Lecture Notes in Computer Science 10261

Commenced Publication in 1973
Founding and Former Series Editors:
Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

Editorial Board

David Hutchison
Lancaster University, Lancaster, UK
Takeo Kanade
Carnegie Mellon University, Pittsburgh, PA, USA
Josef Kittler
University of Surrey, Guildford, UK
Jon M. Kleinberg
Cornell University, Ithaca, NY, USA
Friedemann Mattern
ETH Zurich, Zurich, Switzerland
John C. Mitchell
Stanford University, Stanford, CA, USA
Moni Naor
Weizmann Institute of Science, Rehovot, Israel
C. Pandu Rangan
Indian Institute of Technology, Madras, India
Bernhard Steffen
TU Dortmund University, Dortmund, Germany
Demetri Terzopoulos
University of California, Los Angeles, CA, USA
Doug Tygar
University of California, Berkeley, CA, USA
Gerhard Weikum
Max Planck Institute for Informatics, Saarbrücken, Germany

More information about this series at http://www.springer.com/series/7407

Fengyu Cong · Andrew Leung
Qinglai Wei (Eds.)

Advances in Neural Networks – ISNN 2017

14th International Symposium, ISNN 2017
Sapporo, Hakodate, and Muroran, Hokkaido, Japan, June 21–26, 2017
Proceedings, Part I

Springer

Editors
Fengyu Cong
Dalian University of Technology
Dalian
China

Qinglai Wei
Chinese Academy of Sciences
Beijing
China

Andrew Leung
City University of Hong Kong
Kowloon Tong
Hong Kong

ISSN 0302-9743 ISSN 1611-3349 (electronic)
Lecture Notes in Computer Science
ISBN 978-3-319-59071-4 ISBN 978-3-319-59072-1 (eBook)
DOI 10.1007/978-3-319-59072-1

Library of Congress Control Number: 2017941494

LNCS Sublibrary: SL1 – Theoretical Computer Science and General Issues

© Springer International Publishing AG 2017
This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.
The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.
The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Printed on acid-free paper

This Springer imprint is published by Springer Nature
The registered company is Springer International Publishing AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Preface

The twin volumes of *Lecture Notes in Computer Science* constitute the proceedings of the 14th International Symposium on Neural Networks (ISNN 2017) held during June 21–26, 2017, in Sapporo, Hakodate, and Muroran, Hokkaido, Japan. Building on the success of the previous events, ISNN has become a well-established series of popular and high-quality conferences on the theory and methodology of neural networks and their applications. This year's symposium was held for the third time outside China, in Hokkaido, a beautiful island in Japan. As usual, it achieved great success. ISNN aims at providing a high-level international forum for scientists, engineers, educators, and students to gather so as to present and discuss the latest progress in neural network research and applications in diverse areas. It encouraged open discussion, disagreement, criticism, and debate, and we think this is the right way to push the field forward.

Based on the rigorous peer-reviews by the Program Committee members and reviewers, 135 high-quality papers from 25 countries and regions were selected for publication in the LNCS proceedings. These papers cover many topics of neural network-related research including intelligent control, neurodynamic analysis, memristive neurodynamics, computer vision, signal processing, machine learning, optimization etc. Many organizations and volunteers made great contributions toward the success of this symposium. We would like to express our sincere gratitude to City University of Hong Kong and Hokkaido University for their sponsorship, the IEEE Computational Intelligence Society, the International Neural Network Society, and the Japanese Neural Network Society for their technical co-sponsorship. We would also like to sincerely thank all the committee members for all their great efforts in organizing the symposium. Special thanks go to the Program Committee members and reviewers whose insightful reviews and timely feedback ensured the high quality of the accepted papers and the smooth flow of the symposium. We would also like to thank Springer for their cooperation in publishing the proceedings in the prestigious *Lecture Notes in Computer Science* series. Finally, we would like to thank all the speakers, authors, and participants for their support.

