2014 International Joint Conference on Neural Networks

TABLE OF CONTENTS

Monday, July 7, 1:30PM-3:30PM

Special Session: MoN1-1 Neuromorphic Science & Technology for Augmented Human Performance in Cybersecurity, Chair: Tarek Taha and Helen Li, Room: 308

1:30PM *STDP Learning Rule Based on Memristor with STDP Property*
Ling Chen, Chuandong Li, Tingwen Huang, Xing He, Hai Li and Yiran Chen 1

1:50PM *An Adjustable Memristor Model and Its Application in Small-World Neural Networks*
Xiaofang Hu, Gang Feng, Hai Li, Yiran Chen and Shukai Duan 7

2:10PM *Efficacy of Memristive Crossbars for Neuromorphic Processors*
Chris Yakopcic, Raqibul Hasan and Tarek Taha 15

2:30PM *Enabling Back Propagation Training in Memristor Crossbar Neuromorphic Processors*
Raqibul Hasan and Tarek Taha 21

2:50PM *Ferroelectric Tunnel Memristor-Based Neuromorphic Network with 1T1R Crossbar Architecture*
Zhaohao Wang, Weisheng Zhao, Wang Kang, Youguang Zhang, Jacques-Olivier Klein and Claude Chappert 29

Special Session: MoN1-2 Artificial Neural Networks and Learning Techniques towards Intelligent Transport Systems, Chair: David Elizondo and Benjamin Passow, Room: 305A

1:30PM *Traffic Flow Prediction Using Orthogonal Arrays and Takagi-Sugeno Neural Fuzzy Models*
Kit Yan Chan and Tharam Dillon 35

1:50PM *Optimal Design of Traffic Signal Controller Using Neural Networks and Fuzzy Logic Systems*
Sahar Araghi, Abbas Khosravi and Creighton Douglas 42

2:10PM *Optimising Traffic Lights with Metaheuristics: Reduction of Car Emissions and Consumption*
Jose Garcia-Nieto, Javier Ferrer and Enrique Alba 48

2:30PM *Applying Neural-Symbolic Cognitive Agents in Intelligent Transport Systems to Reduce CO2 Emissions*
Leo de Penning, Artur d'Avila Garcez, Luis Lamb, Arjan Stuiver and John-Jules Meyer 55

2:50PM *LOGAN's Run: Lane Optimising Genetic Algorithms Based on NSGA-II*
Simon R Witheridge, Benjamin Passow and Jethro Shell 63

Special Session: MoN1-3 Computational Intelligence for Cognitive Fault Diagnosis, Chair: Christos Panayiotou and Marios Polycarpou, Room: 305B

1:30PM *A Cognitive Monitoring System for Contaminant Detection in Intelligent Buildings*
Giacomo Boracchi, Michalis Michaelides and Manuel Roveri 69

1:50PM *Learning the Deterministically Constructed Echo State Networks*
Fengzhen Tang, Peter Tino and Huanhuan Chen 77

2:10PM *Inconsistent Sensor Data Detection/Correction: Application to Environmental Systems*
Miquel A. Cuguero, Joseba Quevedo, Vicenc Puig and Diego Garcia 84

2:30PM *Optimal Detection of New Classes of Faults by an Invasive Weed Optimization Method*
Roozbeh Razavi-Far, Vasile Palade and Enrico Zio 91

2:50PM *A Distributed Virtual Sensor Scheme for Smart Buildings Based on Adaptive Approximation*
Vasso Reppa, Panayiotis Papadopoulos, Marios Polycarpou and Christos Panayiotou 99

MoN1-4 Deep Learning, Chair: Donal C. Wunsch, Room: 305C

1:30PM *From ADP to the Brain: Foundations, Roadmap, Challenges and Research Priorities*
Paul Werbos 107

1:50PM *A New Active Labeling Method for Deep Learning*
Dan Wang and Yi Shang 112

2:10PM *Parallel Tempering with Equi-Energy Moves for Training of Restricted Boltzmann Machines*
Nannan Ji and Jiangshe Zhang 120

2:30PM *EOG-Based Drowsiness Detection Using Convolutional Neural Networks*
Xuemin Zhu, Wei-Long Zheng, Bao-Liang Lu, Xiaoping Chen, Shanguang Chen and Chunhui Wang 128

2:50PM *Using Recurrent Networks for Non-Temporal Classification Tasks*
Saurav Biswas, Muhammad Zeshan Afzal and Thomas Breuel 135

3:10PM *Computation of Deep Belief Networks Using Special-Purpose Hardware Architecture*
Byungik Ahn 141

MoN1-5 Ensemble and Meta Learning, Chair: Robi Polikar, Room: 305D

1:30PM *Neural Networks and AdaBoost Algorithm Based Ensemble Models for Enhanced Forecasting of Nonlinear Time Series*
Yilin Dong, Jianhua Zhang and Jonathan Garibaldi 149

1:50PM *An Improved Boosting Scheme Based Ensemble of Fuzzy Neural Networks for Nonlinear Time Series Prediction*
Yilin Dong and Jianhua Zhang 157

2:10PM *On Optimal Wavelet Bases for Classification of Skin Lesion Images through Ensemble Learning*
Grzegorz Surowka and Maciej Ogorzalek 165

2:30PM *From Low Negative Correlation Learning to High Negative Correlation Learning*
Liu Yong 171

2:50PM *An Algorithmic Framework Based on the Binarization Approach for Supervised and Semi-Supervised Multiclass Problems*
Ayon Sen, Md. Monirul Islam and Kazuyuki Murase 175

3:10PM *A Hierarchical Learning Approach to Calibrate Allele Frequencies for Snp Based Genotyping of Dna Pools*
Andrew Hellicar, Daniel Smith, Ashfaqur Rahman, Ulrich Engelke and John Henshall 183

MoN1-6 Time Series Analysis I, Chair: Vladimir Cherkassky, Room: 305E

1:30PM *Multi-Objective Cooperative Coevolution of Neural Networks for Time Series Prediction*
Shelvin Chand and Rohitash Chandra 190

1:50PM *Multivariate Time Series Prediction Based on Multiple Kernel Extreme Learning Machine*
Xinying Wang and Min Han 198

2:10PM *Cooperative Coevolution of Feed Forward Neural Networks for Financial Time Series Problem*
Shelvin Chand and Rohitash Chandra 202

2:30PM *Forecasting Time Series - A Layered Ensemble Architecture*
Md. Mustafizur Rahman, Shubhra Kanti Karmaker Santu, Md. Monirul Islam and Kazuyuki Murase 210

2:50PM *Sets with Incomplete and Missing Data - NN Radar Signal Classification*
Ivan Jordanov and Nedyalko Petrov 218

3:10PM *Application of Artificial Neural Network and Multiple Linear Regression Models for Predicting Survival Time of Patients with Non-Small Cell Cancer Using Multiple Prognostic Factors Including FDG-PET Measurements*
Yonglin Pu, Michael Baad, Yisheng Chen and Yulei Jiang 225

MoN1-7 Approximate Dynamic Programming and Reinforcement Learning, Chair: Qinglai Wei, Room: 303

1:30PM *Near-Optimal Online Control of Uncertain Nonlinear Continuous-Time Systems Based on Concurrent Learning*
Xiong Yang, Derong Liu and Qinglai Wei 231

1:50PM *Finite Horizon Stochastic Optimal Control of Nonlinear Two-Player Zero-Sum Games under Communication Constraint*
Hao Xu and Jagannathan Sarangapani 239

2:10PM *Neural-Network-Based Optimal Control for a Class of Complex-Valued Nonlinear Systems with Input Saturation*
Ruizhuo Song and Qinglai Wei 245

2:30PM *Policy Iteration Approximate Dynamic Programming Using Volterra Series Based Actor*
Wentao Guo, Jennie Si, Feng Liu and Shengwei Mei 249

2:50PM *Online Adaptation of Controller Parameters Based on Approximate Dynamic Programming*
Wentao Guo, Feng Liu, Jennie Si and Shengwei Mei 256

3:10PM *LASOM: Location Aware Self-Organizing Map for Discovering Similar and Unique Visual Features of Geographical Locations*
Dmitry Kit, Yu Kong and Yun Fu 263

Monday, July 7, 3:30PM-6:00PM

Poster Session: PN1 Poster Session 1, Chair: Marios Polycarpou, Room: Posters Area (Level 3)

P101 *Hidden Space Discriminant Neighborhood Embedding*
Chuntao Ding, Li Zhang and Bangjun Wang 271

P102 *A Supervised Neighborhood Preserving Embedding for Face Recognition*
Xing Bao, Li Zhang, Bangjun Wang and Jiwen Yang 278

P103 *Asymmetric Mixture Model with Variational Bayesian Learning*
Thanh Nguyen and Wu Jonathan 285

P104 *A New Weight Initialization Method for Sigmoidal Feedforward Artificial Neural Networks*
Sartaj Singh Sodhi, Pravin Chandra and Sharad Tanwar 291

P105 *Fast Orthogonal Linear Discriminant Analysis with Applications to Image Classification*
Qiaolin Ye, Ning Ye, Haofeng Zhang and Chunxia Zhao 299

P106 *Stability Analysis of Nonlinear Time-Delay System with Delayed Impulsive Effects*
Guizhen Feng and Jinde Cao 307

P107 *Learning Discriminative Low-Rank Representation for Image Classification*
Jun Li, Heyou Chang and Jian Yang 313

P108 *Supervised Bayesian Sparse Coding for Classification*
Jinhua Xu, Li Ding and Shiliang Sun 319

P109 *Writer-Independent Handwritten Signature Verification Based on One-Class SVM Classifier*
Yasmine Guerbai, Youcef Chibani and Bilal Hadjadji 327

P110 *Attack Detection in Recommender Systems Based on Target Item Analysis*
Wei Zhou, Junhao Wen, Yun Sing Koh, Shafiq Alam and Gillian Dobbie 332

P111 *Video Attention Saliency Mapping Using Pulse Coupled Neural Network and Optical Flow*
Qiling Ni and Xiaodong Gu 340

P112 *Optimized Selection of Training Samples for One-Class Neural Network Classifier*
Hadjadji Bilal and Chibani Youcef 345

P113 *Zernike Moments Descriptor Matching Based Symmetric Optical Flow for Motion Estimation and Image Registration*
Qiuying Yang and Ying Wen 350

P114 *A Pairwise Algorithm for Training Multilayer Perceptrons with the Normalized Risk-Averting Error Criterion*
Yichuan Gui, James Lo and Yun Peng 358

P115 *A Model with Fuzzy Granulation and Deep Belief Networks for Exchange Rate Forecasting*
Ren Zhang, Furao Shen and Jinxi Zhao 366

P116 *Control of Methylamine Removal Reactor Using Neural Network Based Model Predictive Control*
Zhi Long Liu, Feng Yang, Ke Jun Zhou and Mei Xu 374

P117 *A Genetic Algorithm Based Double Layer Neural Network for Solving Quadratic Bilevel Programming Problem*
Jingru Li, Junzo Watada, Yunlong Guo and Shamshul Bahar Yaakob 382

P118 *Detection of Filter-Like Cellular Automata Spectra*
Eurico Ruivo and Pedro de Oliveira 390

P119 *A Brain-Like Multi-Hierarchical Modular Neural Network with Applications to Gas Concentration Forecasting*
Zhaozhao Zhang and Junfei Qiao 398

P120 *Fast Ship Detection of Synthetic Aperture Radar Images via Multi-View Features and Clustering*
Shigang Wang, Shuyuan Yang, Zhixi Feng and Licheng Jiao 404

P121 *Deep Learning to Classify Difference Image for Image Change Detection*
Jiaojiao Zhao, Maoguo Gong, Jia Liu and Licheng Jiao 411

P122 *Performance of Combined Artificial Neural Networks for Forecasting Landslide Displacement*
Lian Cheng, Zhigang Zeng, Yao Wei and Huiming Tang 418

P123 *Butterfly Communication Strategies: A Prospect for Soft-Computing Techniques*
Sowmya Ch, Anjumara Shaik, Chakravarthi Jada and Anil Kumar Vadathya 424

P124 *A New Transfer Learning Boosting Approach Based on Distribution Measure with an Application on Facial Expression Recognition*
Shihai Wang and Zeling Li 432

P125 *Adaptive Output Feedback Control for Cooperative Dynamic Positioning of Multiple Offshore Vessels*
Lu Liu, Dan Wang and Zhouhua Peng 440

P126 *Hierarchical Organization in Neuronal Functional Networks during Working Memory Tasks*
Hu Lu, Zhe Liu, Yuqing Song and Hui Wei 446

P127 *Shrunk Support Vector Clustering*
Ping Ling, Xiangsheng Rong, Guosheng Hao and Yongquan Dong 452

P128 *Oil Spill GF-1 Remote Sensing Image Segmentation Using an Evolutionary Feedforward Neural Network*
Jianchao Fan, Dongzhi Zhao and Jun Wang 460

P129 *Deep Process Neural Network for Temporal Deep Learning*
Wenhao Huang and Haikun Hong 465

P130 *Dynamic Boosting in Deep Learning Using Reconstruction Error*
Wenhao Huang and Haikun Hong 473

P131 *Efficient Diminished-1 Modulo 2n+1 Multiplier Architectures*
Xiaolan Lv and Ruohe Yao 481

P132 *A Classifier-Based Association Test for Imbalanced Data Derived from Prediction Theory*
Johannes Mohr, Sambu Seo and Klaus Obermayer 487

P133 *Issues on Sampling Negative Examples for Predicting Prokaryotic Promoters*
Eduardo Gusmao and Marcilio de Souto 494

P134 *Singular Spectrum Analysis of P300 for Classification*
Shirin Enshaeifar, Saeid Sanei and Clive Cheong Took 502

P135 *Vessel Segmentation in Retinal Images with a Multiple Kernel Learning Based Method*
Xiaoming Liu, Zhigang Zeng and Xiaoping Wang 507

P136 *Content-Based Image Retrieval by Dictionary of Local Feature Descriptors*
Patryk Najgebauer, Tomasz Nowak, Jakub Romanowski, Marcin Gabryel, Marcin Korytkowski and Rafal Scherer 512

P137 *The Performance of a Recurrent Honn for Temperature Time Series Prediction*
Rozaida Ghazali, Noor Aida Husaini, Lokman Hakim Ismail and Yana Mazwin Hassim 518

P138 *EEG-Based Emotion Recognition Using Discriminative Graph Regularized Extreme Learning Machine*
Jia-Yi Zhu, Wei-Long Zheng, Ruo-Nan Duan, Yong Peng and Bao-Liang Lu 525

P139 *Posture Classification of Lying Down Human Bodies Based on Pressure Sensors Array*
William Cruz Santos, Alberto Beltran Herrera, Eduardo Vazquez Santacruz and Mariano Gamboa Zuniga 533

P140 *Adaptive Control of Wind Turbine Generator System Based on RBF-PID Neural Network*
Zhanshan Wang, Zhengwei Shen and Chao Cai 538

P141 *Single Channel Single Trial P300 Detection Using Extreme Learning Machine, Compared with BPNN and SVM*
Songyun Xie, You Wu, Yunpeng Zhang, Juanli Zhang and Chang Liu 544

P142 *Spectral Clustering-Based Local and Global Structure Preservation for Feature Selection*
Sihang Zhou, Xinwang Liu, Chengzhang Zhu, Qiang Liu and Jianping Yin 550

