170**
Chaoda Peng, Hai-Lin Liu and Fangqing Gu
Guangdong University of Technology, Guangzhou, China.

4:10PM **N-17116** **Complex Social Network Partition for Balanced Subnetworks.....4177**
Hao Lan Zhang[1], Jiming Liu[2], Chunyu Feng[3], Chaoyi Pang[1], Tongliang Li[3] and Jing He[4]
[1]The Center for SCDM, NIT, Zhejiang University, China; [2]Department of Computer Science, Hong Kong Baptist University, Hong Kong; [3]Applied Mathematics Institute, Heibei Academy of Science, China; [4]Nanjing University of Finance & Economics, China Victoria University, Australia.

Session HM-6	Feature Selection, Extraction, and Aggregation II
Date/Time	Thursday, 28 July 2016 / 2:30PM – 4:30PM
Venue	Room 217+219
Chair	Julia Chung

2:30PM **N-16136** **Structural Manifold Analysis: A New Method for Dimensionality Reduction Based on a Computational Theory of Human Concept Learning.....4183**
Ronaldo Vigo[1] and Basawaraj[2]
[1]Center for the Advancement of Cognitive Science, Psychology Department, Ohio University, Athens, OH, USA; [2]Center for the Advancement of Cognitive Science, School of Electrical Engineering and Computer Science, Ohio University Athens, OH, USA.

2:50PM **N-16684** **Maximum Class Boundary Criterion for Supervised Dimensionality Reduction.....4191**
K. Ramachandra Murthy, Ajoy Mondal and Ashish Ghos
Machine Intelligence Unit, Indian Statistical Institute, Kolkata-108, India.

3:10PM **N-16154** **Robust L1-Norm Matrixed Locality Preserving Projection for Discriminative Subspace Learning.....4199**
Yu Tang[1,2], Zhao Zhang[1,2], Yan Zhang[1,2] and Fanzhang Li[1,2]
[1]School of Computer Science and Technology & Joint International Research Laboratory of Machine Learning and Neuromorphic Computing, Soochow University, Suzhou 215006, China; [2]Collaborative Innovation Center of Novel Software Technology and Industrialization, Nanjing 210023, China

3:30PM **N-16693** **Robust Sparse Subspace Learning for Unsupervised Feature Selection.....4205**
Feng Wang[1], Qi Rao[2], Yongquan Zhang[1] and Xu Chen[1]
[1]State Key Laboratory of Software Engineering, Computer School, Wuhan University, Wuhan, China; [2]Institute of Computational Linguistics, Peking University, Beijing, China.

3:50PM **N-16649** **An Unsupervised-based Dynamic Feature Selection for Classification tasks.....4213**
Rômulo de O. Nunes[1], Carine A. Dantas[1], Anne M. P. Canuto[1] and João C. Xavier-Júnior[2]
[1]Informatics and Applied Mathematics Department — DIMAp, Federal University of Rio Grande do Norte — UFRN. Natal, RN, Brazil ; [2]Digital Metrolopis Institute — IMD, Federal University of Rio Grande do Norte — UFRN, Natal, RN, Brazil.

4:10PM **N-16082** **A Dynamic Self-Structuring Neural Network Model to Combat Phishing.....4221**
Fadi Thabtah[1], Rami M. Mohammad[2] and Lee McCluskey[2]
[1]Applied Business, Nelson Marlborough Institute of Technology, New Zeland; [2]School of Computing and Engineering, University of Huddersfield, Huddersfield, UK.

Session HM-7	IJCNN-37: Approximate/Adaptive Dynamic Programming for Control of Cyber-Physical Systems
Date/Time	Thursday, 28 July 2016 / 2:30PM – 4:30PM
Venue	Room 224
Chair(s)	Ali Heydari, Kyriakos Vamvoudakis

2:30PM **N-16222** **Optimal Output Synchronization of Nonlinear Multi-agent Systems using Approximate Dynamic Programming.....4227**
Hamidreza Modares, Frank L. Lewis and Ali Davoudi
University of Texas at Arlington Research Institute, Fort Worth, TX 76118, USA.

2:50PM **N-16484** **Game-Theoretic Tracking Control for Actuator Attack Attenuation in Cyber-Physical Systems.....4233**
Kyriakos G. Vamvoudakis
Center for Control, Dynamicalsystems and Computation (CCDC), University of California, Santa Barbara, CA, 93106-9560, USA.

3:10PM **N-17035** **Dual Heuristic Dynamic Programming Based Event-Triggered Control for Nonlinear Continuous-Time Systems.....4241**
Lu Dong[1,2], Changyin Sun[1] and Haibo He
[1]*School of Automation, Southeast University, Nanjing 210096, China;*
[2]*Department of Electrical, Computer, and Biomedical Engineering, University of Rhode Island, Kingston, RI 02881, USA.*

3:30PM **N-17070** **Neural Network-based Attack Detection in Nonlinear Networked Control Systems.....4249**
Haifeng Niu and S. Jagannathan
Department of Electrical and Computer Engineering, Missouri University of Science and Technology, Rolla, MO, USA

3:50PM **N-16188** **Finite and Infinite Horizon Optimal Triggering of Networked Control Systems.....4255**
Ali Heydari
Mechanical Engineering, South Dakota School of Mines and Technology, Rapid City, SD 57701, USA

4:10PM **N-17023** **Optimal Switching of DC-DC Voltage Converters using Approximate Dynamic Programming.....4263**
Ali Heydari
Mechanical Engineering with the South Dakota School of Mines and Technology, Rapid City, SD 57701, USA

Session HP-1	IJCNN-38: Energy Efficient Deep Neural Networks
Date/Time	Thursday, 28 July 2016 / 4:30PM – 6:30PM
Venue	Room 212
Chair	Andrew Cassidy, Mike Debole

4:30PM **N-16623** **LATTE: Low-power Audio Transform with TrueNorth Ecosystem.....4270**
Wei-Yu Tsai[1], Davis R. Barch[2], Andrew S. Cassidy[2], Michael V. DeBole[2], Alexander Andreopoulos[2], Bryan L. Jackson[2], Myron D. Flickner[2], Dharmendra S. Modha[2], Jack Sampson[1] and Vijaykrishnan Narayanan[1]
[1]The Pennsylvania State University, University Park, PA; [2]IBM Research, Almaden Research Center, San Jose, CA, USA

4:50PM **N-16542** **TrueHappiness: Neuromorphic Emotion Recognition on TrueNorth.....4278**
Peter U. Diehl[1], Bruno U. Pedroniy[2], Andrew Cassidy[3], Paul Merolla[3], Emre Neftci[2,4] and Guido Zarrella[5]
[1]Institute of Neuroinformatics, ETH Zurich and University Zurich, Switzerland; [2]Institute for Neural Computation, UC San Diego, La Jolla, USA; [3]IBM Research Almaden, San Jose, CA, USA; [4]Department of Cognitive Sciences, UC Irvine, Irvine, USA; [5]The MITRE Corporation, Bedford, MA, USA

5:10PM **N-17038** **Probabilistic Inference Using Stochastic Spiking Neural Networks on A Neurosynaptic Processor.....4286**
Khadeer Ahmed[1], Amar Shrestha[1], Qinru Qiu[1] and Qing Wu[2]
[1]Department of Electrical Engineering and Computer, Science, Syracuse University, NY 13244, USA; [2]Air Force Research Laboratory, Information Directorate, 525 Brooks Road, Rome, NY, 13441, USA.