April 2017

Fengyu Cong
Andrew C.-S. Leung
Qinglai Wei

Organization

Honorary Chair

Shun'ichi Amari	RIKEN Brain Science Institute, Japan

General Chairs

Hidenori Kawamura	Hokkaido University, Japan
Jun Wang	City University of Hong Kong, SAR China

Advisory Chairs

Kunihiko Fukushima	Fuzzy Logic Systems Institute, Japan
Takeshi Yamakawa	Fuzzy Logic Systems Institute, Japan

Steering Chairs

Haibo He	University of Rhode Island, USA
Derong Liu	University of Illinois, Chicago, USA
Jun Wang	City University of Hong Kong, SAR China

Organizing Committee Chairs

Andrzej Cichocki	RIKEN Brain Science Institute, Japan
Min Han	Dalian University of Technology, China
Bao-Liang Lu	Shanghai Jiao Tong University, China
Masahito Yamamoto	Hokkaido University, Japan

Program Chairs

Fengyu Cong	Dalian University of Technology, China
Andrew C.-S. Leung	City University of Hong Kong, SAR China
Qinglai Wei	CAS Institute of Automation, China

Special Sessions Chairs

Long Cheng	CAS Institute of Automation, China
Satoshi Kurihara	University of Electro-Communications, Japan
Qingshan Liu	Huazhong University of Science and Technology, China
Tomohisa Yamashita	National Institute of Advanced Industrial Science and Technology, Japan
Nian Zhang	University of District of Columbia, USA

Tutorial Chairs

Hitoshi Matsubara	Future University Hakodate, Japan
Keiji Suzuki	Future University Hakodate, Japan

Workshop Chairs

Mianxiong Dong	Muroran Institute of Technology, Japan
Jay Kishigami	Muroran Institute of Technology, Japan
Yasuo Kudo	Muroran Institute of Technology, Japan

Publicity Chairs

Jinde Cao	Southeast University, China
Hisao Ishibuchi	Osaka Prefecture University, Japan
Zhigang Zeng	Huazhong University of Science and Technology, China
Huaguang Zhang	Northeastern University, China
Jun Zhang	South China University of Technology, China

Publications Chairs

Jin Hu	Chongqing Jiaotong University, China
He Huang	Soochow University, China
Xinyi Le	Shanghai Jiao Tong University, China
Yongming Li	Liaoning University of Technology, China

Registration Chairs

Shenshen Gu	Shanghai University, China
Hiroyuki Iizuka	Hokkaido University, Japan
Ka Chun Wong	City University of Hong Kong, SAR China

Local Arrangements Chairs

Takashi Kawakami	Hokkaido University of Science, Japan
Koji Nishikawa	Hokkaido University of Science, Japan

Secretaries

Miki Kamata	Hokkaido University, Japan
Ying Qu	Dalian University of Technology, China

Program Committee

Xuhui Bu	Henan Polytechnic University, China
Long Cheng	Chinese Academy of Sciences, China

Fengyu Cong	Dalian University of Technology, China
Ruxandra Liana Costea	Polytechnic University of Bucharest, Romania
Jisheng Dai	Jiangsu University, China
Wai-Keung Fung	Robert Gordon University, UK
Shenshen Gu	Shanghai University, China
Zhishan Guo	Missouri University of Science and Technology, USA
Zhenyuan Guo	Hunan University, China
Chengan Guo	Dalian University of Technology, China
Wei He	Beijing University of Science and Technology, China
Sanqing Hu	Hangzhou Dianzi University, China
Long-Ting Huang	Wuhan University of Technology, China
Min Jiang	Xiamen University, China
Danchi Jiang	University of Tasmania, Australia
Shunshoku Kanae	Fukui University of Technology, Japan
Rhee Man Kil	Korean Advanced Institute of Science and Technology, South Korea
Chiman Kwan	Signal Processing, Inc., Singapore
Chi-Sing Leung	City University of Hong Kong, SAR China
Michael Li	Central Queensland University, Australia
Shoutao Li	Jilin University, China
Cheng Dong Li	Shandong Jianzhu University, China
Jie Lian	Dalian University of Technology, China
Jinling Liang	Southeast University, China
Meiqin Liu	Zhejiang University, China
Ju Liu	Shandong University, China
Wenlian Lu	Fudan University, China
Biao Luo	Chinese Academy of Sciences, China
Dazhong Ma	Northeastern University, China
Tiedong Ma	Chongqing University, China
Jinwen Ma	Peking University, China
Kim Fung Man	City University of Hong Kong, SAR China
Seiichi Ozawa	Kobe University, Japan
Sitian Qin	Harbin Institute of Technology at Weihai, China
Ruizhuo Song	Beijing University of Science and Technology, China
Qiankun Song	Chongqing Jiaotong University, China
John Sum	National Chung Hsing University, China
Weize Sun	Shenzhen University, China
Norikazu Takahashi	Okayama University, Japan
Christos Tjortjis	International Hellenic University, Greece
Kim-Fung Tsang	City University of Hong Kong, SAR China
Jun Wang	City University of Hong Kong, SAR China
Jian Wang	China University of Petroleum, China
Zhanshan Wang	Northeastern University, China
Jing Wang	Beijing University of chemical Technology, China
Shenquan Wang	Changchun University of technology, China
Dianhui Wang	La Trobe University, Australia

