## Contents – Part II

### Deep Learning

- Video Description Using Bidirectional Recurrent Neural Networks
  - Álvaro Peris, Marc Bolaños, Petia Radeva, and Francisco Casacuberta
  - Page 3

- Tactile Convolutional Networks for Online Slip and Rotation Detection
  - Martin Meier, Florian Patzelt, Robert Haschke, and Helge J. Ritter
  - Page 12

- DeepPainter: Painter Classification Using Deep Convolutional Autoencoders
  - Omid E. David and Nathan S. Netanyahu
  - Page 20

- Revisiting Deep Convolutional Neural Networks for RGB-D Based Object Recognition
  - Lorand Madai-Tahy, Sebastian Otte, Richard Hanten, and Andreas Zell
  - Page 29

- Deep Learning for Emotion Recognition in Faces
  - Ariel Ruiz-Garcia, Mark Elshaw, Abdulrahman Altahhan, and Vasile Palade
  - Page 38

- Extracting Muscle Synergy Patterns from EMG Data Using Autoencoders
  - Martin Spüler, Nerea Irastorza-Landa, Andrea Sarasola-Sanz, and Ander Ramos-Murguialday
  - Page 47

- Integration of Unsupervised and Supervised Criteria for Deep Neural Networks Training
  - Francisco Zamora-Martínez, Javier Muñoz-Almaraz, and Juan Pardo
  - Page 55

- Layer-Wise Relevance Propagation for Neural Networks with Local Renormalization Layers
  - Alexander Binder, Grégoire Montavon, Sebastian Lapuschkin, Klaus-Robert Müller, and Wojciech Samek
  - Page 63

- Analysis of Dropout Learning Regarded as Ensemble Learning
  - Kazuyuki Hara, Daisuke Saitoh, and Hayaru Shouno
  - Page 72

- The Effects of Regularization on Learning Facial Expressions with Convolutional Neural Networks
  - Tobias Hinz, Pablo Barros, and Stefan Wermter
  - Page 80

- DeepChess: End-to-End Deep Neural Network for Automatic Learning in Chess
  - Omid E. David, Nathan S. Netanyahu, and Lior Wolf
  - Page 88
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Convolutional Network Model of the Primate Middle Temporal Area</td>
<td>97</td>
</tr>
<tr>
<td>Bryan P. Tripp</td>
<td></td>
</tr>
<tr>
<td>Pseudo Boosted Deep Belief Network</td>
<td>105</td>
</tr>
<tr>
<td>Tiehang Duan and Sargur N. Srihari</td>
<td></td>
</tr>
<tr>
<td>Keyword Spotting with Convolutional Deep Belief Networks and Dynamic Time Warping</td>
<td>113</td>
</tr>
<tr>
<td>Baptiste Wicht, Andreas Fischer, and Jean Hennebert</td>
<td></td>
</tr>
<tr>
<td>Computational Advantages of Deep Prototype-Based Learning</td>
<td>121</td>
</tr>
<tr>
<td>Thomas Hecht and Alexander Gepperth</td>
<td></td>
</tr>
<tr>
<td>Deep Convolutional Neural Networks for Classifying Body Constitution</td>
<td>128</td>
</tr>
<tr>
<td>Haiteng Li, Bin Xu, Nanyue Wang, and Jia Liu</td>
<td></td>
</tr>
<tr>
<td>Feature Extractor Based Deep Method to Enhance Online Arabic Handwritten Recognition System</td>
<td>136</td>
</tr>
<tr>
<td>Mohamed Elleuch, Ramzi Zouari, and Monji Kherallah</td>
<td></td>
</tr>
<tr>
<td>On Higher Order Computations and Synaptic Meta-Plasticity in the Human Brain</td>
<td>145</td>
</tr>
<tr>
<td>Stanisław Ambroszkiewicz</td>
<td></td>
</tr>
<tr>
<td>Compression of Deep Neural Networks on the Fly</td>
<td>153</td>
</tr>
<tr>
<td>Guillaume Soulié, Vincent Gripon, and Maëlys Robert</td>
<td></td>
</tr>
<tr>
<td>Blind Super-Resolution with Deep Convolutional Neural Networks</td>
<td>161</td>
</tr>
<tr>
<td>Clément Peyrard, Moez Baccouche, and Christophe Garcia</td>
<td></td>
</tr>
<tr>
<td>DNN-Buddies: A Deep Neural Network-Based Estimation Metric for the Jigsaw Puzzle Problem</td>
<td>170</td>
</tr>
<tr>
<td>Dror Sholomon, Omid E. David, and Nathan S. Netanyahu</td>
<td></td>
</tr>
<tr>
<td>A Deep Learning Approach for Hand Posture Recognition from Depth Data</td>
<td>179</td>
</tr>
<tr>
<td>Thomas Kopinski, Fabian Sachara, Alexander Gepperth, and Uwe Handmann</td>
<td></td>
</tr>
<tr>
<td>Action Recognition in Surveillance Video Using ConvNets and Motion History Image</td>
<td>187</td>
</tr>
<tr>
<td>Sheng Luo, Haojin Yang, Cheng Wang, Xiaoyin Che, and Christoph Meinel</td>
<td></td>
</tr>
</tbody>
</table>