P143 *Unsupervised Robust Bayesian Feature Selection*
Jianyong Sun and Aimin Zhou 558

P144 *Competitive Two-Island Cooperative Coevolution for Training Elman Recurrent Networks for Time Series Prediction*
Rohitash Chandra 565

P145 *Universal Approximation Propriety of Flexible Beta Basis Function Neural Tree*
Souhir Bouaziz, Adel M. Alimi and Ajith Abraham 573

Monday, July 7, 4:00PM-6:00PM

Special Session: MoN2-1 Concept Drift, Domain Adaptation & Learning in Dynamic Environments I, Chair: Giacomo Boracchi and Manuel Roveri, Room: 308

4:00PM *Trotting Gait Planning for a Quadruped Robot with High Payload Walking on Irregular Terrain*
Nan Hu, Shaoyuan Li, Dan Huang and Feng Gao 581

4:20PM *Using HDDT to Avoid Instances Propagation in Unbalanced and Evolving Data Streams*
Andrea Dal Pozzolo, Reid Johnson, Olivier Caelen, Serge Waterschoot, Nitesh V. Chawla and Gianluca Bontempi 588

4:40PM *Domain Adaptation Bounds for Multiple Expert Systems Under Concept Drift*
Gregory Ditzler, Gail Rosen and Robi Polikar 595

5:00PM *Core Support Extraction for Learning from Initially Labelled Nonstationary Environments Using COMPOSE*
Robert Capo, Anthony Sanchez and Robi Polikar 602

5:20PM *Optimal Bayesian Classification in Nonstationary Streaming Environments*
Jehandad Khan, Nidhal Bouaynaya and Robi Polikar 609

5:40PM *New Untrained Aggregation Methods for Classifier Combination*
Bartosz Krawczyk and Michal Wozniak 617

Special Session: MoN2-2 Applications of Computational Intelligence in Ecological Informatics and Environmental Modelling, Chair: Mike Watts and Jie Yang, Room: 305A

4:00PM *Spatio-Temporal PM2.5 Prediction by Spatial Data Aided Incremental Support Vector Regression*
Lei Song, Shaoning Pang, Ian Longley, Gustavo Olivares and Abdolhossein Sarrafzadeh 623

4:20PM *Estuarine Flood Modelling Using Artificial Neural Networks*
Seyyed Adel Alavi Fazel, Hamid Mirfenderesk, Michael Blumenstein and Rodger Tomlinson 631

4:40PM *NeuCube(ST) for Spatio-Temporal Data Predictive Modelling with a Case Study on Ecological Data*
Enmei Tu, Nikola Kasabov, Muhaini Othman, Yuxiao Li, Susan Worner, Jie Yang and Zhenghong Jia638

5:00PM *Evolving Connectionist Systems Can Predict Outbreaks of the Aphid Rhopalosiphum Padi*
Michael Watts 646

5:20PM *Support Vector Regression of Multiple Predictive Models of Downward Short-Wave Radiation*
Pavel Kromer, Petr Musilek, Emil Pelikan, Pavel Krc, Pavel Jurus and Krystof Eben 651

5:40PM *Applying Computational Intelligence Methods to Modeling and Predicting Common Bean Germination Rates*
Andre Bianconi, Michael Watts, Yanbo Huang, A. B. S. Serapiao, Jose Silvio Govone, X. Mi, Gustavo Habermann and Alessandro Ferrarini 658

6:00PM *Contamination Event Detection in Drinking Water Systems Using a Real-Time Learning Approach*
Demetrios Eliades, Christos Panayiotou and Marios Polycarpou 663

Special Session: MoN2-3 Mind, Brain, Development and Cognitive Algorithms, Chair: Angelo Cangelosi and Leonid Perlovsky, Room: 305B

4:00PM *Cognitive Functions of Aesthetic Emotions*
Leonid Perlovsky 671

4:20PM *Locality Linear Fitting One-Class SVM with Low-Rank Constraints for Outlier Detection*
Sheng Li, Ming Shao and Yun Fu 676

4:40PM *Learning to Interact and Interacting to Learn: Active Statistical Learning in Human-Robot Interaction*
Chen Yu, Tian Xu, Yiwen Zhong, Seth Foster and Hui Zhang 684

5:00PM *The iCub Learns Numbers: An Embodied Cognition Study*
Alessandro Di Nuovo, De La Cruz Vivian, Angelo Cangelosi and Santo Di Nuovo 692

5:20PM *Predictive Hebbian Association of Time-Delayed Inputs with Actions in a Developmental Robot Platform*
Martin F. Stoelen, Davide Marocco, Angelo Cangelosi, Fabio Bonsignorio and Carlos Balaguer 700

5:40PM *A Developmental Perspective on Humanoid Skill Learning Using a Hierarchical SOM-Based Encoding*
Georgios Pierris and Torbjorn Dahl 708

6:00PM *WWN-9: Cross-Domain Synaptic Maintenance and Its Application to Object Groups Recognition*
Qian Guo, Xiaofeng Wu and Juyang Weng 716

MoN2-4 Real World Applications I, Chair: Danil Prokhorov, Room: 305C

4:00PM *Tagging Documents Using Neural Networks Based on Local Word Features*
Arnulfo Azcarraga, Paolo Tensuan and Rudy Setiono 724

4:20PM *Constraint Online Sequential Extreme Learning Machine for Lifelong Indoor Localization System*
Yang Gu, Junfa Liu, Yiqiang Chen and Xinlong Jiang 732

4:40PM *Intelligent Facial Action and Emotion Recognition for Humanoid Robots*
Li Zhang, Ming Jiang and Alamgir Hossain 739

5:00PM *Speaker Verification with Deep Features*
Yuan Liu, Tianfan Fu, Yuchen Fan, Yanmin Qian and Kai Yu 747

5:20PM *Qualitative Approach for Inverse Kinematic Modeling of a Compact Bionic Handling Assistant Trunk*
Achille Melingui, Rochdi Merzouki, Jean Bosco Mbede, Coralie Escande, Boubaker Daachi and Nabil Benoudjit 754

5:40PM *Automatic Cluster Labeling through Artificial Neural Networks*
Lucas Lopes, Vinicius Machado and Ricardo Rabelo 762

MoN2-5 Feedforward Neural Networks I, Chair: Meng Joo Er, Room: 305D

4:00PM *A Fast and Effective Extreme Learning Machine Algorithm without Tuning*
Meng Joo Er, Zhifei Shao and Ning Wang 770

4:20PM *Aggregation of PI-Based Forecast to Enhance Prediction Accuracy*
Mohammad Anwar Hosen, Abbas Khosravi, Saeid Nahavandi and Douglas Creighton 778

4:40PM *GPU Implementation of the Feedforward Neural Network with Modified Levenberg-Marquardt Algorithm*
Tomislav Bacek, Dubravko Majetic and Danko Brezak 785

5:00PM *Coarse and Fine Learning in Deep Networks*
Anthony Knittel and Alan Blair 792

5:20PM *Constrained Extreme Learning Machine: A Novel Highly Discriminative Random Feedforward Neural Network*
Wentao Zhu, Jun Miao and Laiyun Qing 800

5:40PM *Self-Learning Recursive Neural Networks for Structured Data Classification*
Bouchachia Abdelhamid 808

MoN2-6 Time Series Analysis II, Chair: Eros Pasero, Room: 305E

4:00PM *Data-Aware Remaining Time Prediction of Business Process Instances*
Mirko Polato, Alessandro Sperduti, Andrea Burattin and Massimiliano de Leoni 816

4:20PM *Forecasting Hourly Electricity Load Profile Using Neural Networks*
Mashud Rana, Irena Koprinska and Alicia Troncoso 824

4:40PM *Time Series Forecasting via Weighted Combination of Trend and Seasonality Respectively with Linearly Declining Increments and Multiple Sine Functions*
Wenchao Lao, Ying Wang, Chen Peng, Chengxu Ye and Yunong Zhang 832

5:00PM *A Factor - Artificial Neural Network Model for Time Series Forecasting: The Case of South Africa*
Ali Babikir and Henry Mwambi 838

5:20PM *A Neural Network Based Approach to Support the Market Making Strategies in High-Frequency Trading*
Everton Silva, Douglas Castilho, Adriano Pereira and Humberto Brandao 845

5:40PM *A Monte Carlo Strategy for Structured Multiple-Step-Ahead Time Series Prediction*
Gianluca Bontempi 853

MoN2-7 Hybrid Learning Methods, Chair: Anne Canuto, Room: 303

4:00PM *Face Recognition through a Chaotic Neural Network Model*
Luis Fernando Martins Carlos Jr. and Joao Luis Rosa 859

4:20PM *Confidence Factor and Feature Selection for Semi-Supervised Multi-Label Classification Methods*
Fillipe Rodrigues, Anne Canuto and Araken Santos 864

4:40PM *Applying the Self-Training Semi-Supervised Learning in Hierarchical Multi-Label Methods*
Araken Santos and Anne Canuto 872

5:00PM *Sampling-Based Learning Control for Quantum Discrimination and Ensemble Classification*
Chunlin Chen, Daoyi Dong, Bo Qi, Ian Petersen and Herschel Rabitz 880

5:20PM *An Improved Extreme Learning Machine with Adaptive Growth of Hidden Nodes Based on Particle Swarm Optimization*
Min-Ru Zhao, Jian-Ming Zhang and Fei Han 886

5:40PM *Structural Representation and Reasoning in a Hybrid Cognitive Architecture*
John Licato, Ron Sun and Selmer Bringsjord 891

Tuesday, July 8, 1:30PM-3:30PM

Special Session: TuN1-1 International Workshop on Computational Energy Management in Smart Grids I, Chair: Stefano Squartini and Derong Liu, Room: 308

1:30PM *Exploring the Performance of Non-Negative Multi-Way Factorization for Household Electrical Seasonal Consumption Disaggregation*
Marisa Figueiredo, Bernardete Ribeiro and Ana de Almeida 899

1:50PM *Community Detection Based on Local Topological Information in Power Grid*
Zengqiang Chen, Zheng Xie and Qing Zhang 907

2:10PM *A Heuristic to Generate Initial Feasible Solutions for the Unit Commitment Problem*
Yi Sun, Y.S. Albert Lam and O.K. Victor Li 913

2:30PM *Computational Intelligence in Smart Water and Gas Grids: An Up-to-Date Overview*
Marco Fagiani, Stefano Squartini, Leonardo Gabrielli, Mirco Pizzichini and Susanna Spinsante 921

2:50PM *Residential Energy System Control and Management Using A Hill-Climbing Heuristic Method*
Luiz Carlos Roth, Eugenius Kaszkurewicz and Amit Bhaya 927

Special Session: TuN1-2 Intelligent Vehicle Systems, Chair: Chaomin Luo and Yi Murphey, Room: 305A

1:30PM *A Computationally Efficient Neural Dynamics Approach to Trajectory Planning of an Intelligent Vehicle*
Chaomin Luo and Jiyong Gao 934

1:50PM *Decision Tree Assisted EKF for Vehicle Slip Angle Estimation Using Inertial Motion Sensors*
James Coyte, Boyuan Li, Haiping Du, Weihua Li, David Stirling and Montserrat Ros 940

2:10PM *Traffic Sign Recognition Using a Novel Permutation-Based Local Image Feature*
Tian Tian, Ishwar Sethi and Patel Nilesh 947

2:30PM *Specific Humidity Forecasting Using Recurrent Neural Network*
Chen Fang, Xipeng Wang and Yi Murphey 955

2:50PM *A Computationally Efficient Complete Area Coverage Algorithm for Intelligent Mobile Robot Navigation*
Eene Eu Jan, Shao-Ting Shih, Lun-Ping Hung and Chaomin Luo 961

3:10PM *Intelligent Trip Modeling on Ramps Using Ramp Classification and Knowledge Base*
Xipeng Wang, Jungme Park, Yi Murphey, Johannes Kristinsson, Ming Kuang and Tony Phillips 967

Special Session: TuN1-3 Biologically Inspired Computational Vision, Chair: Khan Iftekharuddin, Room: 305B

1:30PM *Plant Recognition Based on Intersecting Cortical Model*
Zhaobin Wang, Xiaoguang Sun, Yaonan Zhang, Yide Ma, Hongjuan Zhang, Yurun Ma and Weiying Xie 975

1:50PM *Image Factorization and Feature Fusion for Enhancing Robot Vision in Human Face Recognition*
Hui Yu 981

2:10PM *Linear Regression for Head Pose Analysis*
Hui Yu and Honghai Liu 987

2:30PM *Improved Training of Cellular SRN Using Unscented Kalman Filtering for ADP*
Lasitha Vidyaratne, Mahbubul Alam, John Anderson and Khan Iftekharuddin 993

2:50PM *Retinal Blood Vessel Segmentation Using Bee Colony Optimisation and Pattern Search*
Eid Emary, Hossam Zawbaa, Aboul Ella Hassanien, Gerald Schaefer and Ahmad Taher Azar 1001

3:10PM *Shoreline Extraction from the Fusion of LiDAR DEM Data and Aerial Images Using Mutual Information and Genetic Algrithms*
Amr Yousef and Khan Iftekharuddin 1007

TuN1-4 Real World Applications II, Chair: Lipo Wang, Room: 305C

1:30PM *A Novel Fuzzy Multi-Objective Framework to Construct Optimal Prediction Intervals for Wind Power Forecast*
Abdollah Kavousi-Fard, Abbas Khosravi and Saeid Nahavandi 1015

1:50PM *AORS: Affinity-Based Outlier Ranking Score*
Shaohong Zhang, Hau-San Wong, Wen-Jun Shen and Dongqing Xie 1020

2:10PM *Applications of Probabilistic Model Based on JoyStick Probability Selector*
Marko Jankovic and Nikola Georgijevic 1028

2:30PM *An Intelligent Analysis and Prediction Model for On-Demand Cloud Computing Systems*
Xiuju Fu, Xiaorong Li, Yongqing Zhu, Lipo Wang and Siow mong, Rick Goh 1036

2:50PM *Learning Using Privileged Information (LUPI) for Modeling Survival Data*
Han-Tai Shiao and Vladimir Cherkassky 1042

3:10PM *A Google Approach for Computational Intelligence in Big Data*
Andreas Antoniades and Clive Cheong Took 1050

TuN1-5 Feedforward Neural Networks II, Chair: Brijesh Verma, Room: 305D

1:30PM *Explicit Feature Mapping via Multi-Layer Perceptron and Its Application to Mine-Like Objects Detection*
Hang Shao and Nathalie Japkowicz 1055

1:50PM *Compressing VG-RAM WNN Memory for Lightweight Applications*
Edilson de Aguiar, Avelino Forechi, Lucas de Paula Veronese, Mariella Berger, Alberto F. De Souza, Claudine Badue and Oliveira-Santos Thiago 1063

2:10PM *Data Driven Modeling for UGI Gasification Process via a Variable Structure Genetic BP Neural Network*
Shida Liu, Zhongsheng Hou and Chenkun Yin 1071

2:30PM *MofN Rule Extraction from Neural Networks Trained with Augmented Discretized Input*
Rudy Setiono, Arnulfo Azcarraga and Yoichi Hayashi 1079

2:50PM *Optimizing Configuration of Neural Ensemble Network for Breast Cancer Diagnosis*
Peter McLeod and Brijesh Verma 1087

3:10PM *An Efficient Conjugate Gradient Based Multiple Optimal Learning Factors Algorithm of Multilayer Perceptron Neural Network*
Xun Cai, Kanishka Tyagi and Michael T Manry 1093