Xinzhe Wang	Dalian University of Technology, China
Zhuo Wang	Beihang University, China
Ding Wang	Chinese Academy of Sciences, China
Zhiliang Wang	Northeastern University, China
Qinglai Wei	Chinese Academy of Sciences, China
Xin Xu	National University of Defense Technology, China
Qinmin Yang	Zhejiang University, China
Xiong Yang	Tianjin University, China
Xu Yang	Beijing University of Science and Technology, China
Mao Ye	University of Electronic Science and Technology of China, China
Nian Zhang	University of the District of Columbia, USA
Chi Zhang	Dalian University of Technology, China
Jie Zhang	Chinese Academy of Sciences, China
Xiumei Zhang	Changchun University of Technology, China
Jie Zhang	Newcastle University, UK
Bo Zhao	Chinese Academy of Sciences, China
Dongbin Zhao	Chinese Academy of Sciences, China

Contents – Part I

Clustering, Classification, Modeling, and Forecasting

Online Multi-threshold Learning with Imbalanced Data Stream 3
Xufen Cai, Min Yang, Rong Zhu, Xiaoyan Li, Long Ye, and Qin Zhang

A Comparative Study of Machine Learning Techniques for Automatic Product Categorisation 10
Chanawee Chavaltada, Kitsuchart Pasupa, and David R. Hardoon

Bootstrap Based on Generalized Regression Neural Network for Landslide Displacement for Interval Prediction 18
Jiejie Chen, Zhigang Zeng, and Ping Jiang

Multi-task Learning with Cartesian Product-Based Multi-objective Combination for Dangerous Object Detection 28
Yaran Chen and Dongbin Zhao

Collaborative Response Content Recommendation for Customer Service Agents 36
Cuihua Ma, Ping Guo, Xin Xin, Xiaoyu Ma, Yanjie Liang, Shaomin Xing, Li Li, and Shaozhuang Liu

Text Classification Based on ReLU Activation Function of SAE Algorithm 44
Jia-le Cui, Shuang Qiu, Ming-yang Jiang, Zhi-li Pei, and Yi-nan Lu

On Designing New Structures with Emergent Computing Properties 51
Daniela Danciu and Vladimir Răsvan

Fast Sparse Least Squares Support Vector Machines by Block Addition 60
Fumito Ebuchi and Takuya Kitamura

Construction and Analysis of Meteorological Elements Correlation Network 71
Cui-juan Fang, Feng-jing Shao, Wen-peng Zhou, Chun-xiao Xing, and Yi Sui

Classifying Helmeted and Non-helmeted Motorcyclists 81
Atsushi Hirota, Nguyen Huy Tiep, Le Van Khanh, and Natsuki Oka

Dominant Set Based Density Kernel and Clustering 87
Jian Hou and Shen Yin

Web Content Extraction Using Clustering with Web Structure 95
Xiaotao Huang, Yan Gao, Liqun Huang, Zhizhao Zhang, Yuhua Li, Fen Wang, and Ling Kang

Optimal KD-Partitioning for the Local Outlier Detection in Geo-Social Points 104
Teerawat Kumrai, Kyoung-Sook Kim, Mianxiong Dong, and Hirotaka Ogawa

V2G Demand Prediction Based on Daily Pattern Clustering and Artificial Neural Networks 113
Junghoon Lee and Gyung-Leen Park

