2022 International Workshop on Acoustic Signal Enhancement (IWAENC 2022)

Bamberg, Germany 5 – 8 September 2022



IEEE Catalog Number: CFP22WAE-POD **ISBN:**

978-1-6654-6868-8

Copyright © 2022 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:	CFP22WAE-POD
ISBN (Print-On-Demand):	978-1-6654-6868-8
ISBN (Online):	978-1-6654-6867-1

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





Technical Program

Tuesday, Sept. 6

Keynote Talk

The Evolution of Microphone Array Beamformers...N/A

Jens Meyer and Gary W. Elko

mh acoustics

Poster Session A

A-01 Joint Analysis of Acoustic Scenes and Sound Events with Weakly Labeled Data...1

Shunsuke Tsubaki¹, Keisuke Imoto¹, and Nobutaka Ono² ¹Doshisha University, Japan

²Tokyo Metropolitan University, Japan

A-02 Preservation of Interaural Level Difference Cue in a Deep Learning-Based Speech Separation System for Bilateral and Bimodal Cochlear Implants User...6

Zicheng Feng¹, Yu Tsao², and Fei Chen¹ ¹Southern University of Science and Technology, China ²Academia Sinica, Taiwan

A-03 Distributed Synchronization for Ad-Hoc Acoustic Sensor Networks using Closed-Loop Double-Cross-Correlation Processing...11

Aleksej Chinaev and Gerald Enzner University of Oldenburg, Germany

A-04 Incremental Method of Permutation Alignment for Frequency-Domain Blind Source Separation...16 Satoru Emura

Kyoto University of Advanced Science, Japan

A-05 Direction of Arrival Estimation for Reverberant Speech based on Neural Networks and the Direct-Path Dominance Test...21

Orel Ben Zaken¹, Boaz Rafaely¹, Anurag Kumar², and Vladimir Tourbabin² ¹Ben-Gurion University of the Negev, Israel ²Reality Labs Research at Meta, USA

- A-06 User Preference between Residual Noise and Speech Distortion in Speech Enhancement...26 Akihiko Sugiyama¹, Osamu Shimada², and Toshiyuki Nomura² ¹Yahoo Japan Corporation, Japan ²NEC Corporation, Japan
- A-07 Enhancement of Hearing Aid Processing via Spatial Spectro-Temporal Post-Filtering with a Prototype Eyeglass-Integrated Array...31

Marcos Cantu and Volker Hohmann University of Oldenburg, Germany

A-08 Sector-based Parametric Sound Field Reproduction in the Circular Harmonic Domain using Covariance based Rendering...36

Carlotta Anemüller, Oliver Thiergart, and Emanuël A. P. Habets International Audio Laboratories Erlangen, Germany



A-09 Deep Multi-Frame MVDR Filtering for Binaural Noise Reduction...41 Marvin Tammen and Simon Doclo

University of Oldenburg, Germany

A-10 Model-Based Estimation of In-Car-Communication Feedback Applied to Speech Zone Detection...46 Kaspar Müller¹, Simon Doclo², Jan Østergaard³, and Tobias Wolff¹

¹Cerence, Germany ²University of Oldenburg, Germany ³Aalborg University, Denmark

- A-11 Beyond Griffin-Lim: Improved Iterative Phase Retrieval for Speech...51 Tal Peer, Simon Welker, and Timo Gerkmann University of Hamburg, Germany
- A-12 Mechatronic Generation of Datasets for Acoustics Research...56 Austin Lu, Kanad Sarkar, Manan Mittal, Ryan Corey, Paris Smaragdis, and Andrew Singer University of Illinois Urbana-Champaign, USA
- A-13 Polynomial Eigenvalue Decomposition-Based Target Speaker Voice Activity Detection in the Presence of Competing Talkers...61

Vincent W. Neo¹, Stephan Weiss², Simon W. McKnight¹, Aidan O. T. Hogg¹, and Patrick A. Naylor¹ ₁Imperial College London, UK

