

2018 IEEE 28th International Workshop on Machine Learning for Signal Processing (MLSP 2018)

**Aalborg, Denmark
17 – 20 September 2018**



**IEEE Catalog Number: CFP18NNS-POD
ISBN: 978-1-5386-5478-1**

**Copyright © 2018 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

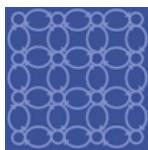
For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP18NNS-POD
ISBN (Print-On-Demand):	978-1-5386-5478-1
ISBN (Online):	978-1-5386-5477-4
ISSN:	1551-2541

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com



2018 IEEE International Workshop on Machine Learning for Signal Processing
September 17-20, Aalborg, Denmark

Paper Index

A Variance Modeling Framework Based On Variational Autoencoders For Speech Enhancement.....1

Simon Leglaise, Inria Grenoble Rhône-Alpes

Laurent Girin, Univ. Grenoble Alpes, Grenoble INP, GIPSA-lab

Radu Horaud, Inria Grenoble Rhône-Alpes

Logical Access Attacks Detection Through Audio Fingerprinting In Automatic Speaker Verification....7

Juan Manuel Espín López, Biometric Vox

Roberto Font Ruiz, Biometric Vox

Javier Gómez Marín-Blazquez, Universidad de Murcia

Francisco Esquembre Martínez, Universidad de Murcia

Analysing Replay Spoofing Countermeasure Performance Under Varied Conditions....13

Bhusan Chettri, Queen Mary University of London

Bob L. Sturm, Queen Mary University of London

Emmanouil Benetos, Queen Mary University of London

Monaural Speech Separation Using A Phase-Aware Deep Denoising Auto Encoder....19

Donald S. Williamson, Indiana University

Speech Emotion Recognition Using Cyclostationary Spectral Analysis....25

Amin Jalili, National Tsing Hua University

Sadid Sahami, Isfahan University of Technology

Chong-Yung Chi, National Tsing Hua University

Rassoul Amirkattahi, Isfahan University of Technology

Noise-Adaptive Deep Neural Network For Single-Channel Speech Enhancement....31

Hanwook Chung, McGill University

Taesup Kim, Universite de Montreal

Eric Plourde, Sherbrooke University

Benoit Champagne, McGill University

Uncertainty Bounds For Kernel-Based Regression: A Bayesian SPS Approach....37

Algo Care', Dept Information Engineering, University of Padova

Gianluigi Pillonetto, University of Brescia

Marco Campi, University of Brescia

Markov Recurrent Neural Networks....43

Che-Yu Kuo, National Chiao Tung University

Jen-Tzung Chien, National Chiao Tung University

Learning Stochastic Differential Equations With Gaussian Processes Without Gradient Matching....49

Cagatay Yildiz, Aalto University

Markus Heinonen, Aalto University

Jukka Intosalmi, Aalto University

Henrik Mannerström, Aalto University

Harri Lähdesmäki, Aalto University

Scaling Bayesian Optimization Up To Higher Dimensions: A Review And Comparison Of Recent Algorithms.....55

Benoît Choffin, CentraleSupélec
Naonori Ueda, RIKEN AIP

Correcting Boundary Over-Exploration Deficiencies In Bayesian Optimization With Virtual Derivative Sign Observations.....61

Eero Siivila, Aalto University
Aki Vehtari, Aalto University
Javier González, Amazon.com
Jarno Vanhatalo, University of Helsinki
Michael Riis Andersen, Aalto Universit

Computational Optimization For Normal Form Realization Of Bayesian Model Graphs.....67

Giovanni Di Gennaro, Università degli studi della Campania 'Luigi Vanvitelli'
Amedeo Buonanno, Università degli studi della Campania 'Luigi Vanvitelli'
Francesco A. N. Palmieri, Università degli studi della Campania 'Luigi Vanvitelli'

Model-Order Selection In Statistical Shape Models.....73

Alma Eguizabal, University of Paderborn
Peter J. Schreier, University of Paderborn
David Ramírez, Universidad Carlos III de Madrid

Optimal Classifier Model Status Selection Using Bayes Boundary Uncertainty.....79

David Ha, Doshisha university
Emilie Delattre, University of Mons
Yuya Tomotoshi, Doshisha university
Masahiro Senda, Doshisha university
Hideyuki Watanabe, Advanced Telecommunications Research Institute International
Shigeru Katagiri, Doshisha university
Miho Ohsaki, Doshisha university