An Arctan-Activated WASD Neural Network Approach to the Prediction of Dow Jones Industrial Average 120
Bolin Liao, Chuan Ma, Lin Xiao, Rongbo Lu, and Lei Ding

State Estimation for Autonomous Surface Vehicles Based on Echo State Networks. 127
Zhouhua Peng, Jun Wang, and Dan Wang

Using Neural Network Formalism to Solve Multiple-Instance Problems 135
Tomáš Pevný and Petr Somol

Many-Objective Optimisation of Trusses Through Meta-Heuristics 143
Nantiwat Pholdee, Sujin Bureerat, Papot Jaroenapibal, and Thana Radpukdee

Clustering with Multidimensional Mixture Models: Analysis on World Development Indicators 153
Leonard K.M. Poon

Logic Calculation Based on Two-Domain DNA Strand Displacement 161
Xiaobiao Wang, Changjun Zhou, Xuedong Zheng, and Qiang Zhang

Several Logic Gates Extended from MAGIC-Memristor-Aided Logic 170
Lin Chen, Zhong He, Xiaoping Wang, and Zhigang Zeng

Static Hand Gesture Recognition Based on RGB-D Image and Arm Removal. 180
Bingyuan Xu, Zhiheng Zhou, Junchu Huang, and Yu Huang

Real-Time Classification Through a Spiking Deep Belief Network with Intrinsic Plasticity 188
Fangzheng Xue, Xuyang Chen, and Xiumin Li

Hamiltonian-Driven Adaptive Dynamic Programming Based on Extreme Learning Machine 197
Yongliang Yang, Donald Wunsch, Zhishan Guo, and Yixin Yin

An Enhanced K-Nearest Neighbor Classification Method Based on Maximal Coherence and Validity Ratings. 206
Nian Zhang, Jiang Xiong, Jing Zhong, Lara Thompson, and Hong Ying

Credit Risk Assessment Based on Flexible Neural Tree Model 215
Yishen Zhang, Dong Wang, Yuehui Chen, Yaou Zhao, Peng Shao, and Qingfang Meng

A Portable Prognostic System for Bearing Monitoring 223
Bulent Ayhan, Chiman Kwan, and Steven Liang

Parameter Estimation of Linear Systems with Quantized Innovations 234
Changchang Hu

LSTM with Matrix Factorization for Road Speed Prediction 242
Jian Hu, Xin Xin, and Ping Guo

Cognition Computation and Neural Networks

Adaptive Control Strategy for Projective Synchronization of Neural Networks 253
Abdujelil Abdurahman, Cheng Hu, Ahmadjan Muhammadhaji, and Haijun Jiang

Real-Time Decoding of Arm Kinematics During Grasping Based on F5 Neural Spike Data 261
Narges Ashena, Vassilis Papadourakis, Vassilis Raos, and Erhan Oztop

Application of Deep Belief Network to Land Cover Classification Using Hyperspectral Images 269
Bulent Ayhan and Chiman Kwan

Reservoir Computing with a Small-World Network for Discriminating Two Sequential Stimuli 277
Ke Bai, Fangzhou Liao, and Xiaolin Hu

Single Channel Speech Separation Using Deep Neural Network 285
Linlin Chen, Xiaohong Ma, and Shuxue Ding

Sparse Direct Convolutional Neural Network 293
Vijay Daultani, Yoshiyuki Ohno, and Kazuhisa Ishizaka

Fuzzy Modeling from Black-Box Data with Deep Learning Techniques 304
Erick de la Rosa, Wen Yu, and Humberto Sossa

Matrix Neural Networks 313
Junbin Gao, Yi Guo, and Zhiyong Wang

Simplified Particle Swarm Optimization Algorithm Based on Improved Learning Factors 321
Wei Gao, Chuyi Song, Jingqing Jiang, and Chenggang Zhang

Synchronization Analysis for Complex Networks with Interval Coupling Delay 329
Dawei Gong, Xiaolin Dai, Jinliang Song, and Bonan Huang

FPGA Implementation of the *L* Smallest *k*-Subsets Sum Problem Based on the Finite-Time Convergent Recurrent Neural Network 337
Shenshen Gu and Xiaowen Wang