5:30PM **N-17062** **Weighted Population Code for Low Power Neuromorphic Image Classification.....4294**
Antonio Jimeno Yepes[1], Jianbin Tang[1], Shreya Saxena[2], Tobias Brosch[3] and Arnon Amir[4]
[1]IBM Research Australia, Parkville, 3053, VIC, Australia; [2]MIT, MA 02139, USA; [3]Ulm University, 89081 Ulm, Germany; [4]IBM Research-Almaden, San Jose, CA 95120, USA

5:50PM **N-17170** **Sparse Approximation on Energy Efficient Hardware.....4302**
Kaitlin L. Fair and David V. Anderson
Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, Georgia, United States.

6:10PM **N-16737** **A Low-Power Neurosynaptic Implementation of Local Binary Patterns for Texture Analysis.....4308**
Alexander Andreopoulos[1], Rodrigo Alvarez-Icaza[2], Andrew S. Cassidy[2] and Myron D. Flickner[1]
[1]IBM Research — Almaden, Almaden, San Jose, CA 95120-6099; [2]IBM Research — Austin, 11501 Burnet Road, Austin, TX, 78758, USA

Session HP-2	Evolutionary Learning & Robotics
Date/Time	Thursday, 28 July 2016 / 4:30PM – 6:30PM
Venue	Room 213
Chair	Yoonsuck Choe

4:30PM **N-16507** **Application of Modified Ant Colony Optimization for Computer Aided Bleeding Detection System.....4317**
Shahed K. Mohammed, Farah Deeba, Francis M. Bui and Khan A. Wahid
Department of Electrical and Computer Engineering, University of Saskatchewan, Saskatoon, Canada

4:50PM **N-16990** **Sleep Learning and Max-Min Aggregation of Evolving Connectionist Systems.....4325**
Michael J. Watts
Information Technology Programme, Auckland Institute of Studies, Auckland, New Zealand.

5:10PM **N-16897** **Analysis of Tool Use Strategies in Evolved Neural Circuits controlling an Articulated Limb.....4331**
Michael Freitag[1,2] and Yoonsuck Choe[1]
[1]Department of Computer Science and Engineering, Texas A&M University; [2]Faculty of Computer Science and Mathematics, University of Passau, Germany

5:30PM **N-16331** **Dynamical Analysis of Recurrent Neural Circuits in Articulated Limb Controllers for Tool Use.....4339**
Han Wang, Qinbo Li, Jaewook Yoo and Yoonsuck Choe
Department of Computer Science and Engineering, Texas A&M University, USA

5:50PM **N-17131** **Individual Distinguishing Pheromone in a Multi-Robot System for a Balanced Partitioned Surveillance Task.....4346**
Rodrigo Calvo[1], Ademir A. Constantino[1] and Mauricio Figueiredo[2]
[1]Department of Computer Science, State University of Maringa, Av. Colombo, 5790, Maringa-PR, Brazil; [2]Department of Computer Science, Federal University of Sao Carlos, Rod. Washington Luiz, 235, Sao Carlos-SP, Brazil.

6:10PM **N-16294** **Motor-Based Autonomous Grounding in a Model of the Fly Optic Flow System.....4354**
Amey Parulkar and Yoonsuck Choe
Department of Computer Science and Engineering, Texas A&M University, College Station, TX 77843-3112, USA

Session HP-3	IJCNN-32: Advanced Machine Learning Methods and Applications from Complicated Data Environment I
Date/Time	Thursday, 28 July 2016 / 4:30PM – 6:30PM
Venue	Room 214
Chair	Jia Wu

4:30PM **N-26028** **Training Cost-sensitive Deep Belief Networks on Imbalance Data Problems.....4362**
Chong Zhang and Kay Chen Tan
Department of Electrical and Computer Engineering, National University of Singapore, 117583, Singapore.

4:50PM **N-16326** **Training Deep Neural Networks on Imbalanced Data Sets.....4368**
Shoujin Wang[1], Wei Liu[1], Jia Wu[1], Longbing Cao[2], Qinxue Meng[2] and Paul J. Kennedy[2]
[1]Advanced Analytics Institute, University of Technology Sydney, Sydney, Australia; [2]Centre for Quantum Computation & Intelligent Systems, University of Technology Sydney, Sydney, Australia.

5:10PM **N-16439** **Summarizing Uncertain Transaction Databases by Probabilistic Tiles.....4375**
Chunyang Liu and Ling Chen
Centre for Quantum Computation and Intelligent Systems, University of Technology, Sydney, Australia

5:30PM **N-16482** **A Novel Feature Subspace Selection Method in Random Forests for High Dimensional Data.....4383**
Yisen Wang[1,2,3] and Shu-Tao Xia[1,2]
[1]Department of Computer Science and Technology, Tsinghua University, Beijing, China; [2]Graduate School at Shenzhen, Tsinghua University, Shenzhen, China; [3]Tsinghua National Laboratory for Information Science and Technology, Beijing, China

5:50PM **N-16548** **Multi-instance Graphical Transfer Clustering for Traffic Data Learning.....4390**
Shan Xue[1,2], Jie Lu[1], Jia Wu[3], Guangquan Zhang[1] and Li Xiong[2]
[1]Lab of Decision Systems & e-Service Intelligence (DeSI), the Centre for Quantum Computation & Intelligent Systems (QCIS), Faculty of Engineering and Information Technology (FEIT), University of Technology Sydney, Australia; [2]School of Management, Shanghai University, China; [3]Centre for Quantum Computation & Intelligent Systems(QCIS), Faculty of Engineering and Information Technology (FEIT), University of Technology Sydney, Australia.

6:10PM **N-16111** **Contribution of Data Complexity Features on Dynamic Classifier Selection.....4396**
Andr L. Brun[1], Alceu S. Britto Jr[1], Luiz S. Oliveira[2], Fabricio Enembreck[1] and Robert Sabourin[3]
[1]Postgraduate Program in Informatics, Pontifical Catholic University of Parana (PUCPR), Curitiba, Parana, Brazil; [2]Postgraduate Program in Informatics, Federal University of Parana (UFPR), Curitiba, Parana, Brazil; [3]École de Technologie Supérieure (ÉTS), Quebec University, Montreal, Quebec, Canada.

Session HP-4	IJCNN-17: Complex-Valued Neural Networks II
Date/Time	Thursday, 28 July 2016 / 4:30PM – 6:30PM
Venue	Room 215
Chair	Akira Hirose

4:30PM **N-16181** **System Identification using FRA and a modified MLMVN with Arbitrary Complex-Valued Inputs.....4404**
Igor Aizenberg[1], Antonio Luchetta[2], Stefano Manetti[2] and Maria Cristina Piccirilli[2]
[1]Manhattan College, Riverdale, NY, USA; [2]Department of Information Engineering, University of Florence, Florence, Italy.

4:50PM **N-16588** **Multi-valued Autoencoders for Multi-valued Neural Networks.....4412**
Ryusuke Hata and Kazuyuki Murase
Graduate school of Engineering, University of Fukui, Fukui, Japan.

5:10PM **N-16640** **Theoretical and Computational Aspects of Quaternionic Multivalued Hopfield Neural Networks.....4418**
Marcos Eduardo Valle[1] and Fidelis Zanetti de Castro[2]
[1]Department of Applied Mathematics, University of Campinas, Campinas — SP, Brazil; [2]Federal Institute of Espírito Santo, Serra — ES, Brazil.

5:30PM **N-16843** **A Model of Hopfield-Type Octonion Neural Networks and Existing Conditions of Energy Functions.....4426**
Yasuaki Kuroe and Hitoshi Iima
Faculty of Information and Human Sciences, Kyoto Institute of Technology, Matsugasaki, Sakyo-ku, Kyoto 606-8585, Japan.

5:50PM **N-16655** **Complex-valued Online Classifier.....4431**
Masaya Ishikawa and Kazuyuki Murase
Graduate School of Engineering, University of Fukui, Fukui, Japan.

6:10PM **N-16410** **On Improving the Efficiency of Complex-Valued ELM.....4438**
B. Chandra and Rajesh K. Sharma
Department of Mathematics, Indian Institute of Technology Delhi, Delhi, India.