TuN1-6 Supervised Learning I, Chair: Jose Principe, Room: 305E

1:30PM *Imputation of Missing Data Supported by Complete p-Partite Attribute-Based Decision Graphs*
Joao Bertini, Maria Nicoletti and Liang Zhao 1100

1:50PM *An Asymmetric Stagewise Least Square Loss Function for Imbalanced Classification*
Guibiao Xu, Bao-Gang Hu and Jose Principe 1107

2:10PM *An Analysis Based on F-Discrepancy for Sampling in Regression Tree Learning*
Cristiano Cervellera, Mauro Gaggero and Danilo Maccio 1115

2:30PM *Coupled Fuzzy k-Nearest Neighbors Classification of Imbalanced Non-IID Categorical Data*
Chunming Liu, Longbing Cao and Philip S Yu 1122

2:50PM *Wind Power Forecasting- An Application of Machine Learning in Renewable Energy*
Jawad Ali, Gul Muhammad Khan and Sahibzada Ali Mahmud 1130

3:10PM *Signature Identification via Efficient Feature Selection and GPU-Based SVM Classifier*
Bernardete Ribeiro, Noel Lopes and Joao Goncalves 1138

Tuesday, July 8, 3:30PM-6:00PM

Poster Session: PN2 Poster Session 2, Chair: Danil Prokhorov, Room: Posters Area (Level 3)

P301 *Hopfield Neural Network for Seismic Velocity Picking*
Kou-Yuan Huang and Jia-Rong Yang 1146

P302 *Deep Neural Networks for Mandarin Tone Recognition*
Mingming Chen, Zhanlei Yang and WenJu Liu 1154

P303 *An Adaptive Multiclass Boosting Algorithm for Classification*
Shixun Wang, Peng Pan and Yansheng Lu 1159

P304 *Animal Group Behavioral Model with Evasion Mechanism*
Zhiping Duan and Xiaodong Gu 1167

P305 *Superpixel Appearance and Motion Descriptors for Action Recognition*
Xuan Dong, Ah-Chung Tsoi and Sio-Long Lo 1173

P306 *Structured Sparse Coding Method for Infrared Small Target Detection in Video Sequence*
Chunwei Yang, Huaping Liu, Shouyi Liao and Shicheng Wang 1179

P307 *Human Activity Recognition Using Smart Phone Embedded Sensors: A Linear Dynamical Systems Method*
Wen Wang, Huaping Liu, Lianzhi Yu and Fuchun Sun 1185

P308 *Effect of Spectrum Occupancy on the Performance of a Real Valued Neural Network Based Energy Detector*
Adeiza James Onumanyi, Elizabeth Onwuka, Abiodun Musa Aibinu, Okechukwu Ugweje and Momoh Jimoh Salami 1191

P309 *Scale Invariant Feature Transform Flow Trajectory Approach with Applications to Human Action Recognition*
Jia-Tao Zhang, Ah-Chung Tsoi and Sio-Long Lo 1197

P310 *An Effective Criterion for Pruning Reservoir's Connections in Echo State Networks*
Simone Scardapane, Gabriele Nocco, Danilo Comminiello, Michele Scarpiniti and Aurelio Uncini 1205

P311 *Similarity-Balanced Discriminant Neighborhood Embedding*
Chuntao Ding, Li Zhang, Yaping Lu and Shuping He 1213

P312 *Stability of a Neutral Delay Neuron System in the Critical Case*
Xiaofeng Liao 1221

P313 *Further Enhancements in WOM Algorithm to Solve the Local Minimum and Flat-Spot Problem in Feed-Forward Neural Networks*
Chi Chung Cheung, Sin Chun Ng, Andrew K Lui and Sean Shensheng Xu 1225

P314 *Extending Dynamic SOMs to Capture Incremental Changes in Data*
Thushan Ganegedara, Lasindu Vidana Pathiranage, Ruwan Gunarathna, Buddhima Wijeweera, Amal Shehan and Damminda Alahakoon 1231

P315 *Application of Fuzzy Systems in the Control of a Shunt Active Power Filter with Four-Leg Topology*
Edson Junior Acordi, Ivan Nunes Silva and Ricardo Quadros Machado 1239

P316 *Highly Sensitive Weak Signal Acquisition Method for GPS/Compass*
Song Li, Qing-ming Yi, Min Shi and Qing Chen 1245

P317 *Mining User Tasks from Print Logs*
Xin Li, Lei Zhang, Ping Luo, Enhong Chen, Guandong Xu, Yu Zong and Chu Guan 1250

P318 *Adaptive Backstepping-Based Nonlinear Disturbance Observer for Fin Stabilizer System*
Weiwei Bai and Tieshan Li 1258

P319 *Multiagent Evolutionary Design of Flexible Beta Basis Function Neural Tree*
Marwa Ammar, Souhir Bouaziz, Adel M. Alimi and Ajith Abraham 1265

P320 *Similarity Michaelis-Menten Law Pre-Processing Descriptor for Face Recognition*
Suli Ji, Baochang Zhang, Dandan Du and Jianzhuang Liu 1272

P321 *Single Image Super-Resolution via Learned Representative Features and Sparse Manifold Embedding*
Liao Zhang, Shuyuan Yang, Jiren Zhang and Licheng Jiao 1278

P322 *Facial Expression Recognition under Random Block Occlusion Based on Maximum Likelihood Estimation Sparse Representation*
S. S. Liu, Y. Zhang and K. P. Liu 1285

P323 *Non-Singular Terminal Sliding Mode Control for Landing on Asteroids Based on RBF Neural Network*
K. P. Liu, F. X. Liu, S. S. Liu and Y. C. Li 1291

P324 *Automatic Forest Species Recognition Based on Multiple Feature Sets*
Marcelo N. Kapp, Rodrigo Bloot, Paulo R. Cavalin and Luiz E. S. Oliveira 1296

P325 *Approximate Planning in POMDPs via MDP Heuristic*
Yong Lin, Xingjia Lu and Makedon Fillia 1304

P326 *A Neural Network Left-Inversion Flux Estimation for Induction Motor Filed-Oriented Control*
Hao Zhang, Guohai Liu, Li Qu and Yan Jiang 1310

P327 *The Transformer Fault Diagnosis Combing KPCA with PNN*
Chenxi Dai, Zhigang Liu and Yan Cui 1314

P328 *Classifying Web Documents Using Term Spectral Transforms and Multi-Dimensional Latent Semantic Representation*
Haijun Zhang, Shifu Bie and Bin Luo 1320

P329 *A Hopfield Neural Network Based Algorithm for Haplotype Assembly from Low-Quality Data*
Xiao Chen, Qinke Peng, Libin Han and Xiao Wang 1328

P330 *Distributed Control for Second-Order Leader-Following Multi-Agent Systems with Heterogeneous Leader*
Hongjing Liang, Yingchun Wang, Zhanshan Wang and Huaguang Zhang 1334

P331 *A Multiplicative Update Algorithm for Nonnegative Convex Polyhedral Cone Learning*
Qizhao Cai, Kan Xie and Zhaoshui He 1339

P332 *Neural-Based Adaptive Integral Sliding Mode Tracking Control for Nonlinear Interconnected Systems*
Wen-Shyong Yu and Chien-Chih Weng 1344

P333 *IR Remote Sensing Image Registration Based on Multi-Scale Feature Extraction*
Jun Kong, Min Jiang and Yi-Ning Sun 1352

P334 *Learning Rates of Neural Network Estimators via the New FNNs Operators*
Yi Zhao and Dansheng Yu 1359

P335 *Image Encryption Based on Compressed Sensing and Blind Source Separation*
Zuyuan Yang, Yong Xiang and Chuan Lu 1366

P336 *A Modular Neural Network Architecture that Selects a Different Set of Features per Module*
Diogo Severo, Everson Verissimo, George Cavalcanti and Ing Ren Tsang 1370

P337 *Extracting Nonlinear Correlation for the Classification of Single-Trial EEG in a Finger Movement Task*
Jun Lu, Kan Xie and Zeng Tang 1375

P338 *Vessel Maneuvering Model Identification Using Multi-Output Dynamic Radial-Basis-Function Networks*
Ning Wang, Nuo Dong and Min Han 1380

P339 *Intrusion Detection Using a Cascade of Boosted Classifiers (CBC)*
Mubasher Baig, El-Sayed El-Alfy and Mian Awais 1386

P340 *Data Dimensionality Reduction Approach to Improve Feature Selection Performance Using Sparsified SVD*
Pengpeng Lin, Jun Zhang and Ran An 1393

P341 *Visualization and Pattern Discovery of Social Interactions and Repost Propagation in Sina Weibo*
Xuming Huang, Cong Quan, Shuwei Liu and Yuanyuan Man 1401

P342 *A Transductive Support Vector Machine with Adjustable Quasi-Linear Kernel for Semi-Supervised Data Classification*
Bo Zhou, Chenlong Hu and Jinglu Hu 1409

P343 *Multi-Kernel Linear Programming Support Vector Regression with Prior Knowledge*
Jinzhu Zhou 1416

P344 *An Autonomous Trader Agent for the Stock Market Based on Online Sequential Extreme Learning Machine Ensemble*
Rodolfo C. Cavalcante and Adriano Oliveira 1424

Tuesday, July 8, 4:00PM-6:00PM

Special Session: TuN2-1 International Workshop on Computational Energy Management in Smart Grids II, Chair: Dongbin Zhao and Haibo He, Room: 308

4:00PM *Kernel Canonical Variate Analysis Based Management System for Monitoring and Diagnosing Smart Homes*
Andrea Giantomassi, Francesco Ferracuti, Sabrina Iarlori, Sauro Longhi, Alessandro Fonti and Gabriele Comodi 1432

4:20PM *Frequency Control Using On-Line Learning Method for Island Smart Grid with EVs and PVs*
Yufei Tang, Jun Yang, Jun Yan, Zhili Zeng and Haibo He 1440

4:40PM *Home Energy Management Benefits Evaluation Through Fuzzy Logic Consumptions Simulator*
Lucio Ciabattoni, Massimo Grisostomi, Gianluca Ippoliti and Sauro Longhi 1447

5:00PM *Reactive Power Control of DFIG Wind Farm Using Online Supplementary Learning Controller Based on Approximate Dynamic Programming*
Wentao Guo, Feng Liu, Dawei He, Jennie Si, Ronald Harley and Shengwei Mei 1453

5:20PM *A Hierarchical Classification Algorithm for Evaluating Energy Consumption Behaviors*
Li Bu, Dongbin Zhao, Yu Liu and Qiang Guan 1461

Special Session: TuN2-2 Neural Networks Applied to Vision and Robotics I, Chair: Jose Garcia Rodriguez and Jorge Azorin, Room: 305A

4:00PM *Augmenting the NEAT Algorithm to Improve Its Temporal Processing Capabilities*
Pilar Caamano, Francisco Bellas and Richard Duro 1467

4:20PM *3D Colour Object Reconstruction Based on Growing Neural Gas*
Sergio Orts-Escolano, Jose Garcia-Rodriguez, Vicente Morell, Miguel Cazorla and Juan Manuel Garcia-Chamizo 1474

4:40PM *3D Maps Representation Using GNG*
Vicente Morell, Miguel Cazorla, Sergio Orts-Escolano and Jose Garcia-Rodriguez 1482

5:00PM *Intelligent Visual Servoing for Nonholonomic Mobile Robots*
Carlos Lopez-Franco, Michel Lopez-Franco, Edgar Sanchez and Alma Y. Alanis 1488

5:20PM *A Predictive Model for Recognizing Human Behaviour Based on Trajectory Representation*
Jorge Azorin-Lopez, Marcelo Saval-Calvo, Andres Fuster-Guillo and Antonio Oliver-Albert 1494

5:40PM *Facial Expressions Recognition System Using Bayesian Inference*
Maninderjit Singh, Anima Majumder and Laxmidhar Behera 1502

Special Session: TuN2-3 Autonomous Learning, Chair: Plamen Angelov and Asim Roy, Room: 305B

4:00PM *A Computationally Fast Interval Type-2 Neuro-Fuzzy Inference System and Its Meta-Cognitive Projection Based Learning Algorithm*
Ankit Kumar Das, Kartick Subramanian and Suresh Sundaram 1510

4:20PM *WWN: Integration with Coarse-to-Fine, Supervised and Reinforcement Learning*
Zejia Zheng, Juyang Weng and Zhengyou Zhang 1517

4:40PM *From Here to AGI: A Roadmap to the Realization of Human-Level Artificial General Intelligence*
Ben Goertzel 1525

5:00PM *A Fast Learning Variable Lambda TD Model Used to Realize Home Aware Robot Navigation*
Abdulrahman Altahhan 1534

5:20PM *User Daily Activity Pattern Learning: A Multi-Memory Modeling Approach*
Shan Gao and Ah-Hwee Tan 1542

5:40PM *Mobile Humanoid Agent with Mood Awareness for Elderly Care*
Di Wang and Ah-Hwee Tan 1549

6:00PM *A New Unsupervised Approach to Fault Detection and Identification*
Bruno Costa, Plamen Angelov and Luiz Guedes 1557

TuN2-4 Machine Learning: Complexity and Optimization, Chair: Albert Lam, Room: 305C

4:00PM *Dimensionality Reduction Assisted Tensor Clustering*
Yanfeng Sun, Junbin Gao, Xia Hong, Yi Guo and Chris Harris 1565

4:20PM *Particle Swarm Optimization for Convolved Gaussian Process Models*
Gang Cao, Edmund M-K Lai and Fakhrul Alam 1573

4:40PM *A Flocking-Like Technique to Perform Semi-Supervised Learning*
Roberto Gueleri, Thiago Cupertino, Andre Carvalho and Liang Zhao 1579

5:00PM *Finding Convex Hull Vertices in Metric Space*
Jinhong Zhong, Ke Tang and Kai Qin 1587

5:20PM *An Identifying Function Approach for Determining Structural Identifiability of Parameter Learning Machines*
Zhi-Yong Ran and Bao-Gang Hu 1593

5:40PM *Detection of Non-Structural Outliers for Microarray Experiments*
Zihua Yang and ZhengRong Yang 1600

TuN2-5 Feature Extraction and Intelligent Systems, Chair: Sung-Bae Cho, Room: 305

4:00PM *Variable Selection for Regression Problems Using Gaussian Mixture Models to Estimate Mutual Information*
Emil Eirola, Amaury Lendasse and Juha Karhunen 1606

4:20PM *Scene Image Classification Using a Wigner-Based Local Binary Patterns Descriptor*
Atreyee Sinha, Sugata Banerji and Chengjun Liu 1614

4:40PM *Integrating Supervised Subspace Criteria with Restricted Boltzmann Machine for Feature Extraction*
Guo-Sen Xie, Xu-Yao Zhang, Yan-Ming Zhang and Cheng-Lin Liu 1622

5:00PM *Semi-Supervised Sparse Coding*
Jim Jing-Yan Wang and Xin Gao 1630

5:20PM *Investigation of Multi-Layer Perceptron with Pulse Glial Chain Based on Individual Inactivity Period*
Chihiro Ikuta, Yoko Uwate and Yoshifumi Nishio 1638

5:40PM *Identification of Meat Spoilage by FTIR Spectroscopy and Neural Networks*
Vassilis Kodogiannis, Ilias Petrounias and Eva Kontogianni 1644