Accelerating Stochastic Variance Reduced Gradient Using Mini-Batch Samples on Estimation of Average Gradient 346
Junchu Huang, Zhiheng Zhou, Bingyuan Xu, and Yu Huang

Coexistence and Local Exponential Stability of Multiple Equilibria in Memristive Neural Networks with a Class of General Nonmonotonic Activation Functions 354
Yujiao Huang, Shijun Chen, Jie Xiao, and Pengyi Hao

A Reinforcement Learning Method with Implicit Critics from a Bystander . . . 363
Kao-Shing Hwang, Chi-Wei Hsieh, Wei-Cheng Jiang, and Jin-Ling Lin

The Mixed States of Associative Memories Realize Unimodal Distribution of Dominance Durations in Multistable Perception 371
Takashi Kanamaru

Possibilities of Neural Networks for Personalization Approaches for Prevention of Complications After Endovascular Interventions 379
Tatiana V. Lazovskaya, Dmitriy A. Tarkhov, Gelena A. Berezovskaya, Nikolay N. Petrischev, and Ildar U. Zulkarnay

Relief R-CNN: Utilizing Convolutional Features for Fast Object Detection . . . 386
Guiying Li, Junlong Liu, Chunhui Jiang, Liangpeng Zhang, Minlong Lin, and Ke Tang

The Critical Dynamics in Neural Network Improve the Computational Capability of Liquid State Machines 395
Xiumin Li, Qing Chen, Fangzheng Xue, and Hongjun Zhou

Exponential Stability of the Coupled Neural Networks with Different State Dimensions 404
Jieyin Mai, Manchun Tan, Yunfeng Liu, and Desheng Xu

Critical Echo State Networks that Anticipate Input Using Morphable Transfer Functions 413
Norbert Michael Mayer

INFERNO: A Novel Architecture for Generating Long Neuronal Sequences with Spikes 421
Alex Pitti, Philippe Gaussier, and Mathias Quoy

Global Exponential Stability for Matrix-Valued Neural Networks with Time Delay 429
Călin-Adrian Popa

Global Asymptotic Stability for Octonion-Valued Neural Networks with Delay 439
Călin-Adrian Popa

Convolutional Neural Networks for Thai Poem Classification 449
Nuttachot Promrit and Sajjaporn Waijanya

A Quaternionic Rate-Based Synaptic Learning Rule Derived from Spike-Timing Dependent Plasticity 457
Guang Qiao, Hongyue Du, and Yi Zeng

Cognitive Load Recognition Using Multi-channel Complex Network Method 466
Jian Shang, Wei Zhang, Jiang Xiong, and Qingshan Liu

Event-Triggering Sampling Based Synchronization of Delayed Complex Dynamical Networks: An M-matrix Approach 475
Yang Tang

Learning Human-Understandable Description of Dynamical Systems from Feed-Forward Neural Networks 483
Sophie Tourret, Enguerrand Gentet, and Katsumi Inoue

Stability and Stabilization of Time-Delayed Fractional Order Neural Networks via Matrix Measure 493
Fei Wang, Yongqing Yang, Jianquan Lu, and Jinde Cao

Metrics and the Cooperative Process of the Self-organizing Map Algorithm 502
William H. Wilson

A Cooperative Projection Neural Network for Fast Solving Linear Reconstruction Problems 511
Youshen Xia

A Complex Gradient Neural Dynamics for Fast Complex Matrix Inversion 521
Lin Xiao, Bolin Liao, Qinli Zeng, Lei Ding, and Rongbo Lu

Burst and Correlated Firing in Spiking Neural Network with Global Inhibitory Feedback 529
Jinli Xie, Qinjun Zhao, and Jianyu Zhao

A Soft Computing Prefetcher to Mitigate Cache Degradation by Web Robots. 536
Ning Xie, Kyle Brown, Nathan Rude, and Derek Doran

A Caputo-Type Fractional-Order Gradient Descent Learning of BP Neural Networks 547
Guoling Yang, Bingjie Zhang, Zhaoyang Sang, Jian Wang, and Hua Chen