Session HP-5	IJCNN-06: Computational Intelligence for Big Social Data Analysis
Date/Time	Thursday, 28 July 2016 / 4:30PM – 6:30PM
Venue	Room 216
Chair(s)	Iti Chatuverdi, Andres Gomez de Silva

4:30PM **N-16515** **Event Identification and Assertion from Social Media Using Auto-Extendable Knowledge Base.....4443**
Ahmed Talal Suliman[1], Khaled Al Kaabi[1], Di Wang[1], Ahmad Al-Rubaie[1], Ahmed Al Dhanhani[1], Dymitr Ruta[1], John Davies[2] and Sandra Stincic Clarke[2]
[1]EBTIC, Khalifa University, Abu Dhabi, UAE; [2]BT Research & Innovation, Adastral Park, Ipswich, UK.

4:50PM **N-17122** **Persuasion Driven Influence Analysis in Online Social Networks.....4451**
Xiaoqian Yi, Xiao Shen, Wei Lu, Tung Shan Chan and Fu Lai Chung
Department of Computing, Hong Kong Polytechnic University, Hunghom, Hong Kong

5:10PM **N-16070** **Validation of Matching.....4457**
Ya Le[1], Eric Bax[2], Nicola Barbieri[2], David Garcia Soriano[2], Jitesh Mehta[2] and James Li[3]
[1]Stanford University, Dept. of Statistics, USA; [2]Yahoo, USA; [3]Facebook, USA

5:30PM **N-17179** **Sentic LDA: Improving on LDA with Semantic Similarity for Aspect-Based Sentiment Analysis.....4465**
Soujanya Poria[1], Iti Chaturvedi[1], Erik Cambria[1] and Federica Bisio[2]
[1]School of Computer Science and Engineering, Nanyang Technological University, Singapore; [2]DITEN, University of Genoa, Italy.

5:50PM **N-17178** **Lyapunov Filtering of Objectivity for Spanish Sentiment Model.....4474**
Iti Chaturvedi[1], Erik Cambria[1] and David Vilares[2]
[1]School of Computer Science and Engineering, Nanyang Technological University, Singapore; [2]Grupo LyS, Departamento de Computación, Universidade da Coruña, Spain.

6:10PM **N-16771** **Stock Market Prediction Exploiting Microblog Sentiment Analysis.....4482**
Bo Zhao, Yongji He, Chunfeng Yuan and Yihua Huang
National Key Laboratory for Novel Software Technology, Nanjing University, China and Collaborative Innovation Center of Novel Software Technology and Industrialization, Nanjing, China.

Session HP-6	Feature Selection, Extraction, and Aggregation III
Date/Time	Thursday, 28 July 2016 / 4:30PM – 6:30PM
Venue	Room 217+219
Chair	Ronaldo Vigo

4:30PM **N-16290** **Sparse Tensor Discriminative Locality Alignment for Gait Recognition.....4489**
Nengwen Zhao[1], Lefei Zhang[2], Bo Du[1], Liangpei Zhang[3], Dacheng Tao[4] and Jane You[2]
[1]State Key Laboratory of Software Engineering, School of Computer, Wuhan University, Wuhan, 430079, China; [2]Department of Computing, The Hong Kong Polytechnic University, Kowloon, Hong Kong; [3]State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing, Wuhan University, Wuhan, 430079, China; [4]Centre for Quantum Computation & Intelligent Systems and the Faculty of Engineering and Information Technology, University of Technology, Sydney, NSW 2007, Australia.

4:50PM **N-16300** **A Probabilistic Prior Knowledge Integration Method: Application to Generative and Discriminative Models.....4496**
Nataliya Sokolovska[1] and Thierry Artières[2]
[1]UPMC University Paris 6, INSERM UMRS 1166, NutriOmics Team, ICAN, Paris, France; [2]Université d'Aix Marseille (AMU), CNRS 7279, LIF, QARMA team, Marseille, France.

5:10PM	**N-16446**	**Efficient Feature Extraction of Vibration Signals for Diagnosing Bearing Defects in Induction Motors.....4504** Maryam Farajzadeh-Zanjani[1], Roozbeh Razavi-Far[1], Mehrdad Saif[1] and Luis Rueda[2] *[1]Department of Electrical & Computer Engineering, University of Windsor, 401 Sunset Avenue, Windsor, N9B 3P4, Canada; [2]School of Computer Science, University of Windsor, 401 Sunset Ave., Windsor, ON, N9B 3P4, Canada.*
5:30PM	**N-16612**	**Document Fraud Detection by Ink Analysis Using Texture Features and Histogram Matching.....4512** Apurba Gorai[1], Rajarshi Pal[1] and Phalguni Gupta[2] *[1]Institute for Development and Research in Banking Technology, Hydrabad, India; [2]National Institute for Technical Teachers Training and Research, Kolkata, India.*
5:50PM	**N-17092**	**A Multimodal Data Fusion Approach Efficiently Predicts Disease Duration in Multiple Sclerosis.....4518** Ava Sheikhi Shoshtari[1], Sue-Jin Lin[1], Martin J. McKeown[1] and Z. Jane Wang[2] *[1]Department of Neuroscience, University of British Columbia Vancouver, BC, Canada; [2]Department of Electrical and Computer Engineering, University of British Columbia Vancouver, BC, Canada*
6:10PM	**N-17079**	**Combining User-based and Global Lexicon Features for Sentiment Analysis in Twitter.....4525** Zhou Jin[1], Yujiu Yang[1], Xianyu Bao[2] and Biqing Huang[3] *[1]Key Lab. of Broadband Network and Multimedia, Graduate School at Shenzhen, Tsinghua University, Shenzhen, 518055, China; [2]Shenzhen Academy of Inspection and Quarantine, Shenzhen, Guangdong province, China; [3]Department of Automation, Tsinghua University, Beijing, 100084, China*

Session HP-7	IJCNN-52: Approximate Dynamic Programming and Reinforcement Learning for High Dimensional Systems
Date/Time	Thursday, 28 July 2016 / 4:30PM – 6:30PM
Venue	Room 224
Chair	Dongbin Zhao

4:30PM	**N-16127**	**Model-Free Reinforcement Learning for Nonlinear Zero-Sum Games with Simultaneous Explorations.....4533** Qichao Zhang[1], Dongbin Zhao[1], Yuanheng Zhu[1] and Xi Chen[2] *[1]The State Key Laboratory of Management and Control for Complex Systems, Institute of Automation, Chinese Academy of Sciences, Beijing, China; [2]Mail Box 150, Baoji, China.*
4:50PM	**N-16499**	**Convolutional Fitted Q Iteration for Vision-Based Control Problems.....4539** Dongbin Zhao, Yuanheng Zhu, Le Lv, Yaran Chen and Qichao Zhang *State Key Laboratory of Management and Control for Complex Systems, Institution of Automation, Chinese Academy of Sciences, Beijing, 100190, China.*