TuN2-6 Supervised Learning II, Chair: Fakhri Karray, Room: 305E

4:00PM *Max-Dependence Regression*
Pouria Fewzee, Ali-Akbar Samadani, Dana Kulic and Fakhri Karray 1652

4:20PM *K-Associated Optimal Network for Graph Embedding Dimensionality Reduction*
Murillo Carneiro, Thiago Cupertino and Liang Zhao 1660

4:40PM *Max-Margin Latent Feature Relational Models for Entity-Attribute Networks*
Fei Xia, Ning Chen, Jun Zhu, Aonan Zhang and Xiaoming Jin 1667

5:00PM *Dual Instance and Attribute Weighting for Naive Bayes Classification*
Jia Wu, Shirui Pan, Zhihua Cai, Xingquan Zhu and Chengqi Zhang 1675

5:20PM *Learning from Combination of Data Chunks for Multi-Class Imbalanced Data*
Xu-Ying Liu and Qian-Qian Li 1680

5:40PM *Dual Deep Neural Network Approach to Matching Data in Different Modes*
Mark Eastwood and Chrisina Jayne 1688

Wednesday, July 9, 1:30PM-3:30PM

Special Session: WeN1-1 International Workshop on Computational Energy Management in Smart Grids III, Chair: Stefano Squartini and Francesco Piazza, Room: 308

1:30PM *Computational Framework Based on Task and Resource Scheduling for Micro Grid Design*
Marco Severini, Stefano Squartini and Francesco Piazza 1695

1:50PM *An Optimal Real-Time Pricing for Demand-Side Management: A Stackelberg Game and Genetic Algorithm Approach*
Fan-Lin Meng and Xiao-Jun Zeng 1703

2:10PM *A Simulation Based Approach to Forecast a Demand Load Curve for a Container Terminal Using Battery Powered Vehicles*
Nico Grundmeier, Norman Ihle, Axel Hahn, Claas Meyer-Barlag and Serge Runge 1711

2:30PM *Fuzzy Power Management for Environmental Monitoring Systems in Tropical Regions*
Asher G. Watts, Michal Prauzek, Petr Musilek, Emil Pelikan and Arturo Sanchez-Azofeifa 1719

2:50PM *Solar Radiation Forecasting under Asymmetric Cost Functions*
Seyyed A. Fatemi and Anthony Kuh 1727

3:10PM *Selection of Weighing Functions in H-infinity Controller Design Using PBIL*
Prosser Munawa and Komla Folly 1733

Special Session: WeN1-2 International Workshop on Advances in Learning from/with Multiple Learners, Chair: Nistor Grozavu and Guenael Cabanes, Room: 305A

1:30PM *Feature Ensemble Learning Based on Sparse Autoencoders for Image Classification*
Yaping Lu, Li Zhang, Bangjun Wang and Jiwen Yang 1739

1:50PM *A Review of Adaptive Feature Extraction and Classification Methods for EEG-Based Brain-Computer Interfaces*
Shiliang Sun and Jin Zhou 1746

2:10PM *Diversity Analysis in Collaborative Clustering*
Nistor Grozavu, Guenael Cabanes and Younes Bennani 1754

2:30PM *Solving Unbalanced Problems in Similarity Learning Using SVM Ensemble*
Peipei Xia and Li Zhang 1762

2:50PM *Sharing Information on Extended Reachability Goals Over Propositionally Constrained Multi-Agent State Spaces*
Anderson Araujo and Carlos Henrique Ribeiro 1769

3:10PM *A New Ensemble Method for Multi-Label Data Stream Classification in Non-Stationary Environment*
Ge Song and Yunming Ye 1776

3:30PM *An Evaluation of the Environmental Sustainability Index in Terms of Its Prediction and Clustering Capabilities*
Tatiana Tambouratzis 1784

Special Session: WeN1-3 Machine Learning for Computer Vision I, Chair: Brijesh Verma and Mohammed Bennamoun, Room: 305B

1:30PM *Retinal Vessel Segmentation Based on Possibilistic Fuzzy c-means Clustering Optimised with Cuckoo Search*
Eid Emary, Hossam Zawbaa, Aboul Ella Hassanien, Gerald Schaefer and Ahmad Taher Azar 1792

1:50PM *Large Margin Image Set Representation and Classification*
Jim Jing-Yan Wang, Majed Alzahrani and Xin Gao 1797

2:10PM *Improving Machine Vision via Incorporating Expectation-Maximization into Deep Spatio-Temporal Learning*
Min Jiang, Yulong Ding, Goertzel Ben, Zhongqiang Huang and Fei Chao 1804

2:30PM *Low-Rank Representation Based Action Recognition*
Xiangrong Zhang, Yang Yang, Hanghua Jia, Huiyu Zhou and Licheng Jiao 1812

2:50PM *Interpolating Deep Spatio-Temporal Inference Network Features for Image Classification*
Yongfeng Zhang, Changjing Shang and Qiang Shen 1819

3:10PM *A Study on Word-Level Multi-Script Identification from Video Frames*
Nabin Sharma, Umapada Pal and Michael Blumenstein 1827

WeN1-4 Intelligent Systems and Applications, Chair: Ivo Bukovsky, Room: 305C

1:30PM *B-Spline Neural Network Based Single-Carrier Frequency Domain Equalization for Hammerstein Channels*
Xia Hong, Sheng Chen and Chris Harris 1834

1:50PM *Coordinated Pattern Tracking of Multiple Marine Surface Vehicles with Uncertain Kinematics and Kinetics*
Zhouhua Peng, Dan Wang, Hao Wang and Wei Wang 1842

2:10PM *A Real-Time Driver Identification System Based on Artificial Neural Networks and Cepstral Analysis*
Ines del Campo, Raul Finker, Victoria Martinez, Javier Echanobe and Faiyaz Doctor 1848

2:30PM *An Approach to Exploit Non-Optimized Data for Efficient Control of Unknown Systems through Neural and Kernel Models*
Cristiano Cervellera, Mauro Gaggero, Danilo Maccio and Roberto Marcialis 1856

2:50PM *Neural Network Approach to Hoist Deceleration Control*
Peter Benes and Ivo Bukovsky 1864

WeN1-5 Unsupervised Learning and Clustering I, Chair: Fuchun Sun, Room: 305D

1:30PM *A Locally Adaptive Boundary Evolution Algorithm for Novelty Detection Using Level Set Methods*
Xuemei Ding, Yuhua Li, Ammar Belatreche and Liam Maguire 1870

1:50PM *Tensor LRR Based Subspace Clustering*
Yifan Fu, Junbin Gao, David Tien and Zhouchen Lin 1877

2:10PM *A Kernel K-Means Clustering Algorithm Based on an Adaptive Mahalanobis Kernel*
Marcelo Ferreira and Francisco De Carvalho 1885

2:30PM *A New Distance Metric for Unsupervised Learning of Categorical Data*
Hong Jia and Yiu-ming Cheung 1893

2:50PM *Box-Constrained Projective Nonnegative Matrix Factorization via Augmented Lagrangian Method*
Xiang Zhang, Naiyang Guan, Long Lan, Dacheng Tao and Zhigang Luo 1900

3:10PM *A Survey of Distance / Similarity Measures For Categorical Data*
Madhavi Alamuri, Bapi Raju Surampudi and Atul Negi 1907

WeN1-6 Supervised and Semi-Supervised Learning, Chair: Marley Vellasco, Room: 305E

1:30PM *Lattice Sampling for Efficient Learning with Nadaraya-Watson Local Models*
Cristiano Cervellera, Mauro Gaggero, Danilo Maccio and Roberto Marcialis 1915

1:50PM *Trimmed Affine Projection Algorithms*
Badong Chen, Xiaohan Yang, Hong Ji, Hua Qu, Nanning Zheng and Jose Principe 1923

2:10PM *Reconstructable Generalized Maximum Scatter Difference Discriminant Analysis*
Kai Huang and Liqing Zhang 1929

2:30PM *Music Genre Classification Using On-Line Dictionary Learning*
M. Srinivas, Debaditya Roy and C. Krishna Mohan 1937

2:50PM *Semi-Supervised Local-Learning-Based Feature Selection*
Jim Jing-Yan Wang, Jin Yao and Yijun Sun 1942

Industrial Session: WeN1-7 CI on Smart Grid and Energy Efficiency, Chair: Marco Mussetta and Timothy Havens, Room: 303

1:30PM *Fault Recognition in Smart Grids by a One-Class Classification Approach*
Enrico De Santis, Lorenzo Livi, Alireza Sadeghian and Antonello Rizzi 1949

1:50PM *Hybrid Model Analysis and Validation for PV Energy Production Forecasting*
Alessandro Gandelli, Francesco Grimaccia, Sonia Leva, Marco Mussetta and Emanuele Ogliari 1957

2:10PM *Personalized Sensing towards Building Energy Efficiency and Thermal Comfort*
Huafen Hu, Yonghong Huang, Milan Milenkovic, Chad Miller and Ulf Hanebutte 1963

2:30PM *A Supervised Approach to Electric Tower Detection and Classification for Power Line Inspection*
Carlos Sampedro, Carol Martinez, Aneesh Chauhan and Pascual Campoy 1970

2:50PM *Random Forest Based Adaptive Non-Intrusive Load Monitoring*
Jie Mei, Dawei He, Ronald Harley and Thomas Habetler 1978

Wednesday, July 9, 3:30PM-6:00PM

Poster Session: PN3 Poster Session 3, Chair: Manuel Roveri, Room: Posters Area (Level 3)

P501 *An Implementation of the Path Integrator Mechanism of Head Direction Cells for Bio-Mimetic Navigation*
Ankur Sinha and Jack Wang 1984

P502 *A Legged Central Pattern Generation Model for Autonomous Gait Transition.*
Zhijun Yang, Rocha Marlon, Lima Priscila, Karamanoglu Mehmet and Franca Felipe 1992

P503 *An Algorithm for Real-Time Object Tracking in Complex Environment*
Dongxu Gao, Jiangtao Cao and Zhaojie Ju 1996

P504 *Robust Prediction in Nearly Periodic Time Series Using Motifs*
Woon Huei Chai, Hongliang Guo and Shen-Shyang Ho 2003

P505 *A Hybrid Coupled k-Nearest Neighbor Algorithm on Imbalance Data*
Chunming Liu, Longbing Cao and Philip S Yu 2011

P506 *A Consensus-Based Semi-Supervised Growing Neural Gas*
Vinicius Maximo, Marcos Quiles and Maria Nascimento 2019

P507 *Bio-Inspired Architecture for a Reactive-Deliberative Robot Controller*
Fabian Rubilar, Maria-Jose Escobar and Tomas Arredondo 2027

P508 *Improved Keyword Spotting System by Optimizing Posterior Confidence Measure Vector Using Feed-Forward Neural Network*
Yuchen Liu, Mingxing Xu and Lianhong Cai 2036

P509 *Agglomerative Clustering of Defects in Ultrasonic Non-Destructive Testing Using Hierarchical Mixtures of Independent Component Analyzers*
Addisson Salazar, Jorge Igual and Luis Vergara 2042

P510 *Completed Hybrid Local Binary Pattern for Texture Classification*
Jing-Hua Yuan, Hao-Dong Zhu, Yong Gan and De-Shuang Huang 2050

P511 *Pitch Estimation Using Non-Negative Matrix Factorization*
Ryan Burt, Goktug Cinar and Jose Principe 2058

P512 *On the Dynamics of the High Order Type of Neural Networks with Time Varying Coefficients and Mixed Delay*
Hajer Brahmi, Boudour Ammar, Farouk Cherif and Adel M. Alimi 2063

P513 *DL-Pro: A Novel Deep Learning Method for Protein Model Quality Assessment*
Son Nguyen, Yi Shang and Dong Xu 2071

P514 *Mimicking the Worm - An Adaptive Spiking Neural Circuit for Contour Tracking Inspired by C. Elegans Thermotaxis*
Ashish Bora, Arjun Rao and Bipin Rajendran 2079

P515 *Neural Approach for Bearing Fault Classification in Induction Motors by Using Motor Current and Voltage*
W. F. Godoy, I. N. da Silva, A. Goedtel, R. H. C. Palacios and W. S. Gongora 2087

P516 *Efficient Class Incremental Learning for Multi-Label Classification of Evolving Data Streams*
Zhongwei Shi, Yimin Wen and Yun Xue 2093

P517 *Probabilistic Point Set Matching with Gaussian Mixture Model*
Han-Bing Qu and Jia-Qiang Wang 2100

P518 *EEG Analysis for Cognitive Failure Detection in Driving Using Neuro-Evolutionary Synergism*
Anuradha Saha, Amit Konar, Ritambhar Burman and Atulya Nagar 2108

P519 *Multi-Objective Optimization of a Hybrid Model for Network Traffic Classification by Combining Machine Learning Techniques*
Zuleika Nascimento, Djamel Sadok, Stenio Fernandes and Judith Kelner 2116

P520 *Learning Motion-Difference Features Using Gaussian Restricted Boltzmann Machines for Efficient Human Action Recognition*
Tran Son, Benetos Emmanouil and Garcez Artur 2123

P521 *Color Image Processing Based on Nonnegative Matrix Factorization with Convolutional Neural Network*
Thanh Xuan Luong, Bo-Kyeong Kim and Soo-Young Lee 2130

P522 *Bottom-Up Model of Visual Saliency: A Viewpoint Based on Efficient Coding Hypothesis*
Hao Zhu and Biao Han 2136

P523 *Using Self-Organizing Incremental Neural Network (SOINN) for Radial Basis Function Networks*
Jie Lu, Furao Shen and Jinxi Zhao 2142

P524 *A New Multi-Task Learning Based Wi-Fi Location Approach Using $L_1/2$-Norm*
Wentao Mao, Haicheng Wang and Shangwang Liu 2149

P525 *A Combined Model for Scan Path in Pedestrian Searching*
Lijuan Duan, Zeming Zhao, Wei Ma, Jili Gu, Yuanhua Qiao and Zhen Yang 2156

P526 *Gain Parameters Based Complex-Valued BackPropagation Algorithm for Learning and Recognizing Hand Gestures*
Yuanshan Liu, He Huang and Tingwen Huang 2162

P527 *Tension Identification of Two-Motor System Based on Neural Network Left-Inverse*
Guohai Liu, Zhennan Cai, Wenxiang Zhao, Hao Zhang, Yan Jiang and Yaojie Mi 2167

P528 *Sideslip Angle Soft-Sensor Based on Neural Network Left Inversion for Multi-Wheel Independently Driven Electric Vehicles*
Penghu Miao, Guohai Liu, Duo Zhang, Yan Jiang, Hao Zhang and Huawei Zhou 2171

P529 *Fast Support Vector Data Description Training Using Edge Detection on Large Datasets*
Chenlong Hu, Bo Zhou and Jinglu Hu 2176

P530 *A Half-Split Grid Clustering Algorithm by Simulating Cell Division*
Wenxiang Dou and Jinglu Hu 2183

P531 *Stochastic Gradient Based Iterative Identification Algorithm for a Class of Dual-Rate Wiener Systems*
Jing Leng, Junpeng Li, Changchun Hua and Xinping Guan 2190

P532 *Wiener Model Identification of Blast Furnace Ironmaking Process Based on Laguerre Filter and Linear Programming Support Vector Regression*
Xia Xu, Changchun Hua, Yinggan Tang and Xinping Guan 2198