Attracting Sets of Non-autonomous Complex-Valued Neural Networks with both Distributed and Time-Varying Delays 555
Zhao Yang and Xiaofeng Liao

Stability of Complex-Valued Neural Networks with Two Additive Time-Varying Delay Components 564
Zhenjiang Zhao, Qiankun Song, and Yuchen Zhao

Alpine Plants Recognition with Deep Convolutional Neural Network 572
Tomoaki Negishi and Motonobu Hattori

Author Index 579

Contents – Part II

Intelligent Control

Human-Like Robot Arm Robust Nonlinear Control Using a Bio-inspired Controller with Uncertain Properties 3
Yiping Chang, Aihui Wang, Shengjun Wen, and Wudai Liao

Adaptive NNs Fault-Tolerant Control for Nonstrict-Feedback Nonlinear Systems 11
Guowei Dong, Yongming Li, Duo Meng, Fuming Sun, and Rui Bai

Neural Adaptive Dynamic Surface Control of Nonlinear Systems with Partially Constrained Tracking Errors and Input Saturation 20
Hairong Dong, Xiaoyu Wang, Shigen Gao, and Yubing Wang

An Application of Master-Slave ADALINE for State Estimation of Power System. 28
Zhanshan Wang, Haoyuan Gao, and Huaguang Zhang

Motion and Visual Control for an Upper-Limb Exoskeleton Robot via Learning 36
Jian-Bin Huang, I-Yu Lin, Kuu-Young Young, and Chun-Hsu Ko

Approximation-Based Adaptive Neural Tracking Control of an Uncertain Robot with Output Constraint and Unknown Time-Varying Delays 44
Da-Peng Li, Yan-Jun Liu, Dong-Juan Li, Shaocheng Tong, Duo Meng, and Guo-Xing Wen

Neural Network Based Power Tracking Control of Wind Farm. 52
Liyuan Liang, Yongduan Song, and Mi Tan

A Generalized Policy Iteration Adaptive Dynamic Programming Algorithm for Optimal Control of Discrete-Time Nonlinear Systems with Actuator Saturation 60
Qiao Lin, Qinglai Wei, and Bo Zhao

Exponential Stability of Neutral T-S Fuzzy Neural Networks with Impulses. 66
Shujun Long and Bing Li

Robust NN Control of the Manipulator in the Underwater Vehicle-Manipulator System. 75
Weilin Luo and Hongchao Cong

Nonsingular Terminal Sliding Mode Based Trajectory Tracking Control of an Autonomous Surface Vehicle with Finite-Time Convergence 83
Shuailin Lv, Ning Wang, Yong Wang, Jianchuan Yin, and Meng Joo Er

Saturated Kinetic Control of Autonomous Surface Vehicles Based on Neural Networks 93
Zhouhua Peng, Jun Wang, and Dan Wang

Virtual Structure Formation Control via Sliding Mode Control and Neural Networks. 101
Qi Qin, Tie-Shan Li, Cheng Liu, C.L. Philip Chen, and Min Han

Neuro Adaptive Control of Asymmetrically Driven Mobile Robots with Uncertainties 109
Zhixi Shen, Yaping Ma, and Yongduan Song

Adaptive Neural Network Control for Constrained Robot Manipulators 118
Gang Wang, Tairen Sun, Yongping Pan, and Haoyong Yu

How the Prior Information Shapes Neural Networks for Optimal Multisensory Integration. 128
He Wang, Wen-Hao Zhang, K.Y. Michael Wong, and Si Wu

Fuzzy Uncertainty Observer Based Filtered Sliding Mode Trajectory Tracking Control of the Quadrotor 137
Yong Wang, Ning Wang, Shuailin Lv, Jianchuan Yin, and Meng Joo Er

Local Policy Iteration Adaptive Dynamic Programming for Discrete-Time Nonlinear Systems 148
Qinglai Wei, Yancai Xu, Qiao Lin, Derong Liu, and Ruizhuo Song

A Method Using the Lempel-Ziv Complexity to Detect Ventricular Tachycardia and Fibrillation 154
Deling Xia, Yuetian Li, Qingfang Meng, and Jie He