5:10PM	**N-26004**	**Neural-Network-Based Robust Optimal Control of Uncertain Nonlinear Systems Using Model-Free Policy Iteration Algorithm.....4545** Chao Li[1], Ding Wang[1] and Derong Liu[2] *[1]The State Key Laboratory of Management and Control for Complex Systems, Institute of Automation, Chinese Academy of Sciences, Beijing, 100190, China; [2]School of Automation and Electrical Engineering, University of Science and Technology Beijing, Beijing, 100083, China.*
5:30PM	**N-26009**	**An Adaptive Dynamic Programming Based Method for Optimization of Electricity Consumption in Office Buildings.....4551** Guang Shi[1], Qinglai Wei[1] and Derong Liu[2] *[1]The State Key Laboratory of Management, and Control for Complex Systems, Institute of Automation Chinese Academy of Sciences, Beijing, 100190, China; [2]School of Automation and Electrical Engineering, University of Science and Technology Beijing, Beijing, 100083, China.*
5:50PM	**N-17030**	**Convergence Analysis of GrDHP-based Optimal Control for Discrete-time Nonlinear System.....4557** Xiangnan Zhong[1], Zhen Ni[2] and Haibo He[1] *[1]Department of Electrical, Computer and Biomedical Engineering, University of Rhode Island, Kingston, RI, USA ; [2]Department of Electrical Engineering and Computer Science, South Dakota State University, Brooking, SD, USA.*
6:10PM	**N-17098**	**Self-reflective Deep Reinforcement Learning.....4565** Abdulrahman Altahhan *School of Computing, Electronics and Math. Coventry University, Coventry, UK.*

Session FA-1	IJCNN-09: Intelligent Vehicle and Transportation Systems
Date/Time	Friday, 29 July 2016 / 8:00AM – 10:00AM
Venue	Room 212
Chair(s)	Yi Lu Murphey, Dev Kochhar

8:00AM	**N-16937**	**MTS-DeepNet for Lane Change Prediction.....4571** Xipeng Wang[1], Yi Lu Murphey[1] and Dev S. Kochhar[2] *[1]Department of Electrical and Computer Engineering, University of Michigan-Dearborn, Dearborn, MI, USA; [2]Vehicle Design & Infotronics, Ford Motor Company, Dearborn, MI, USA.*
8:20AM	**N-16075**	**Automatic Knowledge Learning Using Case-Based Reasoning — A Case Study Approach To Automatic Train Conduction.....4579** Viviane Dal Molin de Souza[1], André Pinz Borges[2], Denise Maria Vecino Sato[3], Bráulio Coelho Ávila[3] and Edson Emilio Scalabrin[3] *[1]Departamento de Informática (DAINF), Universidade Tecnológica Federal do Paraná (UTFPR), Pato Branco-PR; [2]Departamento de Informática (DAINF), Universidade Tecnológica Federal do Paraná (UTFPR), Ponta Grossa-PR2, Brasil ; [3]Programa de Pós-graduação em Informática, Pontifícia Universidade Católica do Paraná (PUCPR), Curitiba-PR, Brasil.*

8:40AM	**N-16083**	**A Vision-Based Auxiliary System of Multirotor Unmanned Aerial Vehicles for Autonomous Rendezvous and Docking.....4586** Dexing Zhong, Xuefei Zhang, Haotian Sun, Zhigang Ren and Jiuqiang Han *School of Electronic and Information Engineering, Xi'an Jiaotong University, Engineering Technology Research Center of Shaanxi Province on Intelligent Control and Industrial Big Data Processing, Xian, P.R. China.*
9:00AM	**N-16413**	**Challenges in Visual Parking and How a Developmental Network Approaches the Problem.....4593** Zejia Zheng and Juyang Weng *Michigan State University, East Lansing, MI, USA.*
9:20AM	**N-16876**	**A Hybrid Vision System for Detecting Use of Mobile Phones While Driving.....4601** Rafael Berri[1], Fernando Osório[1], Rafael Parpinelli[2] and Alexandre Silva[3] *[1]USP — University of São Paulo / ICMC, SSC — LRM (Mobile Robots Lab.), São Carlos, São Paulo, 13566-590, Brazil; [2]UDESC — Santa Catarina State University, DCC — CCT, Joinville, Santa Catarina, 89219-710, Brazil; [3]UFSC — Federal University of Santa Catarina / INE — CTC, Florianópolis, Santa Catarina, 88040-900, Brazil.*
9:40AM	**N-16918**	**Improving Anytime Behavior for Traffic Signal Control Optimization Based on NSGA-II and Local Search.....4611** Phuong Thi Mai Nguyen, Benjamin N. Passow and Yingjie Yang *De Montfort University's, Interdisciplinary Research Group in Intelligent Transport Systems (DIGITS), and Centre for Computational Intelligence (CCI), De Montfort University, Leicester, UK.*

Session FA-2	IJCNN-21: Deep Learning, Medical Imaging and Translational Medicine
Date/Time	Friday, 29 July 2016 / 8:00AM – 10:00AM
Venue	Room 213
Chair	Xiao-Hua (Helen) Yu

8:00AM	**N-16313**	**Using Convolutional Neural Network for Edge Detection in Musculoskeletal Ultrasound Images.....4619** Shaima I. Jabbar[1], Charles R. Day[2], Nicholas Heinz[3] and Edward K. Chadwick[1] *[1]biomedical Engineering, Institute for Science and Technology in Medicine, Keele University, UK; [2]Department of Computer Science, Keele University, UK; [3]MMedSci in Anatomical Sciences, Keele University, UK.*
8:20AM	**N-16351**	**Precise 2D Point Set Registration Using Iterative Closest Algorithm and Correntropy.....4627** Guanglin Xu, Shaoyi Du and Jianru Xue *Institute of Artificial Intelligence and Robotics, Xian Jiaotong University, Xian 710049, China.*
8:40AM	**N-16204**	**Modularity Analysis of Brain Network under Realtime Working Memory Feedback Training.....4632** Xueli Yu and Xiaojie Zhao *Departmnet College of Information Science and Technology, Beijing Normal University, Beijing, China.*

9:00AM	**N-16928**	**Classification from Generation: Recognizing Deep Grammatical Information During Reading from Rapid Event-Related fMRI.....4637** Tali Bitan[1,2], Alex Frid[3], Hananel Hazan[4], Larry M. Manevitz[3], Haim Shalelashvili[3] and Yael Weiss[5] *[1]Psychology Department,University of Haifa, Israel; [2]Department of Speech Pathology, University of Toronto, Canada; [3]Neurocomputation Laboratory and the Department of Computer Science, University of Haifa, Israel; [4]Network Biology Research Laboratory, Technion, Haifa, Israel; [5]Brain Development Laboratory, University of Texas, Austin.*
9:20AM	**N-17117**	**Image Registration With Artificial Neural Networks Using Spatial and Frequency Features.....4643** Pramod Gadde and Xiao-Hua Yu *Department of Electrical Engineering, California Polytechnic State University, San Luis Obispo, San Luis Obispo, CA, USA.*
9:40AM	**N-16487**	**Automated GrowCut for Segmentation of Endoscopic Images.....4650** Farah Deeba, Francis M. Bui and Khan A. Wahid *Department of Electrical and Computer Engineering, University of Saskatchewan, Canada*

Session FA-3	Dynamics of Neural Computation
Date/Time	Friday, 29 July 2016 / 8:00AM – 10:00AM
Venue	Room 214
Chair	Peter Andras

8:00AM	**N-17000**	**State Filtering and Parameter Estimation for Hodgkin-Huxley Model.....4658** Fang Liao, Xuyang Lou, Baotong Cui and Wei Wu *Institute of System Engineering, Jiangnan University, Wuxi, 214122, China*
8:20AM	**N-16385**	**Attractor-Based Complexity of a Boolean Model of the Basal Ganglia-Thalamocortical Network.....4664** Jérémie Cabessa[1] and Alessandro E. P. Villa[2] *[1]Laboratory of Mathematical Economics, Université Panthéon-Assas — Paris 2, 75006 Paris, France; [2]Department of Information Systems, University of Lausanne, CH-1015 Lausanne, Switzerland.*
8:40AM	**N-16583**	**Modelling the Restoration of Activity in a Biological Neural Network.....4672** Filipa Dos Santos[1], Jannetta S. Steyn[2] and Peter Andras[1] *[1]School of Computing and Mathematics, Keele University, Newcastle-under-Lyme, UK; [2]School of Computing Science, Newcastle University, Newcastle upon Tyne, UK.*
9:00AM	**N-17071**	**EEG Based Gesture Mimicking by An Artificial Limb Using Cascade-Correlation Learning Architecture.....4680** Sriparna Saha[1], Amit Konar[1], Anuradha Saha[1], Arup Kumar Sadhu[1], Bonny Banerjee[2] and Atulya K. Nagar[3] *[1]Electronics & Tele-Communication Engineering Department, Jadavpur University, Kolkata, India; [2]Electrical & Computer Engineering Department, The University of Memphis, United States of America; [3]Mathematics and Computer Science Department, Liverpool Hope University, United Kingdom.*