P533 *Learning Features from High Speed Train Vibration Signals with Deep Belief Networks*
Jipeng Xie, Yan Yang, Tianli Li and Weidong Jin 2205

P534 *A Neural Network and SOM Based Approach to Analyse Periodic Signals: Application to Oyster Heart-Rate Data*
Andrew Hellicar, Ashfaqur Rahman, Daniel Smith, Greg Smith and John McCulloch 2211

P535 *Bayesian Network Scores Based Text Localization in Scene Images*
Khalid Iqbal, Xu-Cheng Yin, Hong-Wei Hao, Sohail Asghar and Hazrat Ali 2218

P536 *Implementation of Memristive Neural Networks with Spike-Rate-Dependent Plasticity Synapses*
Yide Zhang, Zhigang Zeng and Shiping Wen 2226

P537 *Evaluation of Active Position Detection in Vehicular Ad Hoc Networks*
Kiran Penna, Venkatesh Yalavarthi, Huirong Fu and Ye Zhu 2234

P538 *Smart Bandwidth Management Using a Recurrent Neuro-Evolutionary Technique*
Rabia Arshad, Gul Muhammad Khan and Sahibzada Ali Mahmud 2240

P539 *Analog Memristive Time Dependent Learning Using Discrete Nanoscale RRAM Devices*
Aniket Singha, Bhaskaran Muralidharan and Bipin Rajendran 2248

P540 *Data Intensive Parallel Feature Selection Method Study*
Zhanquan Sun and Zhao Li 2256

P541 *Kernel Ridge Regression Classification*
Jinrong He, Lixin Ding, Lei Jiang and Ling Ma 2263

P542 *Causality Traces for Retrospective Learning in Neural Networks - Introduction of Parallel and Subjective Time Scales*
Katsunari Shibata 2268

P543 *Hardware Implementation of KLMS Algorithm Using FPGA*
Xiaowei Ren, Pengju Ren, Badong Chen, Tai Min and Nanning Zheng 2276

P544 *Parallelized Neural Networks as a Service*
Altaf Ahmad Huqqani, Erich Schikuta and Erwin Mann 2282

Wednesday, July 9, 4:00PM-6:00PM

Special Session: WeN2-2 Learning and Optimization in Multi-criteria Dynamic and Uncertain Environments, Chair: Madalina Drugan and Peter Vrancx, Room: 305A

4:00PM *The Scalarized Multi-Objective Multi-Armed Bandit Problem: An Empirical Study of Its Exploration vs. Exploitation Tradeoff*
Saba Yahyaa, Madalina Drugan and Bernard Manderick 2290

4:20PM *Accelerating Learning in Multi-Objective Systems through Transfer Learning*
Adam Taylor, Ivana Dusparic, Edgar Galvan-Lopez, Siobhan Clarke and Vinny Cahill 2298

4:40PM *A Novel Adaptive Weight Selection Algorithm for Multi-Objective Multi-Agent Reinforcement Learning*
Kristof Van Moffaert, Tim Brys, Arjun Chandra, Lukas Esterle, Peter Lewis and Ann Nowe 2306

5:00PM *Multi-Objectivization of Reinforcement Learning Problems by Reward Shaping*
Tim Brys, Anna Harutyunyan, Peter Vrancx, Matthew E. Taylor, Daniel Kudenko and Ann Nowe 2315

5:20PM *Policy Gradient Approaches for Multi-Objective Sequential Decision Making*
Simone Parisi, Matteo Pirotta, Nicola Smacchia, Luca Bascetta and Marcello Restelli 2323

5:40PM *Multi-Objective X-Armed Bandits*
Kristof Van Moffaert, Kevin Van Vaerenbergh, Peter Vrancx and Ann Nowe 2331

Special Session: WeN2-3 Machine Learning for Computer Vision II, Chair: Brijesh Verma and Mohammed Bennamoun, Room: 305B

4:00PM *An Interpretable Graph-Based Image Classifier*
Filippo Maria Bianchi, Simone Scardapane, Lorenzo Livi, Aurelio Uncini and Antonello Rizzi 2339

4:20PM *Off-Line Handwritten Thai Name Recognition for Student Identification in an Automated Assessment System*
Hemmaphan Suwanwiwat, Michael Blumenstein, Vu Nguyen and Umapada Pal 2347

4:40PM *Feature Extraction in X-Ray Images for Hazelnuts Classification*
Khosa Ikramullah and Eros Pasero 2354

5:00PM *A New Fuzzy Shape Context Approach Based on Multi-Clue and State Reservoir Computing*
Zhidong Deng, Kelaiti Xiao and Jing Huang 2361

5:20PM *Structure-from-Motion Reconstruction Based on Weighted Hamming Descriptors*
Guoyu Lu, Vincent Ly and Chandra Kambhamettu 2367

5:40PM *Local Binary Pattern Based Facial Expression Recognition Using Self-Organizing Map*
Anima Majumder, Laxmidhar Behera and Venkatesh K. Subramanian 2375

WeN2-4 Spiking Neural Networks I, Chair: Nikola Kasabov and Nathan Scott, Room: 305C

4:00PM *Does Plasticity Promote Criticality ?*
Filipe Peliz Pinto Teixeira and Murray Shanahan 2383

4:20PM *Evolutionary Features and Parameter Optimization of Spiking Neural Networks for Unsupervised Learning*
Marco Silva, Adriano Koshiyama, Marley Vellasco and Edson Cataldo 2391

4:40PM *Stochastic Spiking Neural Networks at the Edge of Chaos*
J.L. Rossello, V. Canals, A. Oliver and A. Morro 2399

5:00PM *Phase Offset Between Slow Oscillatory Cortical Inputs Influences Competition in a Model of the Basal Ganglia*
Zafeirios Fountas and Murray Shanahan 2407

5:20PM *A Sequential Learning Algorithm for a Minimal Spiking Neural Network (MSNN) Classifier*
Shirin Dora, Sundaram Suresh and Narasimhan Sundararajan 2415

5:40PM *Large Scale Parameter Estimation of Nonlinear Dynamic Systems: Application on Spike-In, Spike-Out Neural Models*
Alireza Dibazar 2422

WeN2-5 Unsupervised Learning and Clustering II, Chair: Akira Hirose, Room: 305D

4:00PM *An Unsupervised Material Learning Method for Imaging Spectroscopy*
Johannes Jordan, Elli Angelopoulou and Antonio Robles-Kelly 2428

4:20PM *Optimal Reduced Set for Sparse Kernel Spectral Clustering*
Raghvendra Mall, Siamak Mehrkanoon, Rocco Langone and Johan Suykens 2436

4:40PM *An Efficient Parallel ISODATA Algorithm Based on Kepler GPUs*
Shiquan Yang, Jianqiang Dong and Bo Yuan 2444

5:00PM *Semi-Supervised Clustering with Pairwise and Size Constraints*
Shaohong Zhang, Hau-San Wong and Dongqing Xie 2450

5:20PM *Multivariate Multi-Scale Gaussian for Microarray Unsupervised Classification*
Amelia King, Zihua Yang and ZhengRong Yang 2458

5:40PM *Hierarchical Linear Dynamical Systems: A New Model for Clustering of Time Series*
Goktug Cinar, Carlos Loza and Jose Principe 2464

WeN2-6 Dynamics of Neural Systems, Chair: Zhanshan Wang, Room: 305E

4:00PM *A Review on Evolution of Lyapunov-Krasovskii Function in Stability Analysis of Recurrent Neural Networks with Single Time-Varying Delay*
Zhanshan Wang, Zhenwei Shen, Mi Tian and Qihe Shan 2471

4:20PM *Stability of Hopfield Neural Networks with Event-Triggered Feedbacks*
Xinlei Yi, Wenlian Lu and Tianping Chen 2477

4:40PM *Nonlinear Responses of an Asynchronous Cellular Automaton Model of Spiral Ganglion Cells*
Masato Izawa and Hiroyuki Torikai 2483

5:00PM *New Method on the Complete Stability of Delayed Cellular Neural Networks*
Lili Wang and Tianping Chen 2491

5:20PM *Reproduction of Forward and Backward Propagations on Dendrites by Multi-Compartment Asynchronous Cell Automaton Neuron*
Naoki Shimada and Hiroyuki Torikai 2496

5:40PM *Phase Cone Detection Optimization in EEG Data*
Mark Myers, Robert Kozma and Roman Ilin 2504

Industrial Session: WeN2-7 CI on Control Systems, Chair: Ruben Morales-Menendez and Aguilar Jose, Room: 303

4:00PM *Experimental ANN-Based Modeling of an Adjustable Damper*
Juan Carlos Tudon-Martinez, Ruben Morales-Menendez, Ricardo A Ramirez-Mendoza and Luis E Garza-Castanon 2512

4:20PM *Scaling-Up Action Learning Neuro-Controllers with GPUs*
Martin Peniak and Angelo Cangelosi 2519

4:40PM *Application of Genetic Algorithms to Neural Networks Based Control of a Liquid Level Tank System*
Kristina Vassiljeva, Juri Belikov and Eduard Petlenkov 2525

5:00PM *Dynamic Neural Networks for Jet Engine Degradation Prediction and Prognosis*
S. Kiakojoori and K. Khorasani 2531

5:20PM *Exploiting Homophily-Based Implicit Social Network to Improve Recommendation Performance*
Tong Zhao, Junjie Hu, Pinjia He, Hang Fan, Irwin King and Michael Lyu 2539

5:40PM *Anomaly Detection Based on Indicators Aggregation*
Tsirizo Rabenoro, Jerome Lacaille, Marie Cottrell and Fabrice Rossi 2548

6:00PM *Mixture Modeling and Inference for Recognition of Multiple Recurring Unknown Patterns*
Zeyu You, Raviv Raich and Yonghong Huang 2556

6:20PM *Recognition of Sintering State in Rotary Kiln Using a Robust Extreme Learning Machine*
Hua Chen, Jing Zhang, Xiaogang Zhang and HongPing Hu 2564

Thursday, July 10, 1:30PM-3:30PM

Special Session: ThN1-1 Architectures and Theories of the Brain, Chair: Asim Roy, Room: 308

1:30PM *Reliable Object Recognition by Using Cooperative Neural Agents*
Oscar Chang 2571

1:50PM *A Nonlinear Model of fMRI BOLD Signal Including the Trend Component*
Takashi Matsubara, Hiroyuki Torikai, Tetsuya Shimokawa, Kenji Leibnitz and Ferdinand Peper 2579

2:10PM *How Might the Brain Represent Complex Symbolic Knowledge?*
Ben Goertzel 2587

2:30PM *Statistical Approach for Reconstruction of Dynamic Brain Dipoles Based on EEG Data*
Petia Georgieva, Filipe SIlva, Lyudmila Mihaylova and Nidhal Bouaynaya 2592

2:50PM *Design of the First Neural Connectomics Challenge: From Imaging to Connectivity*
Isabelle Guyon, Demian Battaglia, Alice Guyon, Javier Orlandi, Mehreen Saeed, Jordi Soriano Fradera, Alexander Statnikov and Olav Stetter 2600

3:10PM *A Bridge-Islands Model for Brains: Developing Numeric Circuits for Logic and Motivation*
Juyang Weng 2608

Special Session: ThN1-2 Hybrid Neural Intelligent Systems, Chair: Patricia Melin, Room: 305A

1:30PM *Selecting and Combining Models with Self-Organizing Maps for Long-Term Forecasting of Chaotic Time Series*
Rigoberto Fonseca-Delgado and Pilar Gomez-Gil 2616

1:50PM *Impulsive Synchronization of Coupled Switched Neural Networks with Impulsive Time Window*
Xin Wang, Chuandong Li, Tingwen Huang and Xiaofeng Liao 2624

2:10PM *Vibrate Synchronizing Function Neural Network Model - Its Backgrounds*
Yoshitsugu Kakemoto and Shinichi Nakasuka 2629

2:30PM *Neural Networks for Runtime Verification*
Alan Perotti, Artur d'Avila Garcez and Guido Boella 2637

Special Session: ThN1-3 Ensemble Systems and Machine Learning, Chair: Marley Vellasco and Teresa Ludermir, Room: 305B

1:30PM *Towards Generating Random Forests via Extremely Randomized Trees*
Le Zhang, Ye Ren and P. N. Suganthan 2645

1:50PM *Reservoir Computing Optimization with a Hybrid Method*
Anderson Sergio and Teresa Ludermir 2653

2:10PM *An Empirical Analysis of Ensemble Systems in Cancellable Behavioural Biometrics: A Touch Screen Dataset*
Marcelo Damasceno de Melo and Anne Canuto 2661

2:30PM *Ensemble Learning for Keyword Extraction from Event Descriptions*
Pedro Geadas, Ana Alves and Bernardete Ribeiro 2669

2:50PM *Ensembles Of Evolutionary Extreme Learning Machines through Differential Evolution and Fitness Sharing*
Tiago Lima and Teresa Ludermir 2677

ThN1-4 Reinforcement and Hybrid Learning, Chair: Huaguang Zhang, Room: 305C

1:30PM *Unmanned Aerial Vehicles (UAV) Heading Optimal Tracking Control Using Online Kernel-Based HDP Algorithm*
Fuxiao Tan, Derong Liu, Xinping Guan and Bin Luo 2683

1:50PM *Scalarization-Based Pareto Optimal Set of Arms Identification Algorithms*
Madalina Drugan and Ann Nowe 2690

2:10PM *Approximate Model-Assisted Neural Fitted Q-Iteration*
Thomas Lampe and Martin Riedmiller 2698

2:30PM *Explore to See, Learn to Perceive, Get the Actions for Free: SKILLABILITY*
Varun Kompella, Marijn Stollenga, Matthew Luciw and Juergen Schmidhuber 2705

2:50PM *Correntropy Kernel Temporal Differences for Reinforcement Learning Brain Machine Interfaces*
Jihye Bae, Luis Sanchez Giraldo, Joseph Francis and Jose Principe 2713

3:10PM *PROPRE: PROjection and PREdiction for Multimodal Correlations Learning. An Application to Pedestrians Visual Data Discrimination.*
Mathieu Lefort and Alexander Gepperth 2718

ThN1-5 Models of Perception, Cognition and Coordination, Chair: Leonid Perlovsky, Room: 305D

1:30PM *Pinning Dynamic Complex Networks by Time-Varying Controller-Vertex Set*
Yujuan Han, Wenlian Lu and Tianping Chen 2726

1:50PM *Distributed LQR Design for Multi-Agent Systems on Directed Graph Topologies*
Tao Feng, Huaguang Zhang, Yanhong Luo and Yingchun Wang 2732

2:10PM *Impact of Ratio k on Two-Layer Neural Network with Dynamic Optimal Learning Rate*
Tong Zhang and C. L. Philip Chen 2738

2:30PM *A Neural Model of Mentalization/Mindful Based Psychotherapy*
Abbas Edalat and Lin Zheng 2743

2:50PM *Incremental Face Recognition Using Rehearsal and Recall Processes*
Sangwook Kim, Mallipeddi Rammohan and Lee Minho 2752

3:10PM *On the Relationships Between Social Structures and Acquired Knowledge in Societies*
Toshihiko Matsuka and Hidehito Honda 2758

ThN1-6 Recurrent Neural Networks, Chair: Yunong Zhang, Room: 305E

1:30PM *Case Study of Zhang Matrix Inverse for Different ZFs Leading to Different Nets*
Dongsheng Guo, Binbin Qiu, Zhende Ke, Zhi Yang and Yunong Zhang 2764