Network Reconstruction From Time-Course Perturbation Data Using Multivariate Gaussian Processes.....85

Sara Al-Sayed, Technische Universität Darmstadt
Heinz Koepll, Technische Universität Darmstadt

Space-Time Extension Of The MEM Approach For Electromagnetic Neuroimaging.....91

Marie-Christine Roubaud, Aix-Marseille Université
Jean-Marc Lina, Ecole de Technologie Supérieure et Centre de Rech. Mathématiques, Montréal
Julie Carrier, Université de Montréal
Bruno Torrésani, Aix-Marseille Université

Online Variational Message Passing In The Hierarchical Gaussian Filter.....97

Ismail Senoz, Eindhoven University of Technology
Bert De Vries, Eindhoven University of Technology

Nonlinear Probabilistic Latent Variable Models For Groupwise Correspondence Analysis In Brain Structures.....103

Hernan Felipe Garcia, UNIVERSIDAD TECNOLOGICA DE PEREIRA
Alvaro Angel Orozco, UNIVERSIDAD TECNOLOGICA DE PEREIRA
Mauricio Alexander Alvarez, The University of Sheffield

Guaranteed Deterministic Bounds On The Total Variation Distance Between Univariate Mixtures.....109

Frank Nielsen, Sony Computer Science Laboratories Inc
Ke Sun, CSIRO

Mixture Representation Of The Matérn Class With Applications In State Space Approximations And Bayesian Quadrature.....115

Filip Tronarp, Aalto University
Toni Karvonen, Aalto University
Simo Särkkä, Aalto University

Dynamic Bayesian Knowledge Transfer Between A Pair Of Kalman Filters.....121

Milan Papez, Czech Academy of Sciences
Anthony Paul Quinn, Trinity Colledge Dublin

Causality Analysis Based On Matrix Transfer Entropy.....127

Rongjin Ma, Xi'an Jiaotong University
Badong Chen, Xi'an Jiaotong University
Jianfeng Xiao, Xi'an Jiaotong University
Jingli Shao, VICON Technology (Shenzhen) Co.Ltd

Unsupervised Parsimonious Cluster-Based Anomaly Detection (PCAD).....133

David Jonathan Miller, Anomalee Inc.
George Kesidis, Anomalee Inc
Zhicong Qiu, Anomalee Inc

Stochastic Quantum Information Processing, With Applications To Blind Quantum System Identification And Source Separation.....139

Yannick Deville, University of Toulouse
Alain Deville, Aix-Marseille Universite

Distributed Semi-Supervised Multi-Label Classification.....N/A

Zhen Xu, Zhejiang University
Ying Liu, Zhejiang University

Dynamical Component Analysis (dyca): Dimensionality Reduction For High-Dimensional Deterministic Time-Series.....145

Bastian Seifert, Ansbach University of Applied Sciences
Katharina Korn, Ansbach University of Applied Sciences
Steffen Hartmann, Ansbach University of Applied Sciences
Christian Uhl, Ansbach University of Applied Sciences

Variational Bayesian Partially Observed Non-Negative Tensor Factorization.....151

Jesper L. Hinrich, Technical University of Denmark
Søren F. V. Nielsen, Technical University of Denmark
Kristoffer H. Madsen, Copenhagen University Hospital Hvidovre
Morten Mørup, Technical University of Denmark

Scalable Convolutional Dictionary Learning With Constrained Recurrent Sparse Auto-Encoders.....157

Bahareh Tolooshams, Harvard University
Sourav Dey, Manifold ai
Demba Ba, Harvard University

Sparse Bayesian Binary Logistic Regression Using The Split-And-Augmented Gibbs Sampler.....163

Maxime Vono, University of Toulouse
Nicolas Dobigeon, University of Toulouse
Pierre Chainais, University of Lille

Regularization Parameter-Free Convolutional Sparse Coding Via Projections Onto The L1-Ball And The Discrepancy Principle.....169

Paul Rodriguez, PUCP

BALSON: Bayesian Least Squares Optimization With Nonnegative L1-Norm Constraint.....175

Jiyang Xie, Beijing University of Posts, Telecommunications
Zhanyu Ma, Beijing University of Posts, Telecommunications
Guoqiang Zhang, University of Technology Sydney
Jing-Hao Xue, University College London
Jen-Tzung Chien, National Chiao Tung University
Zhiqing Lin, Beijing University of Posts, Telecommunications
Jun Guo, Beijing University of Posts, Telecommunications