**Classification and Forecasting**

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bi-Modal Deep Boltzmann Machine Based Musical Emotion Classification</td>
<td>199</td>
</tr>
<tr>
<td>Moyuan Huang, Wenge Rong, Tom Arjannikov, Nan Jiang, and Zhang Xiong</td>
<td></td>
</tr>
</tbody>
</table>
StreamLeader: A New Stream Clustering Algorithm not Based in Conventional Clustering .............................................. 208

Jaime Andrés-Merino and Lluís A. Belanche

Comparison of Methods for Community Detection in Networks .......... 216

Hassan Mahmoud, Francesco Masulli, Stefano Rovetta, and Amr Abdullatif

A Robust Evolutionary Optimisation Approach for Parameterising a Neural Mass Model .................................................. 225

Elham Zareian, Jun Chen, and Basabdatta Sen Bhattacharya

Kernel Depth Measures for Functional Data with Application to Outlier Detection ......................................................... 235

Nicolás Hernández and Alberto Muñoz

Nesterov Acceleration for the SMO Algorithm ................................. 243

Alberto Torres-Barrán and José R. Dorronsoro

Local Reject Option for Deterministic Multi-class SVM ..................... 251

Johannes Kummert, Benjamin Paassen, Joris Jensen, Christina Göpfert, and Barbara Hammer

Palmprint Biometric System Modeling by DBC and DLA Methods and Classifying by KNN and SVM Classifiers ...................... 259

Raouia Mokni and Monji Kherallah

Ensemble Models of Learning Vector Quantization Based on Bootstrap Resampling ......................................................... 267

Fumiaki Saitoh

Cluster Ensembles Optimization Using Coral Reefs Optimization Algorithm ................................................................. 275

Huliane M. Silva, Anne M.P. Canuto, Inácio G. Medeiros, and João C. Xavier-Júnior

Classification of Photo and Sketch Images Using Convolutional Neural Networks ........................................................ 283

Kazuma Sasaki, Madoka Yamakawa, Kana Sekiguchi, and Tetsuya Ogata

Day-ahead PV Power Forecast by Hybrid ANN Compared to the Five Parameters Model Estimated by Particle Filter Algorithm .......... 291

Emanuele Ogliari, Alberto Bolzoni, Sonia Leva, and Marco Mussetta

Extended Weighted Nearest Neighbor for Electricity Load Forecasting .... 299

Mashud Rana, Irena Koprinska, Alicia Troncoso, and Vassilios G. Agelidis
Using Reservoir Computing and Trend Information for Short-Term Streamflow Forecasting ...................................................... 308
Sabrina G.T.A. Bezerra, Camila B. de Andrade, and Mêuser J.S. Valença

Effect of Simultaneous Time Series Prediction with Various Horizons on Prediction Quality at the Example of Electron Flux in the Outer Radiation Belt of the Earth ......................................................... 317
Irina Myagkova, Vladimir Shiroky, and Sergey Dolenko

