Contents

Machine Learning

Improving Generalization Capability of Extreme Learning Machine with Synthetic Instances Generation .................................................. 3
Wei Ao, Yulin He, Joshua Zhexue Huang, and Yupeng He

Adaptive $L_p$ ($0 < p < 1$) Regularization: Oracle Property and Applications .......................................................... 13
Yunxiao Shi, Xiangnan He, Han Wu, Zhong-Xiao Jin, and Wenlian Lu

Fuzzy Self-Organizing Incremental Neural Network for Fuzzy Clustering .......................................................... 24
Tianyue Zhang, Baile Xu, and Furao Shen

Stochastic Online Kernel Selection with Instantaneous Loss in Random Feature Space .................................................. 33
Zhizhuo Han and Shizhong Liao

Topology Learning Embedding: A Fast and Incremental Method for Manifold Learning .................................................. 43
Tao Zhu, Furao Shen, Jinxi Zhao, and Yu Liang

Hybrid RVM Algorithm Based on the Prediction Variance .......................................................... 53
Fang Liu, Fei Zhao, Mi Tong, Yan Yang, and Zhenhao Yu

Quality Control for Crowdsourced Multi-label Classification Using RAkEL .......................................................... 64
Kosuke Yoshimura, Yukino Baba, and Hisashi Kashima

A Self-adaptive Growing Method for Training Compact RBF Networks .......................................................... 74
Baile Xu, Furao Shen, Jinxi Zhao, and Tianyue Zhang

Incremental Extreme Learning Machine via Fast Random Search Method .......................................................... 82
Zhihui Lao, Zhiheng Zhou, and Junchu Huang

Learning of Phase-Amplitude-Type Complex-Valued Neural Networks with Application to Signal Coherence .................................................. 91
Rongrong Wu, He Huang, and Tingwen Huang

Application of Instruction-Based Behavior Explanation to a Reinforcement Learning Agent with Changing Policy .................................................. 100
Yosuke Fukuchi, Masahiko Osawa, Hiroshi Yamakawa, and Michita Imai

Using Flexible Neural Trees to Seed Backpropagation .................................................. 109
Peng Wu and Jeff Orchard
Joint Neighborhood Subgraphs Link Prediction .......................... 117
   Dinh Tran-Van, Alessandro Sperduti, and Fabrizio Costa

Multimodal Fusion with Global and Local Features for Text Classification . . 124
   Cheng Xu, Yue Wu, and Zongtian Liu

Learning Deep Neural Network Based Kernel Functions for Small Sample Size Classification ......................... 135
   Tieran Zheng, Jiqing Han, and Guibin Zheng

Relation Classification via CNN, Segmented Max-pooling, and SDP-BLSTM .......................................................... 144
   Pengfei Wang, Zhipeng Xie, and Junfeng Hu

Binary Stochastic Representations for Large Multi-class Classification ...... 155
   Thomas Gerald, Nicolas Baskiotis, and Ludovic Denoyer

Solving the Local-Minimum Problem in Training Deep Learning Machines .. 166
   James Ting-Ho Lo, Yichuan Gui, and Yun Peng

The Sample Selection Model Based on Improved Autoencoder for the Online Questionnaire Investigation .................. 175
   Yijie Pang, Shaochun Wu, and Honghao Zhu

Hybrid Collaborative Recommendation via Semi-AutoEncoder .............. 185
   Shuai Zhang, Lina Yao, Xiwei Xu, Sen Wang, and Liming Zhu

Time Series Classification with Deep Neural Networks Based on Hurst Exponent Analysis ............................................. 194
   Xinjuan Li, Jie Yu, Lingyu Xu, and Gaowei Zhang

Deep Learning Model for Sentiment Analysis in Multi-lingual Corpus ...... 205
   Lisa Medrouk and Anna Pappa

Differential Evolution Memetic Document Clustering Using Chaotic Logistic Local Search .................................................. 213
   Ibraheem Al-Jadir, Kok Wai Wong, Chun Che Fung, and Hong Xie

Completion of High Order Tensor Data with Missing Entries via Tensor-Train Decomposition ........................................ 222
   Longhao Yuan, Qibin Zhao, and Jianting Cao

GASOM: Genetic Algorithm Assisted Architecture Learning in Self Organizing Maps ............................................... 230
   Ashutosh Saboo, Anant Sharma, and Tirtharaj Dash
A Nonnegative Projection Based Algorithm for Low-Rank Nonnegative Matrix Approximation ................................................................. 240
Peitao Wang, Zhaoshui He, Kan Xie, Junbin Gao, and Michael Antolovich

Multi-view Label Space Dimension Reduction ........................................ 248
Qi Hu, Pengfei Zhu, Changqing Zhang, and Qinghua Hu

