# 2014 International Joint Conference on Neural Networks

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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

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

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

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

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

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  

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  

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  

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

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

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

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

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  

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  

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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

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

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

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

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

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

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

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

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 Jia

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

5:20PM Support Vector Regression of Multiple Predictive Models of Downward Short-Wave Radiation
Pavel Kromer, Petr Musilek, Emil Pelikan, Pavel Krc, Pavel Juras and Krystof Eben
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<td>Intelligent Facial Action and Emotion Recognition for Humanoid Robots</td>
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5:00PM  Sampling-Based Learning Control for Quantum Discrimination and Ensemble Classification
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Tuesday, July 8, 1:30PM-3:30PM

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1:30PM  Exploring the Performance of Non-Negative Multi-Way Factorization for Household Electrical Seasonal Consumption Disaggregation
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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*
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**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

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

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

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

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

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

**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

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

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

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

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

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

**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

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

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

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

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

3:10PM  *A Google Approach for Computational Intelligence in Big Data*
Andreas Antoniades and Clive Cheong Took
**TuN1-5 Feedforward Neural Networks II, Chair: Brijesh Verma, Room: 305D**

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| 2:50PM | *Optimizing Configuration of Neural Ensemble Network for Breast Cancer Diagnosis*  
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**Poster Session: PN2 Poster Session 2, Chair: Danil Prokhorov, Room: Posters Area (Level 3)**

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**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

- **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

- **4:40PM** *Home Energy Management Benefits Evaluation Through Fuzzy Logic Consumptions Simulator*
  Lucio Ciabattoni, Massimo Grisostomi, Gianluca Ippoliti and Sauro Longhi
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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 Yunning Ye  
1776

3:30PM  An Investigation 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
### Poster Session: PN3 Poster Session 3, Chair: Manuel Roveri, Room: Posters Area (Level 3)

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<td>An Algorithm for Real-Time Object Tracking in Complex Environment</td>
<td>Dongxu Gao, Jiangtao Cao and Zhaojie Ju</td>
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<td>P504</td>
<td>Robust Prediction in Nearly Periodic Time Series Using Motifs</td>
<td>Woon Huei Chai, Hongliang Guo and Shen-Shyang Ho</td>
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<td>P505</td>
<td>A Hybrid Coupled k-Nearest Neighbor Algorithm on Imbalance Data</td>
<td>Chunming Liu, Longbing Cao and Philip S Yu</td>
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<td>Agglomerative Clustering of Defects in Ultrasonic Non-Destructive Testing Using Hierarchical Mixtures of Independent Component Analyzers</td>
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<td>Ashish Bora, Arjun Rao and Bipin Rajendran</td>
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<td>Neural Approach for Bearing Fault Classification in Induction Motors by Using Motor Current and Voltage</td>
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Color Image Processing Based on Nonnegative Matrix Factorization with Convolutional Neural Network
Thanh Xuan Luong, Bo-Kyeong Kim and Soo-Young Lee

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

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

A New Multi-Task Learning Based Wi-Fi Location Approach Using $\ell_{1/2}$-Norm
Wentao Mao, Haicheng Wang and Shangwang Liu

A Combined Model for Scan Path in Pedestrian Searching
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Gain Parameters Based Complex-Valued BackPropagation Algorithm for Learning and Recognizing Hand Gestures
Yuanshan Liu, He Huang and Tingwen Huang

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

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

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

A Half-Split Grid Clustering Algorithm by Simulating Cell Division
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Stochastic Gradient Based Iterative Identification Algorithm for a Class of Dual-Rate Wiener Systems
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Wiener Model Identification of Blast Furnace Ironmaking Process Based on Laguerre Filter and Linear Programming Support Vector Regression
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Learning Features from High Speed Train Vibration Signals with Deep Belief Networks
Jipeng Xie, Yan Yang, Tianli Li and Weidong Jin

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

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

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

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

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

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

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

Kernel Ridge Regression Classification
Jinrong He, Lixin Ding, Lei Jiang and Ling Ma
Causality Traces for Retrospective Learning in Neural Networks - Introduction of Parallel and Subjective Time Scales
Katsunari Shibata

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

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

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 Vранец, 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

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

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

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

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

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

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

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

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

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

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

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

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

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

4:40PM Stochastic Spiking Neural Networks at the Edge of Chaos
J.L. Rossello, V. Canals, A. Oliver and A. Morro
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<td>Zafeirios Fountas and Murray Shanahan</td>
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<td>A Sequential Learning Algorithm for a Minimal Spiking Neural Network (MSNN) Classifier</td>
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**WeN2-5 Unsupervised Learning and Clustering II, Chair: Akira Hirose, Room: 305D**

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<td>Hierarchical Linear Dynamical Systems: A New Model for Clustering of Time Series</td>
<td>Gökçü Cinar, Carlos Loza and Jose Principe</td>
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**WeN2-6 Dynamics of Neural Systems, Chair: Zhanshan Wang, Room: 305E**

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<td>A Review on Evolution of Lyapunov-Krasovskii Function in Stability Analysis of Recurrent Neural Networks with Single Time-Varying Delay</td>
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**Industrial Session: WeN2-7 CI on Control Systems, Chair: Ruben Morales-Menendez and Aguilar Jose, Room: 303**