A Time Series Forecasting Model Based on Deep Learning Integrated Algorithm with Stacked Autoencoders and SVR for FX Prediction ................................................................. 326
Hua Shen and Xun Liang

Multivariate Dynamic Kernels for Financial Time Series Forecasting ................................................................. 336
Mauricio Peña, Argimiro Arratia, and Lluís A. Belanche

Recognition and Navigation

Symbolic Association Using Parallel Multilayer Perceptron ...................................................... 347
Federico Raue, Sebastian Palacio, Thomas M. Breuel, Wonmin Byeon, Andreas Dengel, and Marcus Liwicki

Solution of an Inverse Problem in Raman Spectroscopy of Multi-component Solutions of Inorganic Salts by Artificial Neural Networks ...................................................... 355
Alexander Efitorov, Tatiana Dolenko, Sergey Burikov, Kirill Laptinskiy, and Sergey Dolenko

Sound Recognition System Using Spiking and MLP Neural Networks ...................................................... 363
Elena Cerezuela-Escudero, Angel Jimenez-Fernandez, Rafael Paz-Vicente, Juan P. Domínguez-Morales, Manuel J. Domínguez-Morales, and Alejandro Linares-Barranco

Using Machine Learning Techniques to Recover Prismatic Cirrus Ice Crystal Size from 2-Dimensional Light Scattering Patterns ...................................................... 372
Daniel Priori, Giseli de Sousa, Mauro Roisenberg, Christopher Stopford, Evelyn Hesse, Emmanuel Salawu, Neil Davey, and Yi Sun

25 Years of CNNs: Can We Compare to Human Abstraction Capabilities? ...................................................... 380
Sebastian Stabinger, Antonio Rodríguez-Sánchez, and Justus Piater

A Combination Method for Reducing Dimensionality in Large Datasets ...................................................... 388
Daniel Araújo, Jhoseph Jesus, Adrião Dória Neto, and Allan Martins
Two-Class with Oversampling Versus One-Class Classification
for Microarray Datasets .................................................. 398
Beatrix Pérez-Sánchez, Oscar Fontenla-Romero,
and Noelia Sánchez-Maroño

Polar Sine Based Siamese Neural Network for Gesture Recognition .... 406
Samuel Berlemont, Grégoire Lefebvre, Stefan Duffner,
and Christophe Garcia

Day Types Identification of Algerian Electricity Load Using an Image
Based Two-Stage Approach ............................................. 415
Kheir Eddine Farfar and Mohamed Tarek Khadir

SMS Spam Filtering Using Probabilistic Topic Modelling and Stacked
Denoising Autoencoder .................................................. 423
Noura Al Moubayed, Toby Breckon, Peter Matthews,
and A. Stephen McGough

Improving MDLSTM for Offline Arabic Handwriting Recognition
Using Dropout at Different Positions .................................. 431
Rania Maalej and Monji Kherallah

A Neural Network Model for Solving the Feature Correspondence Problem . . . 439
Ala Aboudib, Vincent Gripon, and Gilles Coppin

The Performance of a Biologically Plausible Model of Visual Attention
to Localize Objects in a Virtual Reality .................................. 447
Amirhossein Jamalian, Frederik Beuth, and Fred H. Hamker

Pose-Invariant Object Recognition for Event-Based Vision with Slow-ELM . . 455
Rohan Ghosh, Tang Siyi, Mahdi Rasouli, Nitish V. Thakor,
and Sunil L. Kukreja

Learning V4 Curvature Cell Populations from Sparse Endstopped Cells ...... 463
Antonio Rodríguez-Sánchez, Sabine Oberleiter, Hanchen Xiong,
and Justus Piater

Recognition of Transitive Actions with Hierarchical Neural Network
Learning ........................................................................... 472
Luiza Mici, German I. Parisi, and Stefan Wermter

Rotation-Invariant Restricted Boltzmann Machine Using Shared
Gradient Filters ................................................................. 480
Mario Valerio Giuffrida and Sotirios A. Tsaftaris