Large-Margin Supervised Hashing ............................................................ 259
Xiaopeng Zhang, Hui Zhang, Yong Chen, and Xianglong Liu

Three-Dimensional Surface Feature for Hyperspectral Imagery Classification ....................................................... 270
Sen Jia, Kuilin Wu, Meng Zhang, and Jie Hu

Stochastic Sequential Minimal Optimization for Large-Scale Linear SVM ................................................................. 279
Shili Peng, Qinghua Hu, Jianwu Dang, and Zhichao Peng

Robust Kernel Approximation for Classification ........................................ 289
Fanghui Liu, Xiaolin Huang, Cheng Peng, Jie Yang, and Nikola Kasabov

A Multiobjective Multiclass Support Vector Machine Restricting Classifier Candidates Based on k-Means Clustering ............................................. 297
Keiji Tatsumi, Yuki Kawashita, and Takahumi Sugimoto

Multi-label Learning with Label-Specific Feature Selection ......................... 305
Yan Yan, Shining Li, Zhe Yang, Xiao Zhang, Jing Li, Anyi Wang, and Jingyu Zhang

Neural Networks for Efficient Nonlinear Online Clustering ........................ 316
Yanis Bahroun, Eugénie Hunsicker, and Andrea Soltoggio

Multiple Scale Canonical Correlation Analysis Networks for Two-View Object Recognition ................................................... 325
Xinghao Yang and Weifeng Liu

A Novel Newton-Type Algorithm for Nonnegative Matrix Factorization with Alpha-Divergence ................................................... 335
Satoshi Nakatsu and Norikazu Takahashi

Iterative Local Hyperlinear Learning Based Relief for Feature Weight Estimation ................................................... 345
Xiaojian Huang, Li Zhang, Bangjun Wang, Zhao Zhang, and Fanzhang Li

Projected Kernel Recursive Least Squares Algorithm .................................. 356
Ji Zhao and Hongbin Zhang
Resource Allocation and Optimization Based on Queuing Theory and BP Network

Hong Tang, Delu Zeng, Xin Liu, Jiabin Huang, and Yinghao Liao

Linear Dimensionality Reduction for Time Series

Nikolaos Gianniotis

An Effective Martin Kernel for Time Series Classification

Liangang Zhang, Yang Li, and Huanhuan Chen

Text Classification Using Lifelong Machine Learning

Muhammad Hassan Arif, Xin Jin, Jianxin Li, and Muhammad Iqbal

Wake-Sleep Variational Autoencoders for Language Modeling

Xiaoyu Shen, Hui Su, Shuzi Niu, and Dietrich Klakow

Educational and Non-educational Text Classification Based on Deep Gaussian Processes

Huijuan Wang, Jing Zhao, Zeheng Tang, and Shiliang Sun

A Generalized I-ELM Algorithm for Handling Node Noise in Single-Hidden Layer Feedforward Networks

Hiu Tung Wong, Chi-Sing Leung, and Sam Kwong

Locality-Sensitive Term Weighting for Short Text Clustering

Chu-Tao Zheng, Sheng Qian, Wen-Ming Cao, and Hau-San Wong

A Comparison of Supervised Machine Learning Algorithms for Classification of Communications Network Traffic

Pramitha Perera, Yu-Chu Tian, Colin Fidge, and Wayne Kelly

Emotion Classification from Electroencephalogram Using Fuzzy Support Vector Machine

Anuchin Chatchinarat, Kok Wai Wong, and Chun Che Fung

Regularized Multi-source Matrix Factorization for Diagnosis of Alzheimer’s Disease

Xiaofan Que, Yazhou Ren, Jiayu Zhou, and Zenglin Xu

Multi-roles Graph Based Extractive Summarization

Zhibin Chen, Yunming Ye, Xiaofei Xu, and Feng Li

Self-advised Incremental One-Class Support Vector Machines: An Application in Structural Health Monitoring

Ali Anaissi, Nguyen Lu Dang Khoa, Thierry Rakotoarivelo, Mehri Makki Alamdari, and Yang Wang

Incremental Self-Organizing Maps for Collaborative Clustering

Denis Maurel, Jérémie Sublime, and Sylvain Lefebvre

Toshiyuki Yamane, Seiji Takeda, Daiju Nakano, Gouhei Tanaka, Ryosho Nakane, Akira Hirose, and Shigeru Nakagawa

Targets Detection Based on the Prejudging and Prediction Mechanism.

Xuemei Sun, Jianrong Cao, Chengdong Li, Ya Tian, and Shusheng Zhao

An Image Quality Evaluation Method Based on Joint Deep Learning.