9:20AM	**N-16421**	**The Evolution of a Generalized Neural Learning Rule.....4688** Jeff Orchard[1] and Lin Wang[2] *[1]Cheriton School of Computer Science, University of Waterloo, Waterloo, Canada; [2]Shandong Provincial Key Laboratory of Network Based Intelligent Computing, University of Jinan, Jinan, 250022, China.*
9:40AM	**N-16555**	**Hardware Implementation of Deep Brain Stimulator on a Biophysical Neural Population Model.....4695** Ehsan Karami, Arash Ahmadi, Majid Ahmadi and Mehrdad Saif *Department of Electrical Engineering, University of Windsor, Windsor, Canada.*

Session FA-4	IJCNN-32: Advanced Machine Learning Methods and Applications from Complicated Data Environment II
Date/Time	Friday, 29 July 2016 / 8:00AM – 10:00AM
Venue	Room 215
Chair	Jia Wu

8:00AM	**N-16907**	**Contextual Weisfeiler-Lehman Graph Kernel For Malware Detection.....4701** Annamalai Narayanan, Guozhu Meng, Liu Yang, Jinliang Liu and Lihui Chen *Nanyang Technological University, Singapore.*
8:20AM	**N-16829**	**A Recursive Method for Big Network Influence Estimation.....4709** Wei-Xue Lu[1,2], Chuan Zhou[1], Jia Wu[3], Chun-Yi Liu[1], Li Gao[1] and Yue Hu[1] *[1]Institute of Information Engineering, Chinese Academy of Sciences; [2]Academy of Mathematics and Systems Science, Chinese Academy of Sciences; [3]Centre for Quantum Computation & Intelligent Systems (QCIS), University of Technology Sydney, Australia.*
8:40AM	**N-16823**	**Query Expansion for Exploratory Search with Subtopic Discovery in Community Question Answering.....4715** Li Gao[1], Yao Lu[1], Qin Zhang[2], Hong Yang[2] and Yue Hu[1] *[1]Institute of Information Engineering, Chinese Academy of Sciences, Beijing, China; [2]Center on Quantum Computation & Intelligent Systems, Univ. of Technology Sydney, Australia ; [3]MathWorks, Beijing, 100090, China.*
9:00AM	**N-16541**	**Denoising Auto-Encoders Toward Robust Unsupervised Feature Representation.....4721** Wei Xiong[1], Bo Du[1]Lefei Zhang[2], Liangpei Zhang[3] and Dacheng Tao[4] *[1]State Key Laboratory of Software Engineering, School of Computer Science, Wuhan University, China; [2]Department of Computing, The Hong Kong Polytechnic University, Kowloon, Hong Kong; [3]State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing, Wuhan University, China; [4]Centre for Quantum Computation & Intelligent Systems, University of Technology, Sydney, NSW 2007, Australia.*

9:20AM **N-16033** **Improving Decision Trees by Tsallis Entropy Information Metric Method.....4729**
Yisen Wang[1,2,3], Chaobing Song[2] and Shu-Tao Xia[1,2]
[1]Department of Computer Science and Technology, Tsinghua University, Beijing, China; [2]Graduate School at Shenzhen, Tsinghua University, Shenzhen, China; [3]Tsinghua National Laboratory for Information Science and Technology, Beijing, China

9:40AM **N-17101** **Optimising a Constrained Echo State Network Using Evolutionary Algorithms for Learning Mental Models of Complex Dynamical Systems.....4735**
Hassan Abdelbari and Kamran Shafi
School of Engineering and Information Technology, University of New South Wales, Canberra, Australia.

Session FA-5	Models of Neurons and Local Circuits
Date/Time	Friday, 29 July 2016 / 8:00AM – 10:00AM
Venue	Room 216
Chair	Pedro Machado

8:00AM **N-16422** ***C. elegans* Behavioural Response Germane to Hardware Modelling.....4743**
Kofi Appiah, Pedro Machado, Alicia Costalago Meruelo and T. M. McGinnity
School of Science and Technology, Nottingham Trent University, Nottingham, NG11 8NS, UK.

8:20AM **N-16654** **Bio-inspired Small Target Motion Detector with a New Lateral Inhibition Mechanism.....4751**
Hongxin Wang[1], Jigen Peng[2] and Shigang Yue[1]
[1]School of Computer Science, University of Lincoln, Lincoln, LN6 7TS, UK; [2]School of Mathematics and Statistics, Xian Jiaotong University, Xian, Shaanxi, 710049, P.R. China.

8:40AM **N-17022** **A Two Layer Disparity Selective Simple Cell Model.....4759**
Sijing Cheng[1], Qiuyan Peng and Bertram E. Shi[1,2]
[1]Department of Electronic and Computer Engineering, Hong Kong University of Science and Technology, Kowloon, Hong Kong SAR; [1]Division of Biomedical Engineering, Hong Kong University of Science and Technology, Kowloon, Hong Kong SAR.

9:00AM **N-16803** **Comparing Data Assimilation Filters for Parameter Estimation in a Neuron Model.....4767**
Nicola Politi[1], Jianfeng Feng[2] and Wenlian Lu[3]
[1]Department of Mathematics, Universitá degli Studi di Torino, and Politecnico di Torino, Torino (TO), Italy; [2]Centre for Computational Systems Biology, Fudan University, Shanghai, China, and Department of Computer Sciences, University of Warwick, Coventry, UK; [3]School of Mathematical Sciences, Centre for Computational Systems Biology, Fudan University, Shanghai, China.

9:20AM **N-16480** **Challenges in Clustering *C. elegans* Neurons using Computational Approaches.....4775**
Alicia Costalago Meruelo, Pedro Machado, Kofi Appiah and T. M. McGinnity
School of Science and Technology, Nottingham Trent University, Nottingham, UK.

9:40AM	**N-16575**	**Optimization of an Electro-Optical Representation of the *C. elegans Connectome* Through Neural Network Cluster Analysis.....4782** Alexey Petrushin, Lorenzo Ferrara and Axel Blau *Department of Neuroscience and Brain Technologies (NBT), Italian Institute of Technology (IIT), 16163 Genoa, Italy.*

Session FA-6	Radial Basis Function Networks & Other NNs
Date/Time	Friday, 29 July 2016 / 8:00AM – 10:00AM
Venue	Room 217+219
Chair	Varun Kumar Ojha