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5:40PM *Anomaly Detection Based on Indicators Aggregation*
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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

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**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, Chuanlong 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 Riedmüller 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

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 Stochastic Blockmodels  
Eunsil Gim, Juho Lee and Seungjin Choi  
2965

P728  Splitting 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 Zincling  
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  
Lufun Marwala and Twala Bhekisipho  
3049

P742  PVIS - Partitions' Visualizer: Extracting Knowledge by Visualizing a Collection of Partitions  
Katti Faceli, Tiemi Sakata, Andre Carvalho and Marcelio 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 Scarpet 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 Jinx 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, Fangteng 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

**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

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

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

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

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

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

**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

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

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

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

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

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

**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

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

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
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 Adrianio, 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 Cayley-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
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<td>A New Stability Condition for Discrete Time Recurrent Neural Networks with Complex-Valued Linear Threshold Neurons</td>
<td>Wei Zhou and Jacek M. Zurada</td>
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<td>Ultra-Short-Pulse Acoustic Imaging Using Complex-Valued Spatio-Temporal Neural-Network for Null-Steering: Experimental Results</td>
<td>Kotaro Terabayashi and Akira Hirose</td>
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<td>Finite Convergence of the Learning Algorithms for a Modified Multi-Valued Neuron</td>
<td>Dongpo Xu and Shuang Liang</td>
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**FrN1-4 Visual Systems, Chair: Zeng-Guang Hou, Room: 305C**

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<td>V4 Neural Network Model for Visual Saliency and Discriminative Local Representation of Shapes</td>
<td>Hui Wei and Zheng Dong</td>
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<td>Binocular Visual Servoing Based on PID Neural Network</td>
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<td>Measurement of Confusion Color Pairs for Dichromats in order to Use Applications Supporting Color Vision Deficiency</td>
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**FrN1-5 Data Analysis and Pattern Recognition, Chair: Wladyslaw Homenda, Room: 305D**

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<td>RNN and SOM Based Classifier to Recognize Assamese Fricative Sounds Designed Using Frame Based Temporal Feature Sets</td>
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<td>Artificial Neural Network Based Gait Patterns Identification Using Neuromuscular Signals and Soft Tissue Deformation Analysis of Lower Limbs Muscles</td>
<td>S. M. N. Arosha Senanayake, Joko Triloka, Owais A, Malik and Muhammad Pg. Iskandar</td>
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**FrN1-6 Hybrid Architectures and Learning , Chair: Gianluca Bontempi, Room: 305E**

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<td>Sub-Classifier Construction for Error Correcting Output Code Using Minimum Weight Perfect Matching</td>
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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  

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

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, Daniil Prokhorov and Ilya Romanenko  

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  

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

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

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

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  

12:10PM  
**A Novel Intelligent Systems for Speech Recognition**  
Washington Silva and Ginalber Serra  

**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  

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  

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  

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

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

12:10PM  
**Investigating the Impacts of Epilepsy on EEG-Based Person Identification Systems**  
Dinh Phung, Dat Tran, Wanli Ma, Phuoc Nguyen and Tien Pham
### Special Session: FrN2-3 Data-Driven Adaptive Dynamic Programming, Chair: Derong Liu and Haibo He, Room: 305B

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<td>Jian Fu, Haibo He, Ai均衡ing Tang and Sujuan Wei</td>
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<td>A Kalman Filter-Based Actor-Critic Learning Approach</td>
<td>Bin Wang and Dongbin Zhao</td>
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### FrN2-4 Data Mining and Knowledge Discovery, Chair: Paulo Adeodato and Alessandro Sperduti, Room: 305C

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<td>Insights on Prediction of Patients' Response to Anti-HIV Therapies through Machine Learning</td>
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### FrN2-5 Large Scale, Associative and Self-Organizing Networks, Chair: Jinde Cao, Room: 305D

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10:50AM  Support Vector Machine with SOM-Based Quasi-Linear Kernel for Nonlinear Classification
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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
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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 Zhanhuan 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
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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 Wu 3865

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**

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<td><strong>Controlling Orthogonality Constraints for Better NMF Clustering</strong></td>
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**FrN3-4 Cognition, Bio-Inspired and Biomorphic Systems, Chair: Ali Minai, Room: 305C**

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

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<td><strong>Exponential Synchronization for a Class of Networked Linear Parabolic PDE Systems via Boundary Control</strong></td>
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**FrN3-6 Brain-Machine Interfaces, Chair: Li-Wei Ko, Room: 305E**

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<td><strong>Recognizing Slow Eye Movement for Driver Fatigue Detection with Machine Learning Approach</strong></td>
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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

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**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 Alexander 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, Shiri 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 Leonaridis, 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, Wamli Ma, Thien Pham, Phuong Duong and Minh Nguyen 4137

4:40PM  **Integrating Bi-Directional Contexts in a Generative Kernel for Trees**
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5:00PM  **Large Scale Semi-Supervised Learning Using KSC Based Model**
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<td>Liana Stanca, Ramona Lacurezeanu and Cristina Felea</td>
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### FrN4-6 Neuromorphic Hardware, Chair: Eros Pasero, Room: 305E

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<td>Accelerating Pattern Matching in Neuromorphic Text Recognition System Using Intel Xeon Phi Coprocessor</td>
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<td>Peter U. Diehl and Matthew Cook</td>
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