²University of Strathclyde, UK

A-14 Acoustic System Identification with Partially Time-Varying Models Based on Tensor Decompositions...66 Gongping Huang¹, Jacob Benesty², Jingdong Chen³, Constantin Paleologu⁴, Silviu Ciochina⁴, Walter Kellermann¹, and Israel Cohen⁵

¹Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany
²University of Quebec, Canada
³Northwestern Polytechnical University, China
⁴University Politehnica of Bucharest, Romania
⁵Technion – Israel Institute of Technology, Israel

A-15 Binaural Speech Enhancement using STOI Optimal Masks...71

Vikas Tokala, Mike Brookes, and Patrick A. Naylor Imperial College London, UK

Poster Session B

B-01 Self-Attention with Restricted Time Context and Resolution in DNN Speech Enhancement...76

Maximilian Strake, Adrian Behlke, and Tim Fingscheidt Technische Universität Braunschweig, Germany

B-02 Blind Extraction of Target Speech Source: Three Ways of Guidance Exploiting Supervised Speaker Embeddings...81

Jiri Malek, Jaroslav Cmejla, and Zbynek Koldovsky Technical University of Liberec, Czechia

B-03 Spherical Sector Harmonics based Directional Drone Noise Reduction...86 Hanwen Bi, Fei Ma, Thushara Abhayapala, and Prasanga Samarasinghe Australian National University, Australia



B-04 Semi-supervised Domain Adaptation for Acoustic Scene Classification by Minimax Entropy and Selfsupervision Approaches...91

Yukiko Takahashi¹, Sawa Takamuku¹, Keisuke Imoto², and Naotake Natori¹

¹AISIN Corporation, Japan ²Doshisha University, Japan

B-05 Joint Localization and Synchronization of Distributed Camera-attached Microphone Arrays for Indoor Scene Analysis...96

Yoshiaki Sumura¹, Kouhei Sekiguchi², Yoshiaki Bando³, Aditya Arie Nugraha², and Kazuyoshi Yoshii¹ ₁Kyoto University, Japan

²RIKEN Center for Advanced Intelligence Project, Japan ³National Institute of Advanced Industrial Science and Technology, Japan

B-06 DNN-based Speech Quality Assessment for Binaural Signals...101

Jan Reimes HEAD acoustics, Germany

B-07 Simulating Wind Noise with Airflow Speed-Dependent Characteristics...106

Daniele Mirabilii¹, Alexander Lodermeyer¹, Felix Czwielong², Stefan Becker², and Emanuël A. P. Habets¹ ¹International Audio Laboratories Erlangen, Germany ²Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

B-08 Frequency-domain MIMO Acoustic Echo Cancellation Based on a Kronecker Product Approximation...111 Mhd Modar Halimeh and Walter Kellermann

Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

B-09 On the Importance of Acoustic Reflections in Beamforming...116

Oren Shmaryahu and Sharon Gannot Bar-Ilan University, Israel

B-10 Do You Listen with One or Two Microphones? A Unified ASR Model for Single and Multi-Channel Audio...121

Gokce Keskin, Minhua Wu, Brian King, Harish Mallidi, Yang Gao, Jasha Droppo, Ariya Rastrow, and Roland Maas

Amazon, USA

B-11 Subspace Constrained Independent Vector Extraction...126

Tongzheng Liu and Zhihua Lu Ningbo University, China

B-12 Binaural Reproduction using Multi-Driver Headphones...131

Jiarui Wang, Prasanga Samarasinghe, Thushara Abhayapala, and Jihui Aimee Zhang Australian National University, Australia

B-13 Utterance Weighted Multi-Dilation Temporal Convolution Networks for Monaural Speech Dereverberation...136

William Ravenscroft, Stefan Goetze, and Thomas Hain University of Sheffield, UK

B-14 Meta-Learning for Adaptive Filters with Higher-Order Frequency Dependencies...141 Junkai Wu¹, Jonah Casebeer¹, Nicholas Bryan², and Paris Smaragdis²