8:00AM	**N-16249**	**Intermittent Fault Estimation for Satellite Attitude Control Systems Based on the Unknown Input Observer.....4789** Xin Wen and Yaping Zhu *College of Astronautics, Nanjing University of Aeronautics and Astronautics, Nanjing, China.*
8:20AM	**N-16409**	**Locally Imposing Function for Generalized Constraint Neural Networks — A Study on Equality Constraints.....4795** Linlin Cao, Ran He and Bao-Gang Hu *NLPR, Institute of Automation, Chinese Academy of Sciences, Beijing, China.*
8:40AM	**N-16722**	**Meta-cognitive Regression Neural Network for Function Approximation: Application to Remaining Useful Life Estimation.....4803** G. Sateesh Babu[1], Xiao-Li Li[1] and S. Suresh[2] *[1]Institute for Infocomm, Research, Agency for Science, Technology and Research (A*STAR), Singapore; [2]School of Computer Engineering, Nanyang Technological University, Singapore.*
9:00AM	**N-16626**	**Adaptive Learning Algorithm for RBF Neural Networks in Kernel Spaces.....4811** Maryam Pazouki[1], Sonia Seyed Allaei[2], M. Hossein Pazouki[2] and Dietmar P. F. Möller[1] *[1]Institut für Angewandte Stochastik und Operations Research, TU Clausthal, Germany; [2]Department of Mathematics, Instituto Superior Tcnico, University of Lisbon, Portugal; [3]Institut für Informatik, Karlsruher Institut für Technologie, Germany*
9:20AM	**N-16133**	**A Substitution of the General Partial Differential Equation with Extended Polynomial Networks.....4819** Ladislav Zjavka[1], Václav Snášel[1], Varun Kumar Ojha[1] and Witold Pedrycz[2] *[1]Department of Computer Science and IT4Innovations, Faculty of Electrical Engineering and Computer Science, VŠB-Technical University of Ostrava, Ostrava, Czech Republic; [2]Department of Electrical & Computer Engineering, University of Alberta, Edmonton, Canada*
9:40PM	**N-16894**	**On the Synergism of Evolutionary Neuro-Fuzzy System.....4827** Vivek Srivastava[1], Bipin K. Tripathi[2], Vinay K. Pathak[2] and Anand Tiwari[1] *[1]Department of Computer Science & Engineering, Rama University, Kanpur, India; [2]Harcourt Butler Technological Institute, Kanpur, India*

ession FA-7	Data Analysis and Pattern Recognition I
Date/Time	Friday, 29 July 2016 / 8:00AM – 10:00AM
Venue	Room 224
Chair	Alceu Britto

8:00AM **N-16152** **A Computational Approach for Authorship Attribution of Literary Texts using Sintatic Features.....4835**
Paulo Varela[1], Edson Justino[1], Alceu Britto Jr.[1] and Flávio Bortolozzi[2]
[1]Programa de Pós-Graduação em Informática-PPGIA, Pontifocia Universidade Católica do Paraná, PUCPR, Curitiba, Brasil; [2]PPGIA — PUCPR — Curitiba, Brasil, PPGGC — UniCesumar — Maringá - Brasil.

8:20AM **N-16276** **Order of Experimentation for Metamodeling Tasks.....4843**
Julian Belz, Konrad Bamberger and Oliver Nelles
Department of Mechanical Engineering, University of Siegen, D-57068 Siegen, Germany.

8:40AM **N-16486** **A Combined Bayesian Network Method for Predicting Drive Failure Times from SMART Attributes.....4850**
Shuai Pang, Yuhan Jia, Rebecca Stones, Gang Wang and Xiaoguang Liu
College of Computer and Control Engineering, Nankai University, Tianjin, China.

9:00AM **N-16914** **Biometric Palmprint Identification via Efficient Texture Features Fusion.....4857**
Raouia Mokni[1], Mohamed Elleuch[2] and Monji Kherallah[3]
[1]Faculty of Economics and Management of Sfax (FSEGS), University of Sfax, Sfax, Tunisia; [2]National School of Computer Science (ENSI), University of Manouba, Manouba, Tunisia; [3]Faculty of Sciences of Sfax (FSS), University of Sfax, Sfax, Tunisia.

9:20AM **N-16183** **An Architecture for Encoding Two-Dimensional Cyclone Track Prediction Problem in Coevolutionary Recurrent Neural Networks.....4865**
Rohitash Chandra[1], Ratneel Deo[2] and Christian W. Omlin[2]
[1]Artificial Intelligence and Cybernetics Research Group, Software Foundation, Nausori, Fiji; [2]School of Computing Information and Mathematical Sciences, University of South Pacific, Suva, Fiji; [3]School of Computing, University of South Africa, Florida 1709, Johannesburg, South Africa.

9:40AM **N-16442** **Enhancing Temporal Alignment with Autoencoder Regularization.....4873**
Liquan Nie[1], Yuanyuan Wang[3], Xiang Zhang[1], Xuhui Huang[2] and Zhigang Luo[1]
[1]Science and Technology on Parallel and Distributed Processing Laboratory, College of Computer, National University of Defense Technology, Changsha, Hunan, 410073, China; [2]Department of Computer Science and Technology, College of Computer, National University of Defense Technology, Changsha, Hunan, 410073, China; [3]Department of Basic Courses, Army Officer Academy, Hefei, Anhui, 230031, China.

Session	[Plenary] – Adaptive Learning and Optimization for MI: From the Foundations to Complex Systems, Prof. Haibo He
Date/Time	Friday, 29 July 2016 / 1:00PM – 2:00PM
Venue	Room Ballroom A
Chair	Yaochu Jin

Session FM-1	Neuro & Fuzzy Control
Date/Time	Friday, 29 July 2016 / 2:30PM – 4:30PM
Venue	Room 212
Chair(s)	Ivo Bukovsky, Jan Pitel

2:30PM **N-16925** **Adaptive Maneuver Control of Hypersonic Re-entry Flight via Self-organizing Recurrent Functional Link Network.....4880**
Yanli Du[1], Dongyang Sun[1], Jian Fu[2] and Peng Zhang[1]
[1]College of Astronautics, Nanjing University of Aeronautics and Astronautics, Nanjing, P.R. China; [2]School of Energy and Power Engineering, Nanjing University of Technology, Nanjing, P.R. China.

2:50PM **N-16284** **Adaptive Neural Control of Pure-feedback Stochastic Nonlinear Systems with Multiple Unknown Time-Varying Delays.....4887**
Zifu Li[1], Tieshan Li[2] and Gang(Gary) Feng[3]
[1]Navigation College, Jimei University, Xiamen 361021, China; [2]Navigation College, Dalian Maritime University, Dalian, 116026, China; [3]Department Of Mechanical And Biomedical Engineering, City University Of Hong Kong, Hong Kong.

3:10PM **N-16978** **Model Reference Multiple-Degree-of-Freedom Adaptive Control with HONUs.....4895**
Ivo Bukovsky[1], Peter Benes[1], Martin Vesely[1], Jan Piteld[2] and Madan M. Gupta[3]
[1]Dpt. of Inst. and Cont. Eng., Faculty of Mechanical Engineering, Czech Technical University in Prague, Czech Republic; [2]Technical University of Košice, Faculty of Manufacturing Technologies, Dpt. of Math., Inf. and Cybernetics, Bayerova 1, Presov, Slovakia; [3]Intelligent Systems Research Laboratory, College of Engineering, University of Saskatchewan, Canada.

3:30PM **N-16817** **Prediction Interval-based ANFIS Controller for Nonlinear Processes.....4901**
Mohammad Anwar Hosen[1], Abbas Khosravi[1], Saeid Nahavandi[1] and Lachlan Sinnott[2]
[1]Institute for Intelligent Systems Research ans Innovation (IISRI), Deakin University, Australia; [2]HPS Engineering, VIC, Australia.

3:50PM **N-16457** **A learning algorithm for a Data-driven Controller based on Fictitious Reference Iterative Tuning.....4908**
Shin Wakitani and Toru Yamamoto
Institute of Engineering, Hiroshima University, Hiroshima, 739-8524, Japan.