Joint Topology Learning And Graph Signal Recovery Via Kalman Filter In Causal Data Processes.....181
Mahmoud Ramezani-Mayiami, ICT department, University of Agder

Learning Sparse Structured Ensembles With Stochastic Gradient MCMC Sampling And Network Pruning.....187

Yichi Zhang, Tsinghua University
Zhijian Ou, Tsinghua University

Efficient Separable Filter Estimation Using Rank-1 Convolutional Dictionary Learning.....193

Gustavo Silva, Pontificia Universidad Católica del Perú
Jorge Quesada, Pontificia Universidad Católica del Perú
Paul Rodríguez, Pontificia Universidad Católica del Perú

Anomaly Detection Of Attacks (ada) On Dnn Classifiers At Test Time.....199

David Jonathan Miller, School of EECS, Pennsylvania State University
Yujia Wang, EE Dept, School of EECS, Pennsylvania State University
George Kesidis, School of EECS, Pennsylvania State University

K-Svd With A Real L0 Optimization: Application To Image Denoising.....205

Yuan Liu, INSA-Rouen
Stéphane Canu, INSA-Rouen
Paul Honeine, Rouen university
Su Ruan, Rouen university

Generalization Bounds For Domain Adaptation Via Domain Transformations.....211

Elif Vural, Middle East Technical University

Greedy Salient Dictionary Learning With Optimal Point Reconstruction For Activity Video Summarization.....217

Ioannis Mademlis, Aristotle University of Thessaloniki
Anastasios Tefas, Aristotle University of Thessaloniki
Ioannis Pitas, Aristotle University of Thessaloniki

A Multi-Layer Perceptron Applied To Number Of Target Indication For Direction-Of-Arrival Estimation In Automotive Radar Sensors.....223

Markus Gardill, InnoSenT GmbH
Jonas Fuchs, Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Institute for Electronics Engineering
Christian Frank, InnoSenT GmbH
Robert Weigel, Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Institute for Electronics Engineering

Enhanced Noisy Sparse Subspace Clustering Via Reweighted L1-Minimization.....229

Jwo-Yuh Wu, National Chiao Tung University
Liang-Chi Huang, National Chiao Tung University
Ming-Hsun Yang, National Chiao Tung University

Ling-Hua Chang, Yuan Ze University
Chun-Hung Liu, Mississippi State University

Acoustic Scene Classification: A Competition Review.....235

Shayan Gharib, Tampere University of Technology
Honain Derrar, Tampere University of Technology
Daisuke Niizumi, BALMUDA Inc.
Tuukka Senttula, Tampere University of Technology
Janne Tommola, Tampere University of Technology
Toni Heittola, Tampere University of Technology
Tuomas Virtanen, Tampere University of Technology
Heikki Huttunen, Tampere University of Technology

Generalizable Supervised Manifold Learning Via Lipschitz Continuous Interpolators.....241

Cem Ornek, Middle East Technical University
Elif Vural, Middle East Technical University

Remote Sensing Image Regression For Heterogeneous Change Detection.....247

Luigi Tommaso Luppino, University of Tromsø
Filippo Maria Bianchi, University of Tromsø
Gabriele Moser, University of Genoa
Stian Normann Anfinsen, University of Tromsø

Graph-Regularized Fast Low-Rank Matrix Approximation Using The Nyström Method For Clustering.....253

Jieun Lee, Yonsei University
Yoonsik Choe, Yonsei University

APE: Archetypal-Prototypal Embeddings For Audio Classification.....258

Arshdeep Singh, IIT Mandi
Anshul Thakur, IIT Mandi
Padmanabhan Rajan, IIT Mandi

Label Propagation For Learning With Label Proportions.....264

Rafael Poyiadzi, University of Bristol
Raul Santos-Rodriguez, University of Bristol
Niall Twomey, University of Bristol

Detecting Industrial Fouling By Monotonicity During Ultrasonic Cleaning.....270

Chang Rajani, University of Helsinki
Arto Klami, University of Helsinki
Ari Salmi, University of Helsinki
Timo Rauhala, Altum Technologies
Edward Häggström, University of Helsinki
Petri Myllymäki, University of Helsinki