¹University of Illinois Urbana-Champaign, USA ²Adobe Research, USA



B-15 Adaptive Crosstalk Cancellation and Spatialization for Dynamic Group Conversation Enhancement Using Mobile and Wearable Devices...146

Ryan Corey, Manan Mittal, Kanad Sarkar, and Andrew Singer University of Illinois Urbana-Champaign, USA

B-16 Streaming Noise Context Aware Enhancement for Automatic Speech Recognition in Multi-Talker Environments...151

Joseph Caroselli, Arun Narayanan, and Yiteng Huang Google, USA

Poster Session C

C-01 Joint Acoustic Echo Cancellation and Blind Source Extraction based on Independent Vector Extraction...156

Thomas Haubner¹, Zbynek Koldovsky², and Walter Kellermann¹ ¹Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany ²Technical University of Liberec, Czechia

- C-02 GMM based Multi-stage Wiener Filtering for Low SNR Speech Enhancement...161 Wageesha Manamperi, Prasanga Samarasinghe, Thushara Abhayapala, and Jihui Zhang Australian National University, Australia
- C-03 Learnable Acoustic Frontends in Bird Activity Detection...166 Mark Anderson and Naomi Harte Trinity College Dublin, Ireland
- C-04 Bias Analysis of Spatial Coherence-Based RTF Vector Estimation for Acoustic Sensor Networks in a Diffuse Sound Field...171

Wiebke Middelberg and Simon Doclo University of Oldenburg, Germany

C-05 Deep Complex-Valued Convolutional-Recurrent Networks for Single Source DOA Estimation...176 Eric Grinstein and Patrick A. Naylor

Imperial College London, UK

C-06 Statistical Analysis of Randomness in Training of Small-Scale Neural Networks for Speech Enhancement...181

Annika Briegleb and Walter Kellermann Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

- C-07 Acoustic Room Compensation using Local PCA-based Room Average PSD Estimation...186 Wenyu Jin, Patrick McPherson, Chris Pike, and Adib Mehrabi Sonos, USA/UK
- C-08 Differential and Constant-Beamwidth Beamforming with Uniform Rectangular Arrays...191 Gal Itzhak and Israel Cohen

Technion – Israel Institute of Technology, Israel

C-09 Frame-based Space-Time Covariance Matrix Estimation for Polynomial Eigenvalue Decomposition-based Speech Enhancement...196

Emilie d'Olne, Vincent W. Neo, and Patrick A. Naylor Imperial College London, UK



C-10 A Distributed Steered Response Power Approach to Source Localization in Wireless Sensor Networks...201 Bilgesu Çakmak¹, Thomas Dietzen¹, Randall Ali¹, Patrick A. Naylor², and Toon van Waterschoot¹ ¹KU Leuven, Belgium

²Imperial College London, UK

C-11 Robust Acoustic Contrast Control with Positive Semidefinite Constraint using Iterative POTDC Algorithm...206

Junqing Zhang¹, Liming Shi², Mads G. Christensen², Wen Zhang¹, Lijun Zhang¹, and Jingdong Chen¹ ¹Northwestern Polytechnical University, China ²Aalborg University, Denmark

C-12 Pareto Optimal Binaural MVDR Beamformer with Controllable Interference Suppression...211

¹Elior Hadad, Simon Doclo², Sven Nordholm³, and Sharon Gannot¹ ¹Bar-Ilan University, Israel

²University of Oldenburg, Germany ³Curtin University, Australia

C-13 Speaker-Conditioning Single-Channel Target Speaker Extraction using Conformer-based Architectures...216

Ragini Sinha¹, Marvin Tammen², Christian Rollwage¹, and Simon Doclo² ¹Fraunhofer Institute for Digital Media Technology IDMT ²University of Oldenburg, Germany