4:10PM	**N-16917**	**Self-Organizing Neural Adaptive Tracking Control of High Speed Trains Subject to Unexpected Traction-Breaking Failures.....4914** Rui-Zhen Gao[1,2], Yu-Juan Wang[1], Jun-Feng Lai[1] and Yong-duan Song[1] *[1]School of Automation, Chongqing University, Chongqing 400044, China; [2]Hebei University of Engineering, Handan 056038, China*

Session FM-2	Robotics I
Date/Time	Friday, 29 July 2016 / 2:30PM – 4:30PM
Venue	Room 213
Chair	Ying Wang

2:30PM	**N-16047**	**An Autonomous Robot Tracking System through Fusing Vision with Sonar Measurements.....4921** Qichang Zheng[1], Sheng Li[1], Boyu Hou[1], Haoxiang Lang[2] and Ying Wang[1] *[1]Kennesaw State University, Marietta, GA 30060 USA; [2]Department of Mechanical Engineering, University of Ontario Institute of Technology, Oshawa, Ontario, L1H 7K4, Canada*
2:50PM	**N-16281**	**Bayesian Perception of Touch for Control of Robot Emotion.....4927** Uriel Martinez-Hernandez[1], Adrian Rubio-Solis[2] and Tony J. Prescott[3] *[1]Institute of Robotics, Design and Optimisation, School of Mechanical Engineering, The University of Leeds, Leeds, UK; [2]ACSE Department, The University of Sheffield, Sheffield, UK; [3]Sheffield Robotics Laboratory, Department of Psychology, The University of Sheffield, Sheffield, UK.*
3:10PM	**N-16752**	**Road Junction Detection from 3D Point Clouds.....4934** Danilo Habermann[1], Carlos E. O. Vido[2], Fernando S. Osório[1] and Fabio Ramos[2] *[1]Instituto de Ciências Matemáticas e de Computação, University of São, Paulo, Brazil; [2]School of Information Technologies, University of Sydney, NSW 2008, Australia.*
3:30PM	**N-16883**	**Event-Sampled Adaptive Neural Network Control of Robot Manipulators.....4941** Vignesh Narayanan and S. Jagannathan *Department of Electrical and Computer Engineering, Missouri University of Science and Technology, Rolla, MO, USA.*
3:50PM	**N-16622**	**Combining Local and Global Visual Information in Context-Based Neurorobotic Navigation.....4947** Marwen Belkaid, Nicolas Cuperlier and Philippe Gaussier *ETIS Laboratory, UMR 8051, CNRS/ENSEA/UCP, 95000 Cergy Cedex, France.*
4:10PM	**N-17003**	**Continuous Material Identification through Tactile Sensing.....4955** A. Gómez Eguíluz[1], and I. Rañó[1], S. A. Coleman[1] and T. M. McGinnity[2] *[1]Intelligent Systems Research Centre, Ulster University, Northern Ireland, UK; [2]School of Science & Technology, Nottingham Trent University, UK.*

Session FM-3	Power System Applications
Date/Time	Friday, 29 July 2016 / 2:30PM – 4:30PM
Venue	Room 214
Chair	Marco Musseta

2:30PM **N-16337** **Solar Power Forecasting Using Weather Type Clustering and Ensembles of Neural Networks.....4962**
Mashud Rana[1], Irena Koprinska[2] and Vassilios G. Agelidis[1]
[1]Australian Energy Research Institute, The University of New South Wales, Sydney, NSW, Australia; [2]School of Information Technologies, The University of Sydney, Sydney, NSW, Australia.

2:50PM **N-16615** **Neural Network-based Load Forecasting and Error Implication for Short-term Horizon.....4970**
S. R. Khuntia[1], J. L. Rueda[1] and M. A. M. M. van der Meijden[1,2]
[1]Department of Electrical Sustainable Energy, Delft University of Technology, The Netherlands; [2]TenneT TSO B.V., The Netherlands

3:10PM **N-16629** **Forecasting Wind Power — An Ensemble Technique With Gradual Coopetitive Weighting Based on Weather Situation.....4976**
André Gensler and Bernhard Sick
Intelligent Embedded Systems, University of Kassel, Germany.

3:30PM **N-16420** **Solar Radiation Forecast Under Convex Piecewise Linear Cost Functions.....4985**
Seyyed A. Fatemi, Anthony Kuh and Matthias Fripp
University of Hawaii at Manoa

3:50PM **N-16433** **Solar Radiation (Insolation) Forecasting Using Constructive Neural Networks.....4991**
L. Ma[1], N. Yorino[1]and K. Khorasani[2]
[1]Division of Electrical, Systems and Mathematical Engineering, Hiroshima University, Higashi-Hiroshima 739-8527, Japan; [2]Department of Electrical and Computer Engineering, Concordia University, Montreal, QC H3G 1M8, Canada

4:10PM **N-16900** **Hybrid Weather-based ANN for Forecasting the Production of a Real Wind Power Plant.....4999**
Mattia Morina, Francesco Grimaccia, Sonia Leva and Marco Mussetta
Dipartimento di Energia, Politecnico di Milano, Via La Masa 34, 20156 Milano, Italy.

Session FM-4	Visual, Auditory and Other Sensory Systems
Date/Time	Friday, 29 July 2016 / 2:30PM – 4:30PM
Venue	Room 215
Chair(s)	Andre Bigand, Martin McGinnity

2:30PM **N-16228** **Learning to Link Human Objects in Videos and Advertisements with Clothes Retrieval.....5006**
Haijun Zhang[1], Shuang Wang[1], Xiong Cao[1], Heng Yue[2] and Ke Wang[3]
[1]Department of Computer Science, Shenzhen Graduate School, Harbin Institute of Technology, Shenzhen, Guangdong 518055, P.R. China; [2]State Key Laboratory of Synthetical, Automation for Process Industries, Northeastern University, Shenyang, Liaoning 110004, P.R. China; [3]Department of Computer Science, Shenzhen Graduate School, Harbin Institute of Technology, Shenzhen, P.R. China.

2:50PM **N-16243** **Contour Representation and Shape Matching Based on Mechanism of Visual Cortex.....5014**
Hui Wei and Zheng Dong
Laboratory of Cognitive Modeling and Algorithms, Shanghai Key Laboratory of Data Science, School of Computer Science, Fudan University, Shanghai, China.

3:10PM **N-16594** **Perception of noise in Global Illumination based on Inductive Learning.....5021**
Joseph Constantin[1], Ibtissam Constantin[1], Andre Bigand[2] and Denis Hamad[2]
[1]Laboratoire de Physique Appliquée, Université Libanaise, Faculté des Sciences 2, Campus Fanar, BP 90656 Jdeidet, Liban; [2]LISIC, ULCO, 50 rue Ferdinand Buisson, BP 719, 62228 Calais Cedex, France.

3:30PM **N-16361** **A Biologically Plausible Spiking Model for Interaural Level Difference Processing Auditory Pathway in Human Brain.....5029**
Feng Xiao[1,2] and Dou Weibei[1,2]
[1]Department of Electronic Engineering, Tsinghua University, Beijing, China; [2]Center for Brain Inspired Computing Research, Tsinghua University, Beijing, China

3:50PM **N-16969** **Modelling the Generation of Tinnitus in a Silent Environment.....5037**
Richard Gault[1], T. M. McGinnity[1,2] and Sonya Coleman[1]
[1]Intelligent Systems Research Centre, Ulster University, UK; [2]Nottingham Trent University, UK

4:10PM **N-16073** **A Spatio-Temporal Model of Multi-Sensory Learning that Demonstrates Improved Object Recall.....5043**
A. Ravishankar Rao
School of Computer Sciences and Engineering, Fairleigh Dickinson University, Teaneck, NJ, USA.

Session FM-5	Biomedical Engineering
Date/Time	Friday, 29 July 2016 / 2:30PM – 4:30PM
Venue	Room 216
Chair	Hamid Tizhoosh

2:30PM **N-16196** **Detection of Alzheimer's Disease Using Advanced Local Binary Pattern from Hippocampus and Whole Brain of MR Images.....5051**
Devvi Sarwinda and Alhadi Bustamam
Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Indonesia, Depok, Indonesia.