Improving Robustness of Slow Feature Analysis Based Localization
Using Loop Closure Events .............................................. 489
Benjamin Metka, Mathias Franzius, and Ute Bauer-Wersing
Self-Organizing Map for the Curvature-Constrained Traveling Salesman Problem ...................................... 497
  Jan Faigl and Petr Váňa

Non-negative Kernel Sparse Coding for the Analysis of Motion Data ............ 506
  Babak Hosseini, Felix Hülsmann, Mario Botsch, and Barbara Hammer

Effect of Neural Controller on Adaptive Cruise Control ......................... 515
  Arden Kuyumcu and Neslihan Serap Şengör

 Intelligent Speech-Based Interactive Communication Between Mobile Cranes and Their Human Operators ............... 523
  Maciej Majewski and Wojciech Kacalak

Short Papers

Orthogonal Permutation Linear Unit Activation Function (OPLU) .............. 533
  Artem Chernodub and Dimitri Nowicki

Smartphone Based Human Activity and Postural Transition Classification with Deep Stacked Autoencoder Networks .......................... 535
  Luke Hicks, Yih-Ling Hedley, Mark Elshaw, Abdulrahman Altahhan, and Vasile Palade

Accuracies and Number of Rules Extracted Using the Re-RX Algorithm Family from a Pareto-Optimal Perspective ....................... 537
  Yoichi Hayashi, Guido Bologna, and Riku Hashiguchi

Finding an Hidden Common Partition in Duplex Structure-Function Brain Networks .................................................. 539
  Casimiro Pio Carrino and Sebastiano Stramaglia

A Novel Quasi-Newton-Based Training Using Nesterov’s Accelerated Gradient for Neural Networks ............................ 540
  Hiroshi Ninomiya

Use of Ensemble Approach and Stacked Generalization for Neural Network Prediction of Geomagnetic Dst Index ............... 541
  Vladimir Shiroky, Irina Myagkova, and Sergey Dolenko

Artificial Neural Network for the Urinary Lithiasis Type Identification .... 542
  Yasmina Nozha Mekki, Nadir Farah, Abdelatif Boutefnouchet, and KheirEddine Chettibi

Artificial Neural Network-Based Modeling for Multi-scroll Chaotic Systems .......................... 544
  Mohammed Amin Khelifa and Abdelkrim Boukabou
Detailed Remote Sensing of High Resolution Planetary Images by Artificial Neural Network

Marzieh Foroutan

Sentiment Analysis Using Extreme Learning Machine with Linear Kernel

Shangdi Sun and Xiaodong Gu

Neural Network with Local Receptive Fields for Illumination Effects

Alejandro Lerer, Matthias S. Keil, and Hans Supér

ROS Based Autonomous Control of a Humanoid Robot

Ganesh Kumar Kalyani, Zhijun Yang, Vaibhav Gandhi, and Tao Geng

A Robotic Implementation of Drosophila Larvae Chemotaxis

Daniel Malagarriga, Ivica Slavkov, James Sharpe, and Matthieu Louis

Author Index
## Contents – Part I

### From Neurons to Networks

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved Chaotic Multidirectional Associative Memory.</td>
<td>3</td>
</tr>
<tr>
<td>Hiroki Sato and Yuko Osana</td>
<td></td>
</tr>
<tr>
<td>Effect of Pre- and Postsynaptic Firing Patterns on Synaptic Competition</td>
<td>11</td>
</tr>
<tr>
<td>Nobuhiro Hinakawa and Katsunori Kitano</td>
<td></td>
</tr>
<tr>
<td>Asymmetries in Synaptic Connections and the Nonlinear Fokker-Planck Formalism</td>
<td>19</td>
</tr>
<tr>
<td>Roseli S. Wedemann and Angel R. Plastino</td>
<td></td>
</tr>
<tr>
<td>Synaptogenesis: Constraining Synaptic Plasticity Based on a Distance Rule</td>
<td>28</td>
</tr>
<tr>
<td>Jordi-Ysard Puigbò, Joeri van Wijngaarden, Sock Ching Low, and Paul F.M.J. Verschure</td>
<td></td>
</tr>
<tr>
<td>A Sensor Fusion Horse Gait Classification by a Spiking Neural Network on SpiNNaker</td>
<td>36</td>
</tr>
<tr>
<td>Multilayer Spiking Neural Network for Audio Samples Classification Using SpiNNaker</td>
<td>45</td>
</tr>
<tr>
<td>Input-Modulation as an Alternative to Conventional Learning Strategies</td>
<td>54</td>
</tr>
<tr>
<td>Esin Yavuz and Thomas Nowotny</td>
<td></td>
</tr>
<tr>
<td>A Potential Mechanism for Spontaneous Oscillatory Activity in the Degenerative Mouse Retina</td>
<td>63</td>
</tr>
<tr>
<td>Kanako Taniguchi, Chieko Koike, and Katsunori Kitano</td>
<td></td>
</tr>
<tr>
<td>Striatal Processing of Cortical Neuronal Avalanches – A Computational Investigation</td>
<td>72</td>
</tr>
<tr>
<td>Jovana J. Belić and Jeanette Hellgren Kotalski</td>
<td></td>
</tr>
</tbody>
</table>
Networks and Dynamics