1:50PM *Neurodynamics-Based Robust Eigenstructure Assignment for Second-Order Descriptor Systems*
Xinyi Le, Zheng Yan and Jun Wang 2770

2:10PM *Oscillation Analysis of the Solutions for a Four Coupled FHN Network Model with Delays*
Chunhua Feng and Rejean Plamondon 2776

2:30PM *Ideal Modified Adachi Chaotic Neural Networks and Active Shape Model for Infant Facial Cry Detection on Still Image*
Yosi Kristian, Mochamad Hariadi and Mauridhi Hery Purnomo 2783

2:50PM *Three New ZNN Models with Economical Dimension and Exponential Convergence for Real-Time Solution of Moore-Penrose Pseudoinverse*
Chen Peng, Yingbiao Ling, Ying Wang, Xiaotian Yu and Yunong Zhang 2788

3:10PM *A Recurrent Neural Network for Real Time Electrical Microgrid Prototype Optimization*
Juan Diego Sanchez-Torres, Martin J. Loza-Lopez, Riemann Ruiz-Cruz, Edgar Sanchez and Alexander G. Loukianov 2794

Thursday, July 10, 3:30PM-6:00P

Poster Session: PN4 Poster Session 4, Chair: Pablo Estevez, Room: Posters Area (Level 3)

P701 *Compressive Direction-of-Arrival Estimation via Regularized Multiple Measurement FOCUSS Algorithm*
Shuyuan Yang, Min Wang and Bin Li 2800

P702 *Effective Identification of a Turbogenerator in a SMIB Power System Using Fuzzy Neural Networks*
Wissam A. Albukhanajer, Hussein A. Lefta and Abduladhem A. Ali 2804

P703 *Multi-Agent Systems Applied to Topological Reconfiguration of Smart Power Distribution Systems*
Filipe Saraiva and Eduardo Asada 2812

P704 *Heuristically Enhanced Dynamic Neural Networks for Structurally Improving Photovoltaic Power Forecasting*
Naji Al-Messabi, Cindy Goh, Ibrahim El-Amin and Yun Li 2820

P705 *Data Mining Paradigm Based on Functional Networks with Applications in Landslide Prediction*
Ailong Wu, Zhigang Zeng and Chaojin Fu 2826

P706 *The State of the Art of Memristive Neural Systems: Models and Applications*
Ailong Wu, Zhigang Zeng and Chaojin Fu 2831

P707 *Integrating Local and Global Manifold Structures for Unsupervised Dimensionality Reduction*
Xiaochen Chen, Jia Wei, Jinhai Li and Xiaodong Zhang 2837

P708 *Moving Towards Accurate Monitoring and Prediction of Gold Mine Underground Dam Levels*
Ali Hasan and Bhekisipho Twala 2844

P709 *Convolutional Deep Belief Networks for Feature Extraction of EEG Signal*
Yuanfang Ren and Yan Wu 2850

P710 *Newton's Method Backpropagation for Complex-Valued Holomorphic Multilayer Perceptrons*
Diana La Corte and Yi Ming Zou 2854

P711 *Fuzzy c-Means Clustering with a New Regularization Term for Image Segmentation*
Guangpu Shao 2862

P712 *Direct Adaptive Neural Network Control of a Class of Nonlinear Systems*
Baobin Miao and Tieshan Li 2870

P713 *Hybrid SVM/HMM Architectures for Statistical Model-Based Voice Activity Detection*
YingWei Tan, WenJu Liu, Wei Jiang and Hao Zheng 2875

P714 *Novel Stability Criteria of T-S Fuzzy Hopfield Neural Networks with Time-Varying Delays and Uncertainties*
Caigen Zhou, Xiaoqin Zeng and Jianjiang Yu 2879

P715 *A Collaborative Filtering Framework Based on Local and Global Similarities with Similarity Tie-Breaking Criteria*
Andre Lopes, Ricardo Prudencio and Byron Bezerra 2887

P716 *SVM Classification for Imbalanced Data Sets Using Conformal Kernel Transformations*
Yong Zhang, Panpan Fu and Wenzhe Liu 2894

P717 *Analysis of Disease Association and Susceptibility for SNP Data Using Emotional Neural Networks*
Xiao Wang, Qinke Peng and Tao Zhong 2901

P718 *Artificial Immune System Application for Solving Dynamic Optimization Problems*
Zhijie Li, Yuanxiang Li, Kuang Li and Fei Yu 2906

P719 *Synchronization Control of Hybrid-Coupled Heterogeneous Complex Networks*
Jianqiang Hu, Jinling Liang and Jinde Cao 2912

P720 *Robust LS-SVR Based on Variational Bayesian and Its Applications*
Kefeng Ning, Min Liu, Mingyu Dong and Zhansong Wu 2920

P721 *Label Propagation and Soft-Similarity Measure for Graph Based Constrained Semi-Supervised Learning*
Zhao Zhang, Mingbo Zhao and Tommy W.S. Chow 2927

P722 *An Improved RBM Based on Bayesian Regularization*
Guangyuan Pan and Junfei Qiao 2935

P723 *On the Cooperative Observability of a Continuous-Time Linear System on an Undirected Network*
Henghui Zhu, Kexin Liu, Jinhu Lu, Zongli Lin and Yao Chen 2940

P724 *Robust Bilinear Matrix Recovery by Tensor Low-Rank Representation*
Zhao Zhang and Mingbo Zhao 2945

P725 *Using Chou's Amphiphilic Pseudo-Amino Acid Composition and Extreme Learning Machine for Prediction of Protein-Protein Interactions*
Qiao-Ying Huang, Zhu-Hong You, Shuai Li and Zexuan Zhu 2952

P726 *Joint Multiple Dictionary Learning for Tensor Sparse Coding*
Yifan Fu, Junbin Gao, Yanfeng Sun and Xia Hong 2957

P727 *Dependent Stotchastic Blockmodels*
Eunsil Gim, Juho Lee and Seungjin Choi 2965

P728 *Splitted Neural Networks for Better Performance of Antenna Optimization*
Linh Ho Manh, Francesco Grimaccia, Marco Mussetta and Riccardo E. Zich 2973

P729 *Learning Features with Structure-Adapting Multi-View Exponential Family Harmoniums*
Kang Yoonseop and Choi Seungjin 2978

P730 *Outdoor Scene Understanding Using SEVI-BOVW Model*
Haibing Zhang, Shirong Liu and Chaoliang Zhong 2986

P731 *Global Exponential Stability of Delayed Hopfield Neural Network on Time Scale*
Xuehui Mei and Haijun Jiang 2991

P732 *Application of Neural Networks to Evaluate Experimental Data of Galvanic Zincing*
Peter Michal, Jan Pitel, Alena Vagaska and Ivo Bukovsky 2997

P733 *Iris Liveness Detection Methods in the Mobile Biometrics Scenario*
Ana F. Sequeira, Juliano Murari and Jaime S. Cardoso 3002

P734 *Nonnegative Shifted Tensor Factorization in Time Frequency Domain*
Qiang Wu, Ju Liu, Fengrong Sun, Jie Li and Andrzej Cichocki 3009

P735 *Modeling of Vertical Mill Raw Meal Grinding Process and Optimal Setting of Operating Parameters Based on Wavelet Neural Network*
Xiaofeng Lin and Zhe Qian 3015

P736 *Kernel Robust Mixed-Norm Adaptive Filtering*
Jin Liu, Hua Qu, Badong Chen and Wentao Ma 3021

P737 *Soft-Constrained Nonnegative Matrix Factorization via Normalization*
Long Lan, Naiyang Guan, Xiang Zhang, Dacheng Tao and Zhigang Luo 3025

P738 *Latency-Based Probabilistic Information Processing in a Learning Feedback Hierarchy*
Alexander Gepperth 3031

P739 *Improving the Genetic-Algorithm-Optimized Wavelet Neural Network for Stock Market Prediction*
Yu Fang, Kamaladdin Fataliyev, Lipo Wang, Xiuju Fu and Yaoli Wang 3038

P740 *Optimal Software Maintenance Policy Based on Reliability and Risk*
Xiaoping Wang, Fang Zhou and Yi Shen 3043

P741 *Forecasting Electricity Consumption in South Africa: ARMA, Neural Networks and Neuro-Fuzzy Systems*
Lufuno Marwala and Twala Bhekisipho 3049

P742 *PVis - Partitions' Visualizer: Extracting Knowledge by Visualizing a Collection of Partitions*
Katti Faceli, Tiemi Sakata, Andre Carvalho and Marcilio de Souto 3056

Thursday, July 10, 4:00PM-6:00PM

Special Session: ThN2-1 Applications of Neural Networks for Financial Modeling and Forecasting, Chair: Massimo Panella, Room: 308

4:00PM *Adaptively Weighted Support Vector Regression for Financial Time Series Prediction*
Zhijie Li, Yuanxiang Li, Fei Yu and Dahai Ge 3062

4:20PM *A Higher-Order Fuzzy Neural Network for Modeling Financial Time Series*
Massimo Panella, Luca Liparulo and Andrea Proietti 3066

4:40PM *Beating The S-and-P 500 Index - A Successful Neural Network Approach*
Mininder Sethi, Philip Treleaven and Sebastian Del Bano Rollin 3074

5:00PM *Stock Volatility Prediction Using Multi-Kernel Based Extreme Learning Machine*
Feng Wang, Zhiyong Zhao, Xiaodong Li and Fei Yu 3078

5:20PM *Augmented Neural Networks for Modelling Consumer Indebtness*
Alexandros Ladas, Jon Garibaldi, Rodrigo Scarpel and Uwe Aickelin 3086

5:40PM *A New Investment Strategy Based on Data Mining and Neural Networks*
Chang Liu and Hafiz Malik 3094

Special Session: ThN2-2 Incremental Machine Learning: Methods and Applications, Chair: Nicoleta Rogovschi and Nistor Grozavu, Room: 305A

4:00PM *Locally Linear Embedding Algorithm Based on OMP for Incremental Learning*
Yiqin Leng, Li Zhang and Jiwen Yang 3100

4:20PM *Hidden Markov Models Based Dynamic Hand Gesture Recognition with Incremental Learning Method*
Meng Hu, Furao Shen and Jinxi Zhao 3108

4:40PM *Long-Term Learning Behavior in a Recurrent Neural Network for Sound Recognition*
Michiel Boes, Damiano Oldoni, Bert De Coensel and Dick Botteldooren 3116

5:00PM *Study of Learning Entropy for Novelty Detection in Lung Tumor Motion Prediction for Target Tracking Radiation Therapy*
Ivo Bukovsky, Noriyasu Homma, Matous Cejnek and Kei Ichiji 3124

5:20PM *Opinion Retrieval through Unsupervised Topological Learning*
Nicoleta Rogovschi and Nistor Grozavu 3130

5:40PM *A Fast Incremental Kernel Principal Component Analysis for Data Streams.*
Annie anak Joseph and Seiichi Ozawa 3135

Special Session: ThN2-3 Neurodynamic Optimization, Chair: Sanqing Hu and Yunong Zhang, Room: 305B

4:00PM *A One-Layer Discrete-Time Projection Neural Network for Support Vector Classification*
Wei Zhang and Qingshan Liu 3143

4:20PM *A Novel Discrete-Time Learning Algorithm for Speech Enhancement Using Noise Constrained Parameter Estimation*
Youshen Xia, Guiliang Lin and Weixing Zheng 3149

4:40PM *Performance Analysis of LVI-Based PDNN Applied to Real-Time Solution of Time-Varying Quadratic Programming*
Yunong Zhang, Fangting Wu, Zhengli Xiao, Zhen Li and Binghuang Cai 3155

5:00PM *Model Predictive Control of Multi-Robot Formation Based on the Simplified Dual Neural Network*
Xinzhe Wang, Zheng Yan and Jun Wang 3161

5:20PM *Neurodynamics-Based Model Predictive Control of Autonomous Underwater Vehicles in Vertical Plane*
Zhiying Liu, Xinzhe Wang and Jun Wang 3167

5:40PM *A Single Layer Recurrent Neural Network For Pseudoconvex Optimization Subject to Quasiconvex Constraints*
Jingjing Huang and Guocheng Li 3173

6:00PM *Causality from Cz to C3/C4 or between C3 and C4 Revealed by Granger Causality and New Causality during Motor Imagery*
Sanqing Hu, Hui Wang, Jianhai Zhang, Wanzeng Kong and Yu Cao 3178

ThN2-4 Spiking Neural Networks II, Chair: Zeng-Guang Hou, Room: 305C

4:00PM *Magnitude Comparison in Analog Spiking Neural Assemblies*
Jose Oliveira-Neto, Felipe Duque-Belfort, Rafael Cavalcanti-Neto and Joao Ranhel 3186

4:20PM *Spike-Timing Dependent Morphological Learning for a Neuron with Nonlinear Active Dendrites*
Phyo Phyo San, Shaista Hussain and Arindam Basu 3192

4:40PM *Improved Predictive Personalized Modelling with the Use of Spiking Neural Network System and a Case Study on Stroke Occurrences Data*
Muhaini Othman, Nikola Kasabov, Enmei Tu, Valery Feigin, Rita Krishnamurthi, Zeng-Guang Hou, Yixiong Chen and Jin Hu 3197

5:00PM *Signature of an Anticipatory Response in Area V1 as Modeled by a Probabilistic Model and a Spiking Neural Network*
Bernhard A. Kaplan, Mina A. Khoei, Anders Lansner and Laurent U. Perrinet 3205

5:20PM *Predicting Temporal Sequences Using an Event-Based Spiking Neural Network Incorporating Learnable Delays*
Tingting Gibson, James Henderson and Janet Wiles 3213

5:40PM *Feasibility of NeuCube SNN Architecture for Detecting Motor Execution and Motor Intention for Use in BCI Applications*
Denise Taylor, Nathan Scott, Nikola Kasabov, Elisa Capecci, Enmei Tu, Nicola Saywell, Yixiong Chen, Jin Hu and Zeng-Guang Hou 3221

ThN2-5 Signal and Image Processing, Chair: Pau-Choo Chung, Room: 305D

4:00PM *On-Line Gaussian Mixture Density Estimator for Adaptive Minimum Bit-Error-Rate Beamforming Receivers*
Sheng Chen, Xia Hong and Chris Harris 3226

4:20PM *The Neoteric Feature Extraction Method of Epilepsy EEG Based on the Vertex Strength Distribution of Weighted Complex Network*
Fenglin Wang, Qingfang Meng and Yuehui Chen 3234

4:40PM *Real-Time Hand Gesture Recognition with Kinect for Playing Racing Video Games*
Yanmin Zhu and Bo Yuan 3240

5:00PM *EEG Energy Analysis for Evaluating Consciousness Level Using Dynamic MEMD*
Yunchao Yin, Gaochao Cui, Toshihisa Tanaka and Jianting Cao 3247

5:20PM *Alzheimer's Disease Classification Based on Gait Information*
Wei-Hsin Wang, Yu-Liang Hsu, Ming-Chyi Pai, Chun-Yao Wang, Chien-Wen Lin, Hao-Li Wu and Pau-Choo Chung 3251

5:40PM *Architectural Distortion Detection from Mammograms Using Support Vector Machine*
Orawan Netprasat, Sansanee Auephanwiriyakul and Nipon Theera-Umpon 3258