Multiclass SVM With Hierarchical Interaction: Application To Face Classification.....276

Mingyuan Jiu, Zhengzhou University
Nelly Pustelnik, Univ Lyon, ENS de Lyon, Univ Lyon 1, CNRS, Laboratoire de Physique
Lin Qi, Zhengzhou University

Frame-Level Proximity And Touch Recognition Using Capacitive Sensing And Semi-Supervised Sequential Modeling.....282

Tobias Fischer, RWTH Aachen
Mariano Etchart, Loughborough University
Ernesto Biempica, KOSTAL

Simple Deep Learning Network Via Tensor-Train Haar-Wavelet Decomposition Without Retraining.....288

Wei-Zhi Huang, Academia Sinica

Sung-Hsien Hsieh, National Taiwan University

Chun-Shien Lu, Academia Sinica

Soo-Chang Pei, National Taiwan University

Evaluation Of Loss Functions For Estimation Of Latent Vectors From GAN.....294

Arun Patro, Indian Institute of Technology Kharagpur

Vishnu Vardhan Makkapati, Myntra Designs Pvt. Ltd.

Jayanta Mukhopadhyay, Indian Institute of Technology Kharagpur

Quality Preserving Face De-Identification Against Deep CNNs.....300

Panteleimon Chriskos, Aristotle University of Thessaloniki

Rosen Zhelev, University of Bristol

Vasileios Mygdalis, Aristotle University of Thessaloniki

Ioannis Pitas, Aristotle University of Thessaloniki

Affective State Recognition Based On Eye Gaze Analysis Using Two-Stream Convolutional Networks.....306

Christina Chrysouli, Centre for Research, Technology

Nicholas Vretos, Centre for Research, Technology

Petros Daras, Centre for Research, Technology

Deep Learning Based Speed Estimation For Constraining Strapdown Inertial Navigation On Smartphones.....312

Santiago Cortes Reina, Aalto University

Arno Solin, Aalto University

Juho Kannala, Aalto University

Convolutional Neural Networks For Noise Signal Recognition.....318

Ruslan J. Portsev, Institute of Control Sciences of Russian Academy of Sciences

Andrey V. Makarenko, Institute of Control Sciences of Russian Academy of Sciences

Using Metaheuristics For Hyper-Parameter Optimization Of Convolutional Neural Networks.....324

Victoria Bibaeva, Hamburg University of Applied Sciences (HAW Hamburg)

Convex Likelihood Alignments For Bioacoustic Classification.....330

Anshul Thakur, IIT Mandi

Arshdeep Singh, IIT Mandi

Padmanabhan Rajan, IIT Mandi

Efficient Cyclic Learning Rate Schedules And Their Evaluations For Neural Network Ensemble.....336

Minoru Mori, Kanagawa Institute of Technology

Masahiro Nakano, NTT

Deep Neural Networks For Application Awareness In SDN-Based Network.....342

Jun Xu, Beijing University of Posts, Telecommunications, P.R. China

Jingyu Wang, Beijing University of Posts, Telecommunications, P.R. China

Qi Qi, Beijing University of Posts, Telecommunications, P.R. China

Bo He, Beijing University of Posts, Telecommunications, P.R. China

Haifeng Sun, Beijing University of Posts, Telecommunications, P.R. China

Light Field Based Face Recognition Via A Fused Deep Representation.....348

Alireza Sepas-Moghaddam, Instituto de Telecomunicações, Instituto Superior Técnico – Universidade de Lisboa, Lisbon

Paulo Lobato Correia, Instituto de Telecomunicações, Instituto Superior Técnico – Universidade de Lisboa, Lisbon

Kamal Nasrollahi, Visual Analysis of People (VAP), Aalborg University
Thomas B Moeslund, Visual Analysis of People (VAP), Aalborg University
Fernando Pereira, Instituto de Telecomunicações, Instituto Superior Técnico – Universidade de Lisboa, Lisbon

A Characterization Of The Edge Of Criticality In Binary Echo State Networks.....354

Pietro Verzelli, Università della Svizzera italiana
Lorenzo Livi, University of Exeter
Cesare Alippi, Università della Svizzera italiana

Image Deblurring And Super-Resolution Using Deep Convolutional Neural Networks.....360

Fatma Albuwi, Trinity College Dublin
Vladimir A. Krylov, Trinity College Dublin
Rozenn Dahyot, Trinity College Dublin