Mapping the Language Connectome in Healthy Subjects and Brain Tumor Patients ........................................... 83
    Gregory Zegarek, Xerxes D. Arsiwalla, David Dalmazzo, and Paul F.M.J. Verschure

Method for Estimating Neural Network Topology Based on SPIKE-Distance ........................................... 91
    Kaori Kuroda and Mikio Hasegawa

Dynamics of Evolving Feed-Forward Neural Networks and Their Topological Invariants ............................... 99
    Paolo Masulli and Alessandro E.P. Villa

Scaling Properties of Human Brain Functional Networks ................................................................. 107
    Riccardo Zucca, Xerxes D. Arsiwalla, Hoang Le, Mikail Rubinov, and Paul F.M.J. Verschure

Attractor Dynamics Driven by Interactivity in Boolean Recurrent Neural Networks .................................. 115
    Jérémie Cabessa and Alessandro E.P. Villa

Training Bidirectional Recurrent Neural Network Architectures with the Scaled Conjugate Gradient Algorithm .... 123
    Michalis Agathocleous, Chris Christodoulou, Vasilis Promponas, Petros Kountouris, and Vassilis Vassiliades

Learning Multiple Timescales in Recurrent Neural Networks ............................................................... 132
    Tayfun Alpay, Stefan Heinrich, and Stefan Wermter

Investigating Recurrent Neural Networks for Feature-Less Computational Drug Design ............................. 140
    Alexander Dörr, Sebastian Otte, and Andreas Zell

Inverse Recurrent Models – An Application Scenario for Many-Joint Robot Arm Control .......................... 149
    Sebastian Otte, Adrian Zwiener, Richard Hanten, and Andreas Zell

Population Coding of Goal Directed Movements ............................................................................... 158
    Andreas G. Fleischer

Body Model Transition by Tool Grasping During Motor Babbling Using Deep Learning and RNN ............... 166
    Kuniyuki Takahashi, Hadi Tjandra, Tetsuya Ogata, and Shigeki Sugano

Centering Versus Scaling for Hubness Reduction ............................................................................... 175
    Roman Feldbauer and Arthur Flexer
Higher Nervous Functions

Influence of Saliency and Social Impairments on the Development of Intention Recognition ................................................................. 205
Laura Cohen and Aude Billard

A System-Level Model of Noradrenergic Function ................................. 214
Maxime Carrere and Frédéric Alexandre

Phenomenological Model for the Adaptation of Shape-Selective Neurons in Area IT .................................................................................. 222
Martin A. Giese, Pradeep Kuravi, and Rufin Vogels

Deliberation-Aware Responder in Multi-proposer Ultimatum Game ............ 230
Marko Ruman, František Hůla, Miroslav Kárny, and Tatiana V. Guy

From Cognitive to Habit Behavior During Navigation, Through Cortical-Basal Ganglia Loops ................................................................. 238
Jean-Paul Banquet, Souheïl Hanoune, Philippe Gaussier, and Mathias Quoy

Fast and Slow Learning in a Neuro-Computational Model of Category Acquisition .................................................................................. 248
Francesc Villagrasa, Javier Baladron, and Fred H. Hamker