Finite-Time Synchronization of Uncertain Complex Networks with Nonidentical Nodes Based on a Special Unilateral Coupling Control . . . 161
Meng Zhang and Min Han

A Multiple-objective Neurodynamic Optimization to Electric Load Management Under Demand-Response Program 169
Xinyi Le, Sijie Chen, Yu Zheng, and Juntong Xi

Neuro-Adaptive Containment Seeking of Multiple Networking Agents with Unknown Dynamics. 178
Guanghui Wen, Peijun Wang, Tingwen Huang, Long Cheng, and Junyong Sun

Signal, Image and Video Processing

Abnormal Event Detection in Videos Using Spatiotemporal Autoencoder. . . . 189
Yong Shean Chong and Yong Haur Tay

Enhancing Mastcam Images for Mars Rover Mission. 197
Minh Dao, Chiman Kwan, Bulent Ayhan, and James F. Bell

A Collective Neurodynamic Optimization Approach to Nonnegative Tensor Decomposition 207
Jianchao Fan and Jun Wang

A Novel Spatial Information Model for Saliency Detection 214
Hang Gao, Bo Li, and Han Liu

Sparse Representation with Global and Nonlocal Self-similarity Prior for Single Image Super-Resolution 222
Weiguo Gong, Xi Chen, Jinming Li, Yongliang Tang, and Weihong Li

EMR: Extended Manifold Ranking for Saliency Detection 231
Bo Li, Hang Gao, and Han Liu

Hybrid Order l_0-Regularized Blur Kernel Estimation Model for Image Blind Deblurring. 239
Weihong Li, Yangqing Chen, Rui Chen, Weiguo Gong, and Bingxin Zhao

Saliency Detection Optimization via Modified Secondary Manifold Ranking and Blurring Depression 248
Han Liu, Bo Li, and Hang Gao

Noise Resistant Training for Extreme Learning Machine 257
Yik Lam Lui, Hiu Tung Wong, Chi-Sing Leung, and Sam Kwong

Phase Constraint and Deep Neural Network for Speech Separation 266
Zhuangguo Miao, Xiaohong Ma, and Shuxue Ding

A Neural Autoregressive Framework for Collaborative Filtering 274
Zhen Ouyang, Chen Sun, and Chunping Li

Deep Semantics-Preserving Hashing Based Skin Lesion Image Retrieval 282
Xiaorong Pu, Yan Li, Hang Qiu, and Yinhui Sun

Fast Conceptor Classifier in Pre-trained Neural Networks for Visual Recognition. 290
Guangwu Qian, Lei Zhang, and Qianjun Zhang

Video-Based Fire Detection with Saliency Detection and Convolutional Neural Networks 299
Lifeng Shi, Fei Long, ChenHan Lin, and Yihan Zhao

Leveraging Convolutions in Recurrent Neural Networks for Doppler Weather Radar Echo Prediction 310
Sonam Singh, Sudeshna Sarkar, and Pabitra Mitra

Neuroadaptive PID-like Fault-Tolerant Control of High Speed Trains with Uncertain Model and Unknown Tracking/Braking Actuation Characteristics 318
Q. Song and T. Sun

A Programmable Memristor Potentiometer and Its Application in the Filter Circuit 326
Jinpei Tan, Shukai Duan, Ting Yang, and Hangtao Zhu

Rapid Triangle Matching Based on Binary Descriptors 336
Min Tian and Qiu-Hua Lin

An Improved Symbol Entropy Algorithm Based on EMD for Detecting VT and VF 345
Yingda Wei, Qingfang Meng, Haihong Liu, Jin Zhou, and Dong Wang

A Selective Transfer Learning Method for Concept Drift Adaptation 353
Ge Xie, Yu Sun, Minlong Lin, and Ke Tang

On the Co-absence of Input Terms in Higher Order Neuron Representation of Boolean Functions 362
Oytun Yapar and Erhan Oztop

A Genetic Approach to Fusion of Algorithms for Compressive Sensing 371
Hanxu You and Jie Zhu

Industrial Oil Pipeline Leakage Detection Based on Extreme Learning Machine Method 380
Honglue Zhang, Qi Li, Xiaoping Zhang, and Wei Ba