Detection Of Cut Points For Automatic Music Rearrangement.....366

Daniel Stoller, Queen Mary University of London
Vincent Akkermans, MXM Music
Simon Dixon, Queen Mary University of London

Recurrent Neural Networks With Flexible Gates Using Kernel Activation Functions.....372

Simone Scardapane, Department of Information Engineering, Electronics, Telecommunications (DIET), Sapienza University of Rome
Steven Van Vaerenbergh, Department of Communications Engineering, University of Cantabria
Danilo Comminiello, Department of Information Engineering, Electronics, Telecommunications (DIET), Sapienza University of Rome
Simone Totaro, Department of Statistical Sciences, Sapienza University of Rome
Aurelio Uncini, Department of Information Engineering, Electronics, Telecommunications (DIET), Sapienza University of Rome

Sketchsegnet: A RNN Model For Labeling Sketch Strokes.....378

Xingyuan Wu, Beijing University of Posts, Telecommunications
Yonggang Qi, Beijing University of Posts, Telecommunications
Jun Liu, Beijing University of Posts, Telecommunications
Jie Yang, Beijing University of Posts, Telecommunications

Supportive Attention In End-To-End Memory Networks.....384

Jen-Tzung Chien, National Chiao Tung University
Ting-An Lin, National Chiao Tung University

Machine Learning As Digital Therapy Assessment For Mobile Gait Rehabilitation.....390

Javier Conte Alcaraz, Leibniz Universität Hannover
Sanam Moghaddamnia, Leibniz Universität Hannover
Nils Poschadel, Leibniz Universität Hannover
Jürgen Peissig, Leibniz Universität Hannover

Spectro-Temporal ECG Analysis For Atrial Fibrillation Detection.....396

Zheng Zhao, Aalto University
Simo Särkkä, Aalto University
Ali Bahrami Rad, Aalto University

Cross-Corpus EEG-Based Emotion Recognition.....402

Soheil Rayatdoost, University of Geneva
Mohammad Soleymani, University of Southern California

On-Line Bayesian Parameter Estimation In Electrocardiogram State Space Models.....408

Kimmo Suotsalo, Aalto University, RemoteA Ltd
Simo Särkkä, Aalto University

A Deep Learning Architecture To Detect Events In EEG Signals During Sleep.....414

Stanislas Chambon, Stanford University
Valentin Thorey, Dreem sas
Pierrick J Arnal, Dreem
Emmanuel Mignot, Stanford University
Alexandre Gramfort, Inria / CEA - Université Paris Saclay

Single-Channel EEG Classification By Multi-Channel Tensor Subspace Learning And Regression.....420

Simon Van Eysdhoven, KU Leuven
Martijn Boussé, KU Leuven
Borbála Hunyadi, KU Leuven
Lieven De Lathauwer, KU Leuven
Sabine Van Huffel, KU Leuven

Uncertainty Modeling And Interpretability In Convolutional Neural Networks For Polyp Segmentation.....426

Kristoffer Knutsen Wickstrøm, University of Tromsø – The Arctic University of Norway
Michael Kampffmeyer, UiT The Arctic University of Norway
Robert Jenssen, UiT The Arctic University of Norway

Inference Of Gene Regulatory Networks By Maximum-Likelihood Adaptive Filtering And Discrete Fish School Search.....432

Yukun Tan, Texas A&M University
Fernando Buarque Lima Neto, Universidade de Pernambuco / Escola Politécnica de Pernambuco
Ulisses Braga Neto, Texas A&M University

Controlling Blood Glucose Levels In Patients With Type I Diabetes Using Fitted Q-Iterations And Functional Features.....438

Jonas Nordhaug Myhre, UiT - The Arctic University of Norway
Ilkka Kalervo Launonen, UiT - The Arctic University of Norway
Susan Wei, University of Minnesota
Fred Godtliebsen, UiT - The Arctic University of Norway

Chronic Wound Tissue Classification Using Convolutional Networks And Color Space Reduction.....444

Vitor Godeiro, Federal University of Rio Grande do Norte
José Francisco Silva Neto, Federal University of Rio Grande do Norte
Bruno Motta De Carvalho, Federal University of Rio Grande do Norte
Julianny Ferraz, Federal University of Rio Grande do Norte
Bruno Santana, Federal University of Rio Grande do Norte
Renata Antonaci Gama, Federal University of Rio Grande do Norte