Realizing Medium Spiny Neurons with a Simple Neuron Model .................. 256
Sami Utku Çelikok and Neslihan Serap Şengör

Marta Balagué and Laura Dempere-Marco

Plasticity in the Granular Layer Enhances Motor Learning in a Computational Model of the Cerebellum ...................................................... 272
Giovanni Maffei, Ivan Herreros, Marti Sanchez-Fibla, and Paul F.M.J. Verschure

How Is Scene Recognition in a Convolutional Network Related to that in the Human Visual System? ......................................................... 280
Sugandha Sharma and Bryan Tripp
Hybrid Trajectory Decoding from ECoG Signals for Asynchronous BCIs

Marie-Caroline Schaeffer and Tetiana Aksenova

Dimensionality Reduction Effect Analysis of EEG Signals in Cross-Correlation Classifiers Performance

Jefferson Tales Oliva and João Luís Garcia Rosa

EEG-driven RNN Classification for Prognosis of Neurodegeneration in At-Risk Patients

Giulio Ruffini, David Ibañez, Marta Castellano, Stephen Dunne, and Aureli Soria-Frisch

Competition Between Cortical Ensembles Explains Pitch-Related Dynamics of Auditory Evoked Fields

Alejandro Tabas, André Rupp, and Emili Balaguer-Ballester

Dynamics of Reward Based Decision Making: A Computational Study

Bhargav Teja Nallapu and Nicolas P. Rougier

Adaptive Proposer for Ultimatum Game

František Hůla, Marko Ruman, and Miroslav Kárný

Dynamical Linking of Positive and Negative Sentences to Goal-Oriented Robot Behavior by Hierarchical RNN

Tatsuro Yamada, Shingo Murata, Hiroaki Arie, and Tetsuya Ogata

Neuronal Hardware

Real-Time FPGA Simulation of Surrogate Models of Large Spiking Networks

Murphy Berzish, Chris Eliasmith, and Bryan Tripp

Randomly Spiking Dynamic Neural Fields Driven by a Shared Random Flow

Benoît Chappet de Vangel and Bernard Girau

Synfire Chain Emulation by Means of Flexible SNN Modeling on a SIMD Multicore Architecture

Mireya Zapata and Jordi Madrenas

Towards Adjustable Signal Generation with Photonic Reservoir Computers

Piotr Antonik, Michiel Hermans, Marc Haelterman, and Serge Massar

Hierarchical Networks-on-Chip Interconnect for Astrocyte-Neuron Network Hardware

Junxiu Liu, Jim Harkin, Liam McDaid, and George Martin
Restricted Boltzmann Machines Without Random Number Generators for Efficient Digital Hardware Implementation .......................... 391

Sansei Hori, Takashi Morie, and Hakaru Tamukoh

Compact Associative Memory for AER Spike Decoding in FPGA-Based Evolvable SNN Emulation ........................................ 399

Mireya Zapata and Jordi Madrenas

Learning Foundations

Combining Spatial and Parametric Working Memory in a Dynamic Neural Field Model ......................................................... 411

Weronika Wojtak, Stephen Coombes, Estela Bicho, and Wolfram Erlhagen

C4.5 or Naive Bayes: A Discriminative Model Selection Approach ........ 419

Lungan Zhang, Liangxiao Jiang, and Chaoqun Li

Adaptive Natural Gradient Learning Algorithms for Unnormalized Statistical Models .............................................................. 427

Ryo Karakida, Masato Okada, and Shun-ichi Amari

Octonion-Valued Neural Networks ...................................................... 435

Călin-Adrian Popa

Reducing Redundancy with Unit Merging for Self-constructive Normalized Gaussian Networks .............................................. 444

Jana Backhus, Ichigaku Takigawa, Hideyuki Imai, Mineichi Kudo, and Masanori Sugimoto

Learning to Enumerate. ................................................................. 453

Patrick Jörger, Yukino Baba, and Hisashi Kashima

Pattern Based on Temporal Inference. ............................................... 461

Zeineb Neji, Marieme Ellouze, and Lamia Hadrich Belguith

Neural Networks Simulation of Distributed Control Problems with State and Control Constraints ............................................. 468