ThN2-6 Neural Modeling and Control, Chair: Hongliang Li, Room: 305E

4:00PM *Data-Driven Iterative Adaptive Dynamic Programming Algorithm for Approximate Optimal Control of Unknown Nonlinear Systems*
Hongliang Li, Derong Liu, Ding Wang and Chao Li 3265

4:20PM *Hybrid Neural Networks for Gasoline Blending System Modeling*
Wen Yu and Xiaoou Li 3272

4:40PM *Adaptive Self-Constructing Radial-Basis-Function Neural Control for MIMO Uncertain Nonlinear Systems with Unknown Disturbances*
Ning Wang, Bijun Dai, Yancheng Liu and Min Han 3278

5:00PM *Robust Structure Selection of Radial Basis Function Networks for Nonlinear System Identification*
Pan Qin and Han Min 3284

5:20PM *Neural Control for a Solid Waste Incinerator*
Rocio Carrasco, Edgar Sanchez, Riemann Ruiz and Catherine Cadet 3289

5:40PM *Reservoir-Based Online Adaptive Forward Models with Neural Control for Complex Locomotion in a Hexapod Robot*
Poramate Manoonpong, Sakyasingha Dasgupta, Dennis Goldschmidt and Florentin Woergoetter 3295

Friday, July 11, 8:10AM-10:10AM

Special Session: FrN1-1 Concept Drift, Domain Adaptation & Learning in Dynamic Environments II, Chair: Giacomo Boracchi and Manuel Roveri, Room: 308

8:10AM *Resistant Learning on the Envelope Bulk for Identifying Anomalous Patterns*
Shin-Ying Huang, Fang Yu, Rua-Huan Tsaih and Yennun Huang 3303

8:30AM *A Multi-Objective Ensemble Method for Online Class Imbalance Learning*
Shuo Wang, Leandro L. Minku and Xin Yao 3311

8:50AM *The Parzen Kernel Approach to Learning in Non-Stationary Environment*
Lena Pietruczuk, Leszek Rutkowski, Maciej Jaworski and Piotr Duda 3319

9:10AM *A Novel Application of Hoeffding's Inequality to Decision Trees Construction for Data Streams*
Piotr Duda, Maciej Jaworski, Lena Pietruczuk and Leszek Rutkowski 3324

9:30AM *NEVE++: A Neuro-Evolutionary Unlimited Ensemble for Adaptive Learning*
Tatiana Escovedo, Abs da Cruz Andre, Koshiyama Adriano, Melo Rubens and Vellasco Marley 3331

9:50AM *Exploiting Self-Similarity for Change Detection*
Giacomo Boracchi and Roveri Manuel 3339

Special Session: FrN1-2 Neural Networks Applied to Vision and Robotics II, Chair: Jose Garcia Rodriguez and Jorge Azorin, Room: 305A

8:10AM *Color Space Selection for Self-Organizing Map Based Foreground Detection in Video Sequences*
Francisco Javier Lopez-Rubio, Ezequiel Lopez-Rubio, Rafael Marcos Luque-Baena, Enrique Dominguez and Esteban J. Palomo 3347

8:30AM *Improving Robot Vision Models for Object Detection Through Interaction*
Juergen Leitner, Alexander Foerster and Juergen Schmidhuber 3355

8:50AM *Image-Based Global Localization Using VG-RAM Weightless Neural Networks*
Lauro J. Lyrio Junior, Thiago Oliveira-Santos, Avelino Forechi, Lucas Veronese, Claudine Badue and Alberto F. De Souza 3363

9:10AM *EEG Based Artificial Learning of Motor Coordination for Visually Inspired Task Using Neural Networks*
Shreyasi Datta, Anwesha Khasnobish, Amit Konar, D. N. Tibarewala and Atulya Nagar 3371

9:30AM *Serotonin and Dopamine Systems: Internal Areas and Sequential Tasks*
Dongshu Wang, Yihai Duan and Juyang Weng 3379

Special Session: FrN1-3 Complex-Valued Neural Networks, Chair: Akira Hirose and Suresh Sundaram, Room: 305B

8:10AM *An Introduction to Complex-Valued Recurrent Correlation Neural Networks*
Marcos Eduardo Valle 3387

8:30AM *The HC Calculus, Quaternion Derivatives and Caylay-Hamilton Form of Quaternion Adaptive Filters and Learning Systems*
Yili Xia, Cyrus Jahanchahi, Dongpo Xu and Danilo Mandic 3395

8:50AM *Stability Condition for Discrete Time Multi-Valued Recurrent Neural Networks in Asynchronous Update Mode*
Wei Zhou and Jacek M. Zurada 3402

9:10AM *A New Stability Condition for Discrete Time Recurrent Neural Networks with Complex-Valued Linear Threshold Neurons*
Wei Zhou and Jacek M. Zurada 3406

9:30AM *Ultra-Short-Pulse Acoustic Imaging Using Complex-Valued Spatio-Temporal Neural-Network for Null-Steering: Experimental Results*
Kotaro Terabayashi and Akira Hirose 3410

9:50AM *Finite Convergence of the Learning Algorithms for a Modified Multi-Valued Neuron*
Dongpo Xu and Shuang Liang 3414

FrN1-4 Visual Systems, Chair: Zeng-Guang Hou, Room: 305C

8:10AM *V4 Neural Network Model for Visual Saliency and Discriminative Local Representation of Shapes*
Hui Wei and Zheng Dong 3420

8:30AM *Binocular Visual Servoing Based on PID Neural Network*
Guoyou Li and Xin Wang 3428

8:50AM *Visual Saliency via Loss Coding*
Hao Zhu and Biao Han 3435

9:10AM *Border Ownership in a Nano-Neuromorphic Circuit Using Nonlinear Dendritic Computations*
Chih-Chieh Hsu and Alice Parker 3442

9:30AM *A Bio-Inspired Approach Modeling Spiking Neural Networks of Visual Cortex for Human Action Recognition*
Haihua Liu and Na Shu 3450

9:50AM *Measurement of Confusion Color Pairs for Dichromats in order to Use Applications Supporting Color Vision Deficiency*
Hiroki Takagi, Hiroaki Kudo, Tetsuya Matsumoto, Yoshinori Takeuchi and Noboru Ohnishi 3458

FrN1-5 Data Analysis and Pattern Recognition, Chair: Wladyslaw Homenda, Room: 305D

8:10AM *View-Invariant Gait Recognition via Deterministic Learning*
Wei Zeng and Cong Wang 3465

8:30AM *Micro-Expression Recognition Based on Local Binary Patterns from Three Orthogonal Planes and Nearest Neighbor Method*
Yanjun Guo, Yantao Tian, Xu Gao and Xuange Zhang 3473

8:50AM *Classification with Rejection Based on Various SVM Techniques*
Wladyslaw Homenda, Marcin Luckner and Witold Pedrycz 3480

9:10AM *Imbalanced Pattern Recognition: Concepts and Evaluations*
Wladyslaw Homenda and Wojciech Lesinski 3488

9:30AM *RNN and SOM Based Classifier to Recognize Assamese Fricative Sounds Designed Using Frame Based Temporal Feature Sets*
Chayashree Patgiri, Mousmita Sarma and Kandarpa Kumar Sarma 3496

9:50AM *Artificial Neural Network Based Gait Patterns Identification Using Neuromuscular Signals and Soft Tissue Deformation Analysis of Lower Limbs Muscles*
S. M. N. Arosha Senanayake, Joko Triloka, Owais A, Malik and Muhammad Pg. Iskandar 3503

FrN1-6 Hybrid Architectures and Learning , Chair: Gianluca Bontempi, Room: 305E

8:10AM *Recursive Soft Margin Subspace Learning*
Qiao Ye, Zhao Chun and Ye Ning 3511

8:30AM *Sub-Classifier Construction for Error Correcting Output Code Using Minimum Weight Perfect Matching*
Patoomsiri Songsiri, Thimaporn Phetkaew, Ryutaro Ichise and Boonserm Kijsirikul 3519

8:50AM *Supervised Topic Regression via Experts*
Song Lin and Ping Guo 3526

9:10AM *A Robust Framework for Short Text Categorization Based on Topic Model and Integrated Classifier*
Peng Wang, Heng Zhang, Yu-Fang Wu, Bo Xu and Hong-Wei Hao 3534

9:30AM *Linear Subspace Learning via Sparse Dimension Reduction*
Ming Yin, Yi Guo and Junbin Gao 3540

9:50AM *Learning Optimization for Decision Tree Classification of Non-Categorical Data with Information Gain Impurity Criterion*
Konstantin Sofeikov, Ivan Tyukin, Alexander Gorban, Eugene Mirkes, Danil Prokhorov and Ilya Romanenko 3548

Friday, July 11, 10:30AM-12:30PM

Special Session: FrN2-1 Computational Intelligence Algorithms for Digital Audio Applications, Chair: Stefano Squartini and Francesco Piazza, Room: 308

10:30AM *Semi-Supervised Non-Negative Tensor Factorisation of Modulation Spectrograms for Monaural Speech Separation*
Tom Barker and Tuomas Virtanen 3556

10:50AM *Power Normalized Cepstral Coefficients Based Supervectors and i-Vectors for Small Vocabulary Speech Recognition*
Emanuele Principi, Stefano Squartini and Francesco Piazza 3562

11:10AM *Advanced Audio Spatializer Combined with a Multipoint Equalization System*
Stefania Cecchi, Andrea Primavera, Francesco Piazza, Ferruccio Bettarelli and Junfeng Li 3569

11:30AM *Advanced Intelligent Acoustic Interfaces for Multichannel Audio Reproduction*
Danilo Comminiello, Stefania Cecchi, Michele Gasparini, Michele Scarpiniti, Aurelio Uncini and Francesco Piazza 3577

11:50AM *Audio Onset Detection: A Wavelet Packet Based Approach with Recurrent Neural Networks*
Erik Marchi, Giacomo Ferroni, Florian Eyben, Stefano Squartini and Bjorn Schuller 3585

12:10PM *Transfer Learning Emotion Manifestation Across Music and Speech*
Eduardo Coutinho, Jun Deng and Bjorn Schuller 3592

12:30PM *A Novel Intelligent Systems for Speech Recognition*
Washington Silva and Ginalber Serra 3599

Special Session: FrN2-2 Intelligent Computing for Complex & Big Data Analysis in Health and Biomedical Informatics, Chair: Amit Kumar and Shang-Ming Zhou, Room: 305A

10:30AM *Domain Transfer Nonnegative Matrix Factorization*
Jim Jing-Yan Wang, Yijun Sun and Halima Bensmail 3605

10:50AM *Identifying Stable Breast Cancer Subgroups Using Semi-Supervised Fuzzy c-Means on a Reduced Panel of Biomarkers*
Daphne Teck Ching Lai and Jonathan Garibaldi 3613

11:10AM *Mining Textual Data from Primary Healthcare Records - Automatic Identification of Patient Phenotype Cohorts*
Shang-Ming Zhou, Muhammad Rahman, Mark Atkinson and Sinead Brophy 3621

11:30AM *Using EEG Artifacts for BCI Applications*
Wanli Ma, Dat Tran, Tien Pham, Trung Le and Hong Lin 3628

11:50AM *Comparison of Distance Metrics for Hierarchical Data in Medical Databases*
Diman Hassan, Uwe Aickelin and Christian Wagner 3636

12:10PM *Investigating the Impacts of Epilepsy on EEG-Based Person Identification Systems*
Dinh Phung, Dat Tran, Wanli Ma, Phuoc Nguyen and Tien Pham 3644

Special Session: FrN2-3 Data-Driven Adaptive Dynamic Programming, Chair: Derong Liu and Haibo He, Room: 305B

10:30AM *Online Learning Control Based on Projected Gradient Temporal Difference and Advanced Heuristic Dynamic Programming*
Jian Fu, Haibo He, Aihong Tang and Sujuan Wei 3649

10:50AM *A Kalman Filter-Based Actor-Critic Learning Approach*
Bin Wang and Dongbin Zhao 3657

11:10AM *Self-Learning PD Algorithms Based on Approximate Dynamic Programming for Robot Motion Planning*
Huiyuan Yang, Qi Guo, Xin Xu and Chuanqiang Lian 3663

11:30AM *Near Optimal Event-Based Control of Nonlinear Discrete Time Systems in Affine Form with Measured Input Output Data*
Avimanyu Sahoo, Hao Xu and Sarangapani Jagannathan 3671

11:50AM *Event-Triggered Reinforcement Learning Approach for Unknown Nonlinear Continuous-Time System*
Xiangnan Zhong, Zhen Ni, Haibo He, Xin Xu and Dongbin Zhao 3677

12:10PM *Longitudinal Control of Hypersonic Vehicles Based on Direct Heuristic Dynamic Programming Using ANFIS*
Xiong Luo, Yi Chen, Jennie Si and Feng Liu 3685

FrN2-4 Data Mining and Knowledge Discovery, Chair: Paulo Adeodato and Alessandro Sperduti, Room: 305C

10:30AM *A Study on Asynchronous System in P300 Speller Based on User's Intention of Input*
Kohei Kawai, Tomohiro Yoshikawa and Takeshi Furuhashi 3693

10:50AM *Insights on Prediction of Patients' Response to Anti-HIV Therapies through Machine Learning*
Rogerio Rosa, Rafael Santos, Adamo Brito and Katia Guimaraes 3697

11:10AM *Recognizing Cross-Lingual Textual Entailment with Co-Training Using Similarity and Difference Views*
Jiang Zhao and Man Lan 3705

11:30AM *A Novel Algorithm for Mining Behavioral Patterns from Wireless Sensor Networks*
Md Mamunur Rashid, Iqbal Gondal and Joarder Kamruzzaman 3713

11:50AM *Continuous Variables Segmentation and Reordering for Optimal Performance on Binary Classification Tasks*
Paulo Adeodato, Domingos S. P. Salazar, Lucas S. Gallindo and Abner G. Sa 3720

12:10PM *Hybrid Classification with Partial Models*
Bo Tang, Quan Ding, Haibo He and Steve Kay 3726

FrN2-5 Large Scale, Associative and Self-Organizing Networks , Chair: Jinde Cao, Room: 305D

10:30AM *A Decomposition Method for Large-Scale Sparse Coding in Representation Learning*
Yifeng Li, Richard Caron and Alioune Ngom 3732

10:50AM *The Stability and Bifurcation Analysis in High Dimensional Neural Networks with Discrete and Distributed Delays*
Wenying Xu, Jinde Cao and Min Xiao 3739

11:10AM *Restricted Boltzmann Machine Associative Memory*
Koki Nagatani and Masafumi Hagiwara 3745

11:30AM *Two-Factor User Authentication with the CogRAM Weightless Neural Net*
Weng Kin Lai, Beng Ghee Tan, Ming Siong Soo and Imran Khan 3751

11:50AM *The Learning of Neuro-Fuzzy Approximator with Fuzzy Rough Sets in Case of Missing Features*
Robert Nowicki, Bartosz Nowak, Janusz Starczewski and Krzysztof Cpalka 3759

12:10PM *A Dynamic Forecasting Method for Small Scale Residential Electrical Demand*
Andrei Marinescu, Ivana Dusparic, Colin Harris, Vinny Cahill and Siobhan Clarke 3767

FrN2-6 Self-Organizing Maps, Chair: Thomas Vacek, Room: 305E

10:30AM *A Spiking-Based Mechanism for Self-Organizing RBF Neural Networks*
Honggui Han, Lidan Wang, Junfei Qiao and Gang Feng 3775