2:50PM **N-16338** **Feature Leaning with Deep Convolutional Neural Networks for Screening Patients with Paroxysmal Atrial Fibrillation.....5057**
Bahareh Pourbabaee[1], Mehrsan Javan Roshtkhari[2] and Khashayar Khorasani[1]
[1]Department of Electrical and Computer Engineering, Concordia University, Montreal, Canada; [2]SPORTLOGiQ, Montreal, Canada.

3:10PM **N-16475** **Radon Features and Barcodes for Medical Image Retrieval via SVM.....5065**
Shujin Zhu[1] and H. R. Tizhoosh[2]
[1]School of Electronic & Optical Engineering, Nanjing University of Science & Technology, Jiangsu, 210094, China; [2]KIMIA Lab, University of Waterloo, Canada.

3:30PM **N-17008** **A Hybrid Neural System for the Automatic Segmentation of the Interventricular Septum in Echocardiographic Images.....5072**
Salety Ferreira Baracho, Daniel José Lins Leal Pinheiro, Vinícius Veloso de Melo and Regina Célia Coelho
Federal University of São Paulo, Science and Technology Institute, São José dos Campos, Brazil.

3:50PM **N-16301** **Deep Self-Organising Maps for Efficient Heterogeneous Biomedical Signatures Extraction.....5079**
Nataliya Sokolovska[1], Nguyen Thanh Hai[1], Karine Clément[1] and Jean-Daniel Zucker[2]
[1]UPMC University Paris 6, INSERM UMR S 1166, NutriOmics Team, ICAN, Paris, France; [2]UPMC University Paris 6, ICAN, Paris, France, IRD, UMMISCO, Bondy, France.

4:10PM **N-17146** **RNA-Seq Data Analysis using Nonparametric Gaussian Process Models.....5087**
Thanh Nguyen, Saeid Nahavandi, Douglas Creighton and Abbas Khosravi
Institute of Intelligent Systems Research and Innovation, Deakin University, Victoria, Australia.

Session FM-6	Sparse Coding
Date/Time	Friday, 29 July 2016 / 2:30PM – 4:30PM
Venue	Room 217+219
Chair	Sylvain Chartier

2:30PM **N-16436** **Online Non-negative Dictionary Learning via Moment Information for Sparse Poisson Coding.....5094**

Xiaotian Yu[1,2], Haiqin Yang[1,2], Irwin King[1,2] and Michael R. Lyu[1,2]
[1]Shenzhen Key Laboratory of Rich Media Big Data Analytics and Applications, Shenzhen Research Institute, The Chinese University of Hong Kong, Shenzhen, China; [2]Department of Computer Science and Engineering, The Chinese University of Hong Kong, Shatin, New Territories, Hong Kong

2:50PM **N-17166** **Sufficient Conditions for Sparse Recovery by Weighted l_1-Constrained Quadratic Programming.....5102**

Jun Zhang[1], Yuanqing Li[2], Zhu Liang Yu[2] and Zhenghui Gu[2]
[1]School of Information Engineering, Guangdong University of Technology, Guangzhou, 510006, P.R. China; [2]College of Automation Science and Engineering, South China University of Technology, Guangzhou, 510640, P.R. China.

3:10PM **N-16673** **Nearest Neighbour Search Using Binary Neural Networks.....5106**

Demetrio Ferro[1], Vincent Gripon[2] and Xiaoran Jiang
[1]Polytechnic of Turin, Electronics, and Telecommunications Dpt., Turin, Italy; [2]Télécom Bretagne, Electronics Dpt., UMR CNRS Lab-STICC, Brest, France; [3]INRIA, Centre Rennes, Bretagne Atlantique, Rennes, France.

3:30PM **N-17126** **Image Representation via Sub-dictionary based Sparse Coding.....5113**

Bingxin Xu[1], Qian Yin[2], Ping Guo[2] and Hongzhe Liu[1]
[1]Beijing Key Laboratory of Information Service Engineering,Beijing Union University, Beijing, 100101, China ; [2]Image Processing and Pattern Recognition Laboratory,Beijing Normal University, Beijing, 100875, China.

3:50PM **N-16240** **Encoding Sparse Features in a Bidirectional Associative Memory.....5119**

Nareg Berberian[1], Sébastien Hélie[2], Zoya Aamir[1] and Sylvain Chartier[3]
[1]School of Psychology, 136 Jean-Jacques Lussier, University of Ottawa, ON K1N 6N5, Canada; [2]Department of Psychological Sciences, 703 Third Purdue University, IN 47907-2081, USA; [3]School of Psychology, 136 Jean-Jacques Lussier University of Ottawa, ON K1N 6N5, Canada.

4:10PM **N-16339** **Low-Rank Representation based Traffic Data Completion Method.....5127**

Rong Du[1], Yong Zhang[1,2], Boyue Wang[1], Hao Liu[2], Guanglei Qi[1] and Baocai Yin[1]
[1]Beijing Key Laboratory of Multimedia and Intelligent Software Technology, College of Metropolitan Transportation, Beijing University of Technology Beijing, 100124, China; [2]Beijing Transportation Information Center Beijing, China.

Session FM-7	Data Analysis and Pattern Recognition II
Date/Time	Friday, 29 July 2016 / 2:30PM – 4:30PM
Venue	Room 224
Chair(s)	Julio Cesar Nievola, Alceu Britto

2:30PM **N-16625** **Face Recognition by Humans Performed on Basis of Linguistic Descriptors and Neural Networks.....5135**

Michał Dolecki[1], Paweł Karczmarek[1], Adam Kiersztyn[1] and Witold Pedrycz[2]
[1]Institute of Mathematics and Computer Science, The John Paul II Catholic University of Lublin, ul. Konstantynw 1H, 20-708, Lublin, Poland; [2]Department of Electrical & Computer Engineering, University of Alberta, Edmonton T6R 2V4 AB, Canada, Department of Electrical and Computer Engineering, King Abdulaziz University, Jeddah, 21589, Saudi Arabia and Systems Research Institute, Polish Academy of Sciences, Warsaw, Poland.

2:50PM **N-16675** **BALLKNN: An Efficient and Scalable KNN based on Euclidean Similarity.....5141**

Peipei Lv, Peng Yang, Yongqing Dong and Liang Gu
Key Laboratory of Computer Network and Information Integration (Southeast University), Ministry of Education, Chaina; and School of Computer Science and Engineering, Southeast University, China

3:10PM **N-16898** **Facial Expression Recognition Using a Pairwise Feature Selection and Classification Approach.....5149**

Marcelo J. Cossetin[1], Julio C. Nievola[1] and Alessandro L. Koerich[2]
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[1]Faculty of Computer Science, Universitas Indonesia, Depok, Indonesia; [2]Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Indonesia, Depok, Indonesia.

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[1]Faculty of Interdisciplinary Research, University of Yamanashi, Kofu, Japan; [2]Interdisciplinary Graduate School of Medicine and Engineering, University of Yamanashi, Kofu, Japan

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[1]Department of Computing, Imperial College London, London, UK; [2]Institute of Computer Science, Foundation for Research and Technology Hellas, Heraklion, Greece

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[1]Department of Electrical Engineering, Indian Institute of Technology, New Delhi, India; [2]Center for Intelligent Systems Research, Deakin University, Australia.

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[1]The State Key Laboratory of Management and Control for Complex Systems, Institute of Automation, Chinese Academy of Sciences, Beijing, 100190, China; [2]School of Automation and Electrical Engineering, University of Science and Technology Beijing, Beijing, 100083, China.

5:10PM **N-17050** **Pluralistic Ignorance: Emergence and Hypotheses Testing in a Multi-agent System.....5269**
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[1]Chongqing Key Laboratory of Computational Intelligence, Chongqing University of Posts and Telecommunications, Chongqing, P.R. China; [2]College of Electronics and Information Engineering, Southwest University, Chongqing, P.R. China

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