Tibor Kmet and Maria Kmetova

The Existence and the Stability of Weighted Pseudo Almost Periodic Solution of High-Order Hopfield Neural Network .................. 478

Chaouki Aouiti, Mohammed Salah M’hamdi, and Farouk Chérif

Sparse Extreme Learning Machine Classifier Using Empirical Feature Mapping ................................................................. 486

Takuya Kitamura
Three Approaches to Train Echo State Network Actors of Adaptive Critic Design .................................................. 494

Petia Koprinkova-Hristova

Increase of the Resistance to Noise in Data for Neural Network Solution of the Inverse Problem of Magnetotellurics with Group Determination of Parameters ................................................................. 502

Igor Isaev, Eugeny Obornev, Ivan Obornev, Mikhail Shimelevich, and Sergey Dolenko

Convergence of Multi-pass Large Margin Nearest Neighbor Metric Learning ................................................................. 510

Christina Göpfert, Benjamin Paassen, and Barbara Hammer

Short Papers

Spiking Neuron Model of a Key Circuit Linking Visual and Motor Representations of Actions ................................................................. 521

Mohammad Hovaidi Ardestani and Martin Giese

Analysis of the Effects of Periodic Forcing in the Spike Rate and Spike Correlation’s in Semiconductor Lasers with Optical Feedback ................................. 523

Carlos Quintero-Quiroz, Taciano Sorrentino, M.C. Torrent, and Cristina Masoller

Neuronal Functional Interactions Inferred from Analyzing Multivariate Spike Trains Generated by Simple Models Simulations Using Frequency Domain Analyses Available at Open Platforms ................................................................. 524

Takeshi Abe, Yoshiyuki Asai, and Alessandro E.P. Villa

Controlling a Redundant Articulated Robot in Task Space with Spiking Neurons ................................................................. 526

Samir Menon, Vinay Sriram, Luis Kumanduri, Oussama Khatib, and Kwabena Boahen

Onset of Global Synchrony by Application of a Size-Dependent Feedback ................................................................. 528

August Romeo and Hans Supèr

Identification of Epileptogenic Rhythms in a Mesoscopic Neuronal Model ................................................................. 529

Maciej Jedynak, Antonio J. Pons, Jordi Garcia-Ojalvo, and Marc Goodfellow

Modulation of Wave Propagation in the Cortical Network by Electric Fields ................................................................. 530

Pol Boada-Collado, Julia F. Weinert, Maurizio Mattia, and Maria V. Sanchez-Vives
Investigation of SSEP by Means of a Realistic Computational Model of the Sensory Cortex ................................................................. 532
   Elżbieta Gajewska-Dendek and Piotr Suffczyński

Exploration of a Mechanism to Form Bionic, Self-growing and Self-organizing Neural Network ......................................................... 533
   Hailin Ma, Ning Deng, Zhiheng Xu, Yuzhe Wang, Yingjie Shang, Xu Yang, and Hu He

Living Neuronal Networks in a Dish: Network Science and Neurological Disorders ................................................................. 534
   Sara Teller, Elisenda Tibau, and Jordi Soriano

Does the Default Network Represent the ‘Model’ in Model-Based Decision-Making? .............................................................. 535
   Raphael Kaplan and Gustavo Deco

Experimental Approaches to Assess Connectivity in Living Neuronal Networks ............................................................................... 536
   Lluís Hernández-Navarro, Javier G. Orlandi, Jaume Casademunt, and Jordi Soriano

Spectral Analysis of Echo State Networks ................................................................. 537
   Pau Vilimelis Aceituno, Gang Yan, and Yang-Yu Liu

Adaptive Hierarchical Sensing ........................................................................... 538
   Henry Schütze, Erhardt Barth, and Thomas Martinetz

Across-Trial Dynamics of Stimulus Priors in an Auditory Discrimination Task ............................................................................... 539
   Ainhoa Hermoso-Mendizabal, Alexandre Hyafil, Pavel Ernesto Rueda-Orozco, Santiago Jaramillo, David Robbe, and Jaime de la Rocha