Audio Source Separation from a Monaural Mixture Using Convolutional Neural Network in the Time Domain 388
Peng Zhang, Xiaohong Ma, and Shuxue Ding

Input Dimension Determination of Linear Feedback Neural Network Applied for System Identification of Linear Systems 396
Wenle Zhang

Joining External Context Characters to Improve Chinese Word Embedding 405
Xianchao Zhang, Shike Liu, Yuangang Li, and Wenxin Liang

Enhancing Auscultation Capability in Spacecraft 416
Jin Zhou and Chiman Kwan

Underwater Moving Target Detection Based on Image Enhancement 427
Yan Zhou, Qingwu Li, and Guanying Huo

Bio-signal and Medical Image Analysis

A New Epileptic Seizure Detection Method Based on Degree Centrality and Linear Features 439
Haihong Liu, Qingfang Meng, Yingda Wei, Qiang Zhang, Mingmin Liu, and Jin Zhou

A Comparison Between Two Motion-Onset Visual BCI Patterns: Diffusion vs Contraction 447
Minqiang Huang, Hanhan Zhang, Jing Jin, Yu Zhang, and Xingyu Wang

Detecting Community Structure Based on Optimized Modularity by Genetic Algorithm in Resting-State fMRI 457
Xing Hao Huang, Yu Qing Song, Ding An Liao, and Hu Lu

Pin Defect Inspection with X-ray Images 465
Hsien-Pei Kao, Tzu-Chia Tung, Hong-Yi Chen, Cheng-Shih Wong, and Chiou-Shann Fuh

A Study on the Effects of Lesions on CA3b in Hippocampus 474
Babak Keshavarz-Hedayati, Nikitas Dimopoulos, and Arif Babul

Enhancement of Neuronal Activity by $GABA_b$ Receptor-Mediated Gliotransmission 483
Taira Kobayashi, Asahi Ishiyama, and Osamu Hoshino

The Feature Extraction Method of EEG Signals Based on Transition Network 491
Mingmin Liu, Qingfang Meng, Qiang Zhang, Dong Wang, and Hanyong Zhang

Deep Belief Networks for EEG-Based Concealed Information Test 498
Qi Liu, Xiao-Guang Zhao, Zeng-Guang Hou, and Hong-Guang Liu

Cluster Aggregation for Analyzing Event-Related Potentials 507
Reza Mahini, Tianyi Zhou, Peng Li, Asoke K. Nandi, Huanjie Li, Hong Li, and Fengyu Cong

Detection of Epileptic Seizure in EEG Using Sparse Representation and EMD 516
Qingfang Meng, Shanshan Chen, Haihong Liu, Yunxia Liu, and Dong Wang

Scaling of Texture in Training Autoencoders for Classification of Histological Images of Colorectal Cancer 524
Tuan D. Pham

Multi-channel EEG Classification Based on Fast Convolutional Feature Extraction 533
Qian Wang, Yongjun Hu, and He Chen

Hearing Loss Detection in Medical Multimedia Data by Discrete Wavelet Packet Entropy and Single-Hidden Layer Neural Network Trained by Adaptive Learning-Rate Back Propagation 541
Shuihua Wang, Sidan Du, Yang Li, Huimin Lu, Ming Yang, Bin Liu, and Yudong Zhang

Study on Differences of Early-Mid ERPs Induced by Emotional Face and Scene Images 550
Xin Wang, Jingna Jin, Zhipeng Liu, and Tao Yin

Comparison of Functional Network Connectivity and Granger Causality for Resting State fMRI Data 559
Ce Zhang, Qiu-Hua Lin, Chao-Ying Zhang, Ying-Guang Hao, Xiao-Feng Gong, Fengyu Cong, and Vince D. Calhoun

Neural Oscillations as a Bridge Between GABAergic System and Emotional Behaviors 567
Tao Zhang, Qun Li, and Zhuo Yang

Impacts of Working Memory Training on Brain Network Topology 575
Dongping Zhao, Qiushi Zhang, Li Yao, and Xiaojie Zhao

A Novel Biologically Inspired Hierarchical Model for Image Recommendation 583
Yan-Feng Lu, Hong Qiao, Yi Li, Li-Hao Jia, and Ai-Xuan Zhang

Author Index 591