Jiachen Yang, Bin Jiang, Yinghao Zhu, Chunqi Ji, and Wen Lu

Generic Pixel Level Object Tracker Using Bi-Channel Fully Convolutional Network.

Zijing Chen, Jun Li, Zhe Chen, and Xinge You

RBNet: A Deep Neural Network for Unified Road and Road Boundary Detection.

Zhe Chen and Zijing Chen

Semi-supervised Multi-label Linear Discriminant Analysis.

Yanming Yu, Guoxian Yu, Xia Chen, and Yazhou Ren

Field Support Vector Regression.

Haochuan Jiang, Kaizhu Huang, and Rui Zhang


Xi Yang, Kaizhu Huang, and Rui Zhang

Improve Deep Learning with Unsupervised Objective.

Shufei Zhang, Kaizhu Huang, Rui Zhang, and Amir Hussain

Reinforcement Learning


Liao Zhu, Ruizhuo Song, Yulong Xie, and Junsong Li


Ziyang Wang, Qinglai Wei, and Derong Liu

Implicit Incremental Natural Actor Critic.

Ryo Iwaki and Minoru Asada

Influence of the Chaotic Property on Reinforcement Learning Using a Chaotic Neural Network.

Yuki Goto and Katsunari Shibata
Average Reward Reinforcement Learning for Semi-Markov
Decision Processes .................................................. 768
   Jiayuan Yang, Yanjie Li, Haoyao Chen, and Jiangang Li

Neuro-control of Nonlinear Systems with Unknown Input Constraints .... 778
   Bo Zhao, Xinliang Liu, Derong Liu, and Yuanchun Li

Average Reward Optimization with Multiple Discounting
Reinforcement Learners ............................................ 789
   Chris Reinke, Eiji Uchibe, and Kenji Doya

Finite Horizon Optimal Tracking Control for Nonlinear Discrete-Time
Switched Systems .................................................. 801
   Chunbin Qin, Xianxing Liu, Guoquan Liu, Jun Wang, and Dehua Zhang

Large-Scale Bandit Approaches for Recommender Systems ............... 811
   Qian Zhou, XiaoFang Zhang, Jin Xu, and Bin Liang

Off-Policy Reinforcement Learning for Partially Unknown
Nonzero-Sum Games ............................................... 822
   Qichao Zhang, Dongbin Zhao, and Sibo Zhang

Consensus Based Distributed Reinforcement Learning for Nonconvex
Economic Power Dispatch in Microgrids ................................ 831
   Fangyuan Li, Jiahu Qin, Yu Kang, and Wei Xing Zheng

FMR-GA – A Cooperative Multi-agent Reinforcement Learning Algorithm
Based on Gradient Ascent .......................................... 840
   Zhen Zhang, Dongqing Wang, Dongbin Zhao, and Tingting Song

Policy Gradient Reinforcement Learning for I/O Reordering
on Storage Servers ................................................. 849
   Kumar Dheenadayalan, Gopalakrishnan Srinivasaraghavan,
   and V.N. Muralidhara

Big Data Analysis

Profile-Based Ant Colony Optimization for Energy-Efficient Virtual
Machine Placement .................................................. 863
   Fares Alharbi, Yu-Chu Tian, Maolin Tang, and Md Hasanul Ferdaus

An Iterative Model for Predicting Film Attendance ........................ 872
   Yang Yue, Ying Li, Tong Jia, and Zhonghai Wu

Estimating VNF Resource Requirements Using Machine
Learning Techniques .................................................. 883
   Houda Jmila, Mohamed Ibn Khedher, and Mounim A. El Yacoubi
Accelerating Core Decomposition in Large Temporal Networks
Using GPUs ................................................................. 893
Heng Zhang, Haibo Hou, Libo Zhang, Hongjun Zhang, and Yanjun Wu

Pulsar Bayesian Model: A Comprehensive Astronomical Data
Fitting Model ................................................................. 904
Hang Yu, Qian Yin, and Ping Guo

Assessing the Performance of Deep Learning Algorithms
for Newsvendor Problem .................................................. 912
Yanfei Zhang and Junbin Gao

A Small Scale Multi-Column Network for Aesthetic Classification
Based on Multiple Attributes .............................................. 922
Chaoqun Wan and Xinmei Tian

Author Index ................................................................. 933
Neural Information Processing
24th International Conference, ICONIP 2017,
Guangzhou, China, November 14-18, 2017,
Proceedings, Part I
Liu, D.; Xie, S.; Li, Y.; Zhao, D.; El-Alfy, E.-S.M. (Eds.)
2017, XVIII, 936 p. 263 illus., Softcover
ISBN: 978-3-319-70086-1