Artificial Neural Network-Based Control Architecture: A Simultaneous Top-Down and Bottom-Up Approach to Autonomous Robot Navigation .... 540
   Dalia-Marcela Rojas-Castro, Arnaud Revel, and Michel Ménard

Realization of Profit Sharing by Self-Organizing Map-BasedProbabilistic Associative Memory ................................................................. 541
   Takahiro Katayama and Yuko Osana

State-Dependent Information Processing in Gene Regulatory Networks .... 542
   Marçal Gabaldà-Sagarra and Jordi García-Ojalvo

Patent Citation Network Analysis: Topology and Evolution of Patent Citation Networks ................................................................. 543
   Péter Érdi
Patent Citation Network Analysis: Ranking: From Web Pages to Patents . . . . 544
  Péter Erdi and Péter Bruck

Multistable Attractor Dynamics in Columnar Cortical Networks
Transitioning from Deep Anesthesia to Wakefulness .......................... 545
  Cristiano Capone, Nuria Tort-Colet, Maurizio Mattia,
  and Maria V. Sanchez-Vives

Modulation of Cortical Intrinsic Bistability and Complexity
in the Cortical Network ............................................................. 547
  Maria V. Sanchez-Vives, Julia F. Weinert, Beatriz Rebollo,
  Adenauer G. Casali, Andrea Pigorini, Marcello Massimini,
  and Mattia D'Andola

A Neural Network for Visual Working Memory that Accounts
for Memory Binding Errors ....................................................... 548
  João Barbosa and Albert Compte

Single-Neuron Sensory Coding Might Influence Performance
in a Monkey’s Perceptual Discrimination Task ................................. 549
  Pau de Jorge, Verónica Nácher, Rogelio Luna, Jordi Soriano,
  Ranulfo Romo, Gustavo Deco, and Adrià Tauste Campo

Modelling History-Dependent Perceptual Biases in Rodents ................. 550
  Alexandre Hyafil, Ainhoa Hermoso Mendizabal, and Jaime de la Rocha

Applicability of Echo State Networks to Classify EEG Data
from a Movement Task ............................................................... 551
  Lukas Hestermeyer and Gordon Pipa

Data Assimilation of EEG Observations by Neural Mass Models .......... 553
  Lara Escuain-Poole, Jordi Garcia-Ojalvo, and Antonio J. Pons

Functional Reorganization of Neural Networks Prior to Epileptic Seizures . 554
  Adrià Tauste Campo, Alessandro Principe, Rodrigo Rocamora,
  and Gustavo Deco

Attractor Models of Perceptual Decisions Making Exhibit Stochastic
Resonance .................................................................................. 555
  Genis Prat-Ortega, Klaus Wimmer, Alex Roxin, and Jaime de la Rocha

VLSI Design of a Neural Network Model for Detecting Planar Surface
from Local Image Motion ............................................................. 556
  Hisanao Akima, Satoshi Moriya, Susumu Kawakami, Masafumi Yano,
  Koji Nakajima, Masao Sakurabah, and Shigeo Sato
Learning Method for a Quantum Bit Network. .......................... 558
Yoshihiro Osakabe, Shigeo Sato, Mitsunaga Kinjo, Koji Nakajima,
Hisanao Akima, and Masao Sakuraba

Information-Theoretical Foundations of Hebbian Learning .............. 560
Claudius Gros and Rodrigo Echeveste

Artificial Neural Network Models for Forecasting Tourist Arrivals
to Barcelona. ............................................................... 561
Bulent Alptekin and Cagdas Hakan Aladag

Experimental Study of Multistability and Attractor Dynamics in Winnerless
Neural Networks. ......................................................... 562
Ashok Chauhan and Alain Nogaret

Author Index ............................................................... 563
Artificial Neural Networks and Machine Learning – ICANN 2016
25th International Conference on Artificial Neural Networks, Barcelona, Spain, September 6-9, 2016, Proceedings, Part II
Villa, A.E.P.; Masulli, P.; Pons Rivero, A.J. (Eds.)
2016, XXIX, 557 p. 173 illus., Softcover
ISBN: 978-3-319-44780-3