C-14 Analysis of Impact of Emotions on Target Speech Extraction and Speech Separation...221 Ján Švec¹, Kateřina Žmolíková¹, Martin Kocour¹, Marc Delcroix², Tsubasa Ochiai², Ladislav Mošner¹, and Jan

Černocký¹ ¹Brno University of Technology, Czechia ²NTT Communications Science Laboratories, Japan

C-15 Blind Directional Room Impulse Response Parameterization from Relative Transfer Functions...226 Nils Meyer-Kahlen and Sebastian J. Schlecht Aalto University, Finland

Wednesday, Sept. 7

Keynote Talk

Pushing the Limits of Speech Enhancement Technology...N/A

Shoko Araki

NTT Communication Science Laboratories

Lecture Session: Best Paper Award Contest

L-01 Bilateral-Ambisonic Reproduction by Soundfield Translation...231

Lachlan Birnie¹, Zamir Ben-Hur², Vladimir Tourbabin², Thushara Abhayapala¹, and Prasanga Samarasinghe¹

¹Australian National University, Australia ²Reality Labs Research at Meta, USA

L-02 Head-Related Transfer Function Interpolation from Spatially Sparse Measurements Using Autoencoder with Source Position Conditioning...236

Yuki Ito, Tomohiko Nakamura, Shoichi Koyama, and Hiroshi Saruwatari University of Tokyo, Japan



L-03 Occlusion Effect Reduction Using a Vibration Sensor...241 Christoph Weyer and Peter Jax

RWTH Aachen University, Germany

- L-04 AmbiSep: Ambisonic-to-Ambisonic Reverberant Speech Separation Using Transformer Networks...246 Adrian Herzog, Srikanth Chetupalli, and Emanuël A. P. Habets International Audio Laboratories Erlangen, Germany
- L-05 Distributed Cross-Relation-Based Frequency-Domain Blind System Identification using Online-ADMM...251

Matthias Blochberger¹, Filip Elvander¹, Randall Ali¹, Marc Moonen¹, Jan Østergaard², Jesper Jensen², and Toon van Waterschoot¹

¹KU Leuven, Belgium ²Aalborg University, Denmark

L-06 Monaural Source Separation: From Anechoic to Reverberant Environments...256

Tobias Cord-Landwehr¹, Christoph Böddeker¹, Thilo von Neumann¹, Catalin Zorila², Rama Doddipatla², and Reinhold Häb-Umbach¹

¹Paderborn University, Germany ²Toshiba Cambridge Research Laboratory, UK

Poster Session D

D-01 Does a PESQNet (Loss) Require a Clean Reference Input? The Original PESQ Does, But ACR Listening Tests Don't...261

Ziyi Xu, Maximilian Strake, and Tim Fingscheidt Technische Universität Braunschweig, Germany

- D-02 Machine Learning for Parameter Estimation in the MBSTOI Binaural Intelligibility Metric...266 Pierre Guiraud, Alastair H. Moore, Rebecca R. Vos, Patrick A. Naylor, and Mike Brookes Imperial College London, UK
- D-03 The SEBASS-DB: A Consolidated Public Data Base of Listening Test Results for Perceptual Evaluation of BSS Quality Measures...271

Thorsten Kastner and Jürgen Herre International Audio Laboratories Erlangen, Germany

- D-04 Explainable Acoustic Scene Classification: Making Decisions Audible...276 Hasan Nazim Bicer¹, Philipp Götz¹, Cagdas Tuna², and Emanuël A. P. Habets¹ ¹International Audio Laboratories Erlangen, Germany ²Fraunhofer Institute for Integrated Circuits IIS Erlangen, Germany
- D-05 Dictionary-Based Fusion of Contact and Acoustic Microphones for Wind Noise Reduction...281 Marvin Tammen¹, Xilin Li², Simon Doclo¹, and Lalin Theverapperuma² ¹University of Oldenburg, Germany ²Reality Labs Research at Meta, USA
- D-06 Coherence-based Frequency Subset Selection for Binaural RTF-Vector-based Direction of Arrival Estimation for Multiple Speakers...286