10:50AM *Support Vector Machine with SOM-Based Quasi-Linear Kernel for Nonlinear Classification*
Yuling Lin, Yong Fu and Jinglu Hu 3783

11:10AM *The Generative Adaptive Subspace Self-Organizing Map*
Thusitha Chandrapala and Bertram Shi 3790

11:30AM *Clustering of the Self-Organizing Map Using Particle Swarm Optimization and Validity Indices*
Leonardo Enzo Brito da Silva and Jose Alfredo Ferreira Costa 3798

11:50AM *Algorithmic Trading Behavior Identification Using Reward Learning Method*
Steve Yang, Qifeng Qiao, Peter Beling and Scherer William 3807

Friday, July 11, 1:30PM-3:30PM

Special Session: FrN3-1 Intelligent Adaptive Fault Tolerant Control and Optimization, Chair: Huaguang Zhang and Haibo He, Room: 308

1:30PM *Model-Free Adaptive Dynamic Programming for Online Optimal Solution of the Unknown Nonlinear Zero-Sum Differential Game*
Chunbin Qin, Huaguang Zhang and Yanhong Luo 3815

1:50PM *Direct Adaptive Control of a Four-Rotor Helicopter Using Disturbance Observer*
Fuyang Chen, Bin Jiang and Feifei Lu 3821

2:10PM *Discrete-Time Polynomial Fuzzy Observer Designs via a Sum of Squares Approach*
Yingying Wang, Huaguang Zhang, Jianyu Zhang and Yingchun Wang 3826

2:30PM *Adaptive Fault-Tolerant Control for a Class of Uncertain Nonlinear MISO Discrete-Time Systems in Triangular Forms with Actuator Failures*
Lei Liu and Zhanshan Wang 3831

2:50PM *Decoupling Control for Five-Phase Fault-Tolerant Permanent-Magnet Motor by Using SVM Inverse System Method*
Guohai Liu, Li Qu, Hao Zhang and Yan Jiang 3837

3:10PM *Fault Diagnosis of Five-Phase Fault-Tolerant Permanent-Magnet Motor Based on Principal Component Neural Network*
Guohai Liu and Lu Zhou 3841

Special Session: FrN3-2 Cognitive Computing and Neuro-Cognitive Robots, Chair: Huajin Tang and Gang Pan, Room: 305A

1:30PM *Bio-Inspired Categorization Using Event-Driven Feature Extraction and Spike-Based Learning*
Bo Zhao, Shoushun Chen and Huajin Tang 3845

1:50PM *A New Learning Rule for Classification of Spatiotemporal Spike Patterns*
Qiang Yu, Huajin Tang and Kay Chen Tan 3853

2:10PM *Spatial Filter Adaptation Based on Geodesic-Distance for Motor EEG Classification*
Xinyang Li, Cuntai Guan, Kai Keng Ang, Haihong Zhang and Sim Heng Ong 3859

2:30PM *Decoding Motor Cortical Activities of Monkey: A Dataset*
Luoqing Zhou, Yu Qi, Yueming Wang, Gang Pan, Yiwen Wang, Xiaoxiang Zheng and Zhaohui Wu3865

2:50PM *Programming a VG-RAM Based Neural Network Computer*
Alberto F. De Souza, Avelino Forechi, Filipe W. Mutz, Mariella Berger, Thiago Oliveira-Santos and Claudine Badue 3871

3:10PM *High-Fidelity Compression of Electroneurographic Signals from Motor Cortex*
Rachel Zhang, Gang Pan, Yueming Wang and Zhenfang Hu 3879

3:30PM *Cognitive Memory Systems in Consciousness and Memory Model*
Zhongzhi Shi, Xiaofeng Wang and Xi Yang 3887

FrN3-3 Unsupervised Learning and Clustering, Chair: Alessandro Ghio, Room: 305B

1:30PM *Controlling Orthogonality Constraints for Better NMF Clustering*
Ievgen Redko and Younes Bennani 3894

1:50PM *Random Subspaces NMF for Unsupervised Transfer Learning*
Ievgen Redko and Younes Bennani 3901

2:10PM *User-Generated-Video Summarization Using Sparse Modelling*
Yulong Liu, Huaping Liu, Yunhui Liu and Fuchun Sun 3909

2:30PM *Smartphone Battery Saving by Bit-Based Hypothesis Spaces and Local Rademacher Complexities*
Davide Anguita, Alessandro Ghio, Luca Oneto and Sandro Ridella 3916

2:50PM *SVD Truncation Schemes for Fixed-Size Kernel Models*
Ricardo Castro, Siamak Mehrkanoon, Anna Marconato, Johan Schoukens and Johan Suykens 3922

3:10PM *An Ordinal Kernel Trick for a Computationally Efficient Support Vector Machine*
Yara Rizk, Nicholas Mitri and Mariette Awad 3930

FrN3-4 Cognition, Bio-Inspired and Biomorphic Systems, Chair: Ali Minai, Room: 305C

1:30PM *The Stapedius Reflex: Processing Its Neuronal Activity with a Small Embedded System*
Ralf Warmuth and Ralf Salomon 3938

1:50PM *Dynamic Modeling of an Ostraciiform Robotic Fish Based on Angle of Attack Theory*
Wei Wang, Guangming Xie and Hong Shi 3944

2:10PM *Detection of Signaling Pathways in Human Brain during Arousal of Specific Emotion*
Reshma Kar, Amit Konar, Aruna Chakraborty and Atulya Nagar 3950

2:30PM *Chunks of Thought: Finding Salient Semantic Structures in Texts*
Mei Mei, Aashay Vanarase and Ali Minai 3958

2:50PM *Bio-Inspired Probabilistic Model for Crowd Emotion Detection*
Mirza Waqar Baig, Emilia Barakova and Matthias Rauterberg 3966

3:10PM *A Self-Organized Artificial Neural Network Architecture that Generates the McGurk Effect*
Lennart Gustafsson, Tamas Jantvik and Andrew Paplinski 3974

FrN3-5 Machine Learning and Applications I, Chair: Bijaya Ketan Panigrahi, Room: 305D

1:30PM *Exponential Synchronization for a Class of Networked Linear Parabolic PDE Systems via Boundary Control*
Jun-Wei Wang, Cheng-Dong Yang and Chang-Yin Sun 3981

1:50PM *Combining Technical Trading Rules Using Parallel Particle Swarm Optimization Based on Hadoop*
Fei Wang, Philip Yu and David Cheung 3987

2:10PM *Prediction Interval Estimation for Electricity Price and Demand Using Support Vector Machines*
Nitin Anand Shrivastava, Abbas Khosravi and Bijaya Ketan Panigrahi 3995

2:30PM *Enhancing MOPSO through the Guidance of ANNs*
Timothy Rawlins, Andrew Lewis, Jan Hettenhausen and Timoleon Kipouros 4003

2:50PM *Training High-Dimensional Neural Networks with Cooperative Particle Swarm Optimiser*
Anna Rakitianskaia and Andries Engelbrecht 4011

3:10PM *Improved Modeling of Pneumatic Muscle Actuator Using Recurrent Neural Network*
Alexander Hosovsky, Jana Mizakova and Jan Pitel 4019

FrN3-6 Brain-Machine Interfaces, Chair: Li-Wei Ko, Room: 305E

1:30PM *Explorer Based on Brain Computer Interface*
Lijuan Bai, Tianyou Yu and Yuanqing Li 4025

1:50PM *Multi-Factor EEG-Based User Authentication*
Tien Pham, Wanli Ma, Dat Tran and Phuoc Nguyen 4029

2:10PM *Recognizing Slow Eye Movement for Driver Fatigue Detection with Machine Learning Approach*
Yingying Jiao, Bao-Liang Lu, Xiaoping Chen, Shanguang Chen and Chunhui Wang 4035

2:30PM *Neural Signal Analysis by Landmark-Based Spectral Clustering with Estimated Number of Clusters*
Thanh Nguyen, Abbas Khosravi, Douglas Creighton and Saeid Nahavandi 4042

2:50PM *Calibration-Less Detection of Steady-State Visual Evoked Potentials - Comparisons and Combinations of Methods*
Hubert Cecotti and Damien Coyle 4050

Friday, July 11, 4:00PM-6:00PM

Special Session: FrN4-1 Computational Intelligence in Cyber Security, Chair: Frank Jiang and Longbing Cao, Room: 308

4:00PM *Cognitive Neural Network for Cybersecurity*
Leonid Perlovsky and Olexander Shevchenko 4056

4:20PM *Large Scale Recurrent Neural Network on GPU*
Boxun Li, Erjin Zhou, Bo Huang, Jiayi Duan, Yu Wang, Ningyi Xu, JIaxing Zhang and Huazhong Yang 4062

4:40PM *A Connectionist Approach to Airliner Safety*
Marvin Oliver Schneider and Joao Luis Garcia Rosa 4070

5:00PM *Attribute Weighting: How and When Does it Work for Bayesian Network Classification*
Jia Wu, Zhihua Cai, Shirui Pan, Xingquan Zhu and Chengqi Zhang 4076

5:20PM *Extension of Similarity Measures in VSM: from Orthogonal Coordinate System to Affine Coordinate System*
Junyu Xuan, Jie Lu, Guangquan Zhang and Xiangfeng Luo 4084

Special Session: FrN4-2 Computational Intelligence in Brain Computer Interface, Chair: Li-Wei Ko and Chin-Teng Lin, Room: 305A

4:00PM *Medical Diagnosis Applications Using a Novel Interactively Recurrent Self-Evolving Fuzzy CMAC Model*
Jyun-Guo Wang, Shen-Chuan Tai and Cheng-Jian Lin 4092

4:20PM *A Novel Classification Method for Motor Imagery Based on Brain-Computer Interface*
Chih-Yu Chen, Chun-Wei Wu, Chin-Teng Lin and Shi-An Chen 4099

4:40PM *Motor Imagery Classification for Brain-Computer Interfaces through a Chaotic Neural Network*
Denis Renato de Moraes Piazentin and Joao Luis Rosa 4103

5:00PM *EEG-Based Driving Fatigue Prediction System Using Functional-Link-Based Fuzzy Neural Network*
Yu-Ting Liu, Yang-Yin Lin, Shang-Lin Wu, Chun-Hsiang Chuang and Chin-Teng Lin 4109

5:20PM *Developing a Few-Channel Hybrid BCI System by Using Motor Imagery with SSVEP Assist*
Li-Wei Ko, Shih-Chuan Lin and Meng-Shue Song 4114

5:40PM *A Novel BCI-SSVEP Based Approach for Control of Walking in Virtual Environment Using a Convolutional Neural Network*
Giacomo Tattoli, Domenico Buongiorno, Claudio Loconsole, Daniele Leonardis, Michele Barsotti, Vitoantonio Bevilacqua, Antonio Frisoli and Massimo Bergamasco 4121

FrN4-3 Support Vector Machines and Kernel Methods, Chair: Alessandro Sperduti, Room: 305B

4:00PM *Kernel-Based Semi-Supervised Learning for Novelty Detection*
Van Nguyen, Trung Le, Pham Thien, Mi Dinh and Hoang Thai Le 4129

4:20PM *Robust Support Vector Machine*
Trung Le, Dat Tran, Wanli Ma, Thien Pham, Phuong Duong and Minh Nguyen 4137

4:40PM *Integrating Bi-Directional Contexts in a Generative Kernel for Trees*
Davide Bacciu, Alessio Micheli and Alessandro Sperduti 4145

5:00PM *Large Scale Semi-Supervised Learning Using KSC Based Model*
Siamak Mehrkanoon and Johan Suykens 4152

5:20PM *A Practical SIM Learning Formulation with Margin Capacity Control*
Thomas Vacek 4160

5:40PM *Quantized Mixture Kernel Least Mean Square*
Rosha Pokharel, Sohan Seth and Jose Principe 4168

FrN4-4 Feature Extraction and Classification Systems, Chair: Emil Eirola, Room: 305C

4:00PM *Multi-View Uncorrelated Linear Discriminant Analysis with Applications to Handwritten Digit Recognition*
Mo Yang and Shiliang Sun 4175

4:20PM *Differentially Private Feature Selection*
Jun Yang and Yun Li 4182

4:40PM *A Binary Feature Selection Framework in Kernel Spaces*
Chengzhang Zhu, Xinwang Liu, Sihang Zhou, Qiang Liu and Jianping Yin 4190

5:00PM *A Flexible and Efficient Algorithm for Regularized Marginal Fisher Analysis*
Jinrong He, Lixin Ding, Lei Jiang and Li Huang 4198

5:20PM *Estimation of Individual Prediction Reliability Using Error Analysis Applied to Short-Term Load Forecasting Problem*
Elia Matsumoto and Emilio Del-Moral-Hernandez 4206

5:40PM *The Delta Test: The 1-NN Estimator as a Feature Selection Criterion*
Emil Eirola, Amaury Lendasse, Francesco Corona and Michel Verleysen 4214

FrN4-5 Machine Learning and Applications II, Chair: Giacomo Boracchi, Room: 305D

4:00PM *Improved Biogeography-Based Optimization Approach to Secondary Protein Prediction*
Ruisong Fan, Haibin Duan and Guangming Xie 4223

4:20PM *Integrating Self-Organizing Neural Network and Motivated Learning for Coordinated Multi-Agent Reinforcement Learning in Multi-Stage Stochastic Game*
Teck-Hou Teng, Ah-Hwee Tan, Janusz Starzyk, Yuan-Sin Tan and Loo-Nin Teow 4229

4:40PM *Extracting Temporal Knowledge from Time Series: A Case Study in Ecological Data*
Reggio Hartono, Russel Pears, Nikola Kasabov and Susan Worner 4237

5:00PM *Planning-Driven Behavior Selection Network for Controlling a Humanoid Robot*
Yu-Jung Chae and Sung-Bae Cho 4244

5:20PM *Sliding Window-Based Analysis of Multiple Foreign Exchange Trading Systems by Using Soft Computing Techniques*
Rodrigo Brito and Adriano Oliveira 4251

5:40PM *Learning in Dynamic Decision Making: The Usability Process*
Liana Stanca, Ramona Lacurezeanu and Cristina Felea 4259

FrN4-6 Neuromorphic Hardware, Chair: Eros Pasero, Room: 305E

4:00PM *Majority Neuron Circuit Having Large Fan-in with Non-Volatile Synaptic Weight*
Akima Hisanao, Katayama Yasuhiro, Nakajima Koji, Sakuraba Masao and Sato Shigeo 4266

4:20PM *Accelerating Pattern Matching in Neuromorphic Text Recognition System Using Intel Xeon Phi Coprocessor*
Khadeer Ahmed, Qinru Qiu, Parth Malani and Mangesh Tamhankar 4272

4:40PM *Optimising the Overall Power Usage on the SpiNNaker Neuromimetic Platform*
Evangelos Stromatias, Cameron Patterson and Steve Furber 4280

5:00PM *Efficient Implementation of STDP Rules on SpiNNaker Neuromorphic Hardware*
Peter U. Diehl and Matthew Cook 4288

5:20PM *Robust Doublet STDP in a Floating-Gate Synapse*
Roshan Gopalakrishnan and Arindam Basu 4296

5:40PM *Clustering and Synchronous Firing of Coupled Rulkov Maps with STDP for Modeling Epilepsy*
Naohiro Shibuya, Charles Unsworth, Yoko Uwate and Yoshifumi Nishio 4302