Daniel Fejgin and Simon Doclo University of Oldenburg, Germany



D-07 BonsApps Keyword Spotting Challenge: Environment Aware Universal Keyword Encoder for Low Foot Print Devices...291

Moammed Hafsati and Kamil Bentounes Tuito, France

D-08 A Linear MMSE Filter using Delayed Remote Microphone Signals for Speech Enhancement in Hearing Aid Applications...296

Vasudha Sathyapriyan^{1,2}, Michael S. Pedersen², Jan Østergaard¹, Mike Brookes³, Patrick A. Naylor³, and Jesper Jensen^{1,2}

¹Aalborg University, Denmark ²Demant A/S, Denmark ³Imperial College London, UK

D-09 Polynomial Multiple Variance Impulse Response Measurement...301 Riccardo Forti¹, Alberto Carini¹, and Simone Orcioni² ¹University of Trieste, Italy

²Università Politecnica delle Marche, Italy

- D-10 Robust Feedback Active Noise Control in Headphones Based on a Data-Driven Uncertainty Model...306 Florian Hilgemann and Peter Jax RWTH Aachen University, Germany
- D-11 A Deep Learning-based Pressure Matching Approach to Soundfield Synthesis...311 Luca Comanducci, Fabio Antonacci, and Augusto Sarti Politecnico di Milano, Italy
- D-12 An EEG-based Study of Auditory Sensitivity in Spatial Hearing...316 Yihan Wang, Zhixing Liu, and Fei Chen Southern University of Science and Technology, China
- D-13 Comparison of Position Estimation Methods for the Rotating Equatorial Microphone...321 Jeremy Lawrence¹, Jens Ahrens², and Nils Peters¹ ¹International Audio Laboratories Erlangen, Germany

²International Audio Laboratories Erlangen, Germany ²Chalmers University of Technology, Sweden

D-14 DNN-Free Low-Latency Adaptive Speech Enhancement Based on Frame-Online Beamforming Powered by Block-Online FastMNMF...326

Aditya Arie Nugraha¹, Kouhei Sekiguchi¹, Mathieu Fontaine², Yoshiaki Bando³, and Kazuyoshi Yoshii⁴

¹*RIKEN Center for Advanced Intelligence Project, Japan* ²*Télécom Paris, France*

³National Institute of Advanced Industrial Science and Technology, Japan

⁴Kyoto University, Japan

Demonstrations A

DA-01 3PASS - Realistic Testing Matters...N/A

Natalia Manrique, Jan Reimes, and Christian Schüring HEAD acoustics, Germany



DA-02 Demonstration of Spatial Spectro-Temporal Filtering with a Prototype Eyeglass-Integrated Array and the openMHA Real-Time Audio Signal Processing Platform...N/A

Marcos A. Cantu and Volker Hohmann University of Oldenburg, Germany

DA-03 In-Car Communication and Karaoke System in Passenger Van...N/A Markus Buck, Tim Haulick, and Tobias Wolf

Cerence, Germany

Thursday, Sept. 8

Keynote Talk

Spatial Acquisition, Digital Archiving, and Interactive Auralization...N/A

Toon van Waterschoot KU Leuven

Poster Session E

E-01	AID: Open-Source Anechoic Interferer Dataset331	
	Philipp Götz ¹ , Cagdas Tuna ² , Andreas Walther ² , and Emanuël A. P. Habets ¹	
	¹ International Audio Laboratories Erlangen, Germany ² Fraunhofer Institute for Integrated Circuits Erlangen, Germany	
E-02	Acoustic Echo Suppression using a Learning-based Multi-Frame Minimum Variance Distortionless Response (MFMVDR) Filter336	
	Yuefeng Tsai, Yicheng Hsu, and Mingsian Bai National Tsing Hua University, Taiwan	
E-03	Source Separation for Sound Event Detection in Domestic Environments using Jointly Trained Models341	
	Diego de Benito-Gorrón ¹ , Kateřina Žmolíková ² , and Doroteo T. Toledano ¹ ¹ Universidad Autónoma de Madrid, Spain ² Brno University of Technology, Czechia	
E-04	Independent Vector Analysis Assisted Adaptive Beamforming for Speech Source Separation on an Acoustic Vector Sensor346	
	Yichen Yang, Xianrui Wang, Wen Zhang, and Jingdong Chen Northwestern Polytechnical University, China	
E-05	3D Single Source Localization Based on Euclidean Distance Matrices351	
	Klaus Brümann and Simon Doclo University of Oldenburg, Germany	
E-06	Phase Error Analysis for First-Order Linear Differential Microphone Arrays356	
	Longfei Yan ¹ , Weilong Huang ² , W. Bastiaan Kleijn ¹ , and Thushara D. Abhayapala ³	
	¹ Victoria University of Wellington, New Zealand ² Alibaba Group, China ³ Australian National University, Australia	



E-07	Training Strategies for Own Voice Reconstruction in Hearing Protection Devices using an In-ear Microphone361
	Mattes Ohlenbusch ¹ , Christian Rollwage ¹ , and Simon Doclo ²
	¹ Fraunhofer IDMT, Germany ² University of Oldenburg, Germany
E-08	Two-Stage Speech Enhancement Using Gated Convolutions366
	Lars Thieling and Peter Jax RWTH Aachen University, Germany
E-09	Accelerated Unsupervised Clustering in Acoustic Sensor Networks using Federated Learning and a Variational Autoencoder371
	Luca Becker, Alexandru Nelus, Rene Glitza, and Rainer Martin Ruhr-Universität Bochum, Germany
E-10	Positional Tracking of a Moving Microphone in Reverberant Scenes by Applying Perfect Sequences to Distributed Loudspeakers376
	Fabrice Katzberg, Marco Maass, René Pallenberg, and Alfred Mertins University of Lübeck, Germany
E-11	Echo Cancellation and Noise Suppression by Training a Dual-Stream Recurrent Network with a Mixture of Training Targets381
	Fatemeh Alishahi, Yin Cao, Youngkoen Kim, and Asif Mohammad Qualcomm Technologies, USA
E-12	Task Splitting for DNN-based Acoustic Echo and Noise Removal386
	Sebastian Braun and Maria Luis Valero Microsoft, USA/Germany
E-13	Fixed Beamformer Design Using Polynomial Eigenvalue Decomposition391
	Vincent W. Neo, Emilie d'Olne, Alastair H. Moore, and Patrick A. Naylor Imperial College London, UK
E-14	Realistic Sources, Receivers and Walls Improve the Generalisability of Virtually-Supervised Blind Acoustic Parameter Estimators396
	Prerak Srivastava, Antoine Deleforge, and Emmanuel Vincent INRIA Nancy, France
	Demonstrations B
DB-01	Hearing Aids Connected to the World of Sensors and AppsN/A
	Henning Puder and Stefan Petrausch WS Audiology, Germany
DB-02	Networked Robots for Remote Dynamic Acoustic ExperimentsN/A

Ethaniel Moore, Austin Lu, George Zhai, Manan Mittal, Kanad Sarkar, Ryan M. Corey, Paris Smaragdis, and Andrew Singer

University of Illinois Urbana-Champaign, USA



DB-03 Mobile, Multi-Sensor, Real-Time Signal Processing Setup for Synchronous Recordings in Real-Life Situations...N/A

Kamil Adiloğlu¹, Lisa Straetmans², Micha Lundbeck¹, Paul Maanen², Mats Exter¹, and Stefan Debener² ¹Hörzentrum Oldenburg, Germany ²University of Oldenburg, Germany

Poster Session F

- F-01 CPTNN: Cross-Parallel Transformer Neural Network for Time-Domain Speech Enhancement...401 Kai Wang, Bengbeng He, and Wei-Ping Zhu Concordia University, Canada
- F-02 Bandwidth-Scalable Fully Mask-Based Deep FCRN Acoustic Echo Cancellation and Postfiltering...406 Ernst Seidel¹, Rasmus Kongsgaard Olsson², Karim Haddad², Zhengyang Li¹, Pejman Mowlaee², and Tim Fingscheidt¹

¹Technische Universität Braunschweig, Germany ²GN Audio A/S, Denmark

F-03 A Bilinear Framework for Adaptive Speech Dereverberation Combining Beamforming and Linear Prediction...411

Wenxing Yang¹, Gongping Huang^{2,4}, Andreas Brendel⁴, Jingdong Chen¹, Jacob Benesty³, Walter Kellermann⁴, and Israel Cohen²

¹Northwestern Polytechnical University, China ²Technion – Israel Institute of Technology, Israel ³University of Quebec, Canada ⁴Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

F-04 Array Geometry Optimization for Region-of-Interest Broadband Beamforming...416 Yuval Konforti, Israel Cohen, and Baruch Berdugo

Technion – Israel Institute of Technology, Israel

F-05 Dual-Compression Neural Network with Optimized Output Weighting for Improved Single-Channel Speech Enhancement...421

Stefan Thaleiser¹, Aleksej Chinaev², Rainer Martin¹, and Gerald Enzner²

¹Ruhr-Universität Bochum, Germany ²University of Oldenburg, Germany

F-06 Numerical Investigation of Weight Parameters for Geometrically Constrained Independent Vector Analysis using Vectorwise Coordinate Descent or Iterative Source Steering...426

Shinya Furunaga¹, Kana Goto², Tetsuya Ueda¹, Li Li², Yamada Takeshi², and Shoji Makino¹

¹Waseda University, Japan
²University of Tsukuba, Japan
³NTT Communications and Science Laboratories, Japan

F-07 DeepFilterNet2: Towards Real-Time Speech Enhancement on Embedded Devices for Full-Band Audio...431

Hendrik Schröter¹, Tobias Rosenkranz², Alberto N. Escalante B.², and Andreas Maier¹

¹Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany ²WS Audiology, Germany



F-08 Signal-informed DNN-based DOA Estimation Combining an External Microphone and GCC-PHAT Features...436

Ulrik Kowalk¹, Simon Doclo², and Jörg Bitzer¹ ¹Jade University of Applied Sciences, Germany ²University of Oldenburg, Germany

- F-09 Environmental Sound Classification based on CNN Latent Subspaces...441 Maha Mahyub¹, Lincon S. Souza², Bojan Batalo¹, and Kazuhiro Fukui¹ ¹University of Tsukuba, Japan ²AIST, Japan
- F-10 Informed vs. Blind Beamforming in Ad-Hoc Acoustic Sensor Networks for Meeting Transcription...446 Tobias Gburrek, Jörg Schmalenströer, Jens Heitkämper, and Reinhold Häb-Umbach Paderborn University, Germany
- F-11 Physics-informed Convolutional Neural Network with Bicubic Spline Interpolation for Sound Field Estimation...451

Kazuhide Shigemi, Shoichi Koyama, Tomohiko Nakamura, and Hiroshi Saruwatari University of Tokyo, Japan

F-12 An Introduction to the Speech Enhancement for Augmented Reality (SPEAR) Challenge...456

Pierre Guiraud¹, Sina Hafezi¹, Patrick A. Naylor¹, Alastair H. Moore¹, Jacob Donley², Vladimir Tourbabin², and Thomas Lunner²

¹Imperial College London, UK, ²Reality Labs Research at Meta, USA

F-13 A State-Space Recurrent Neural Network Model for Dynamical Loudspeaker System Identification...461 Christian Gruber¹, Gerald Enzner², and Rainer Martin³

¹voicelNTERconnect, Germany ²University of Oldenburg, Germany ³Ruhr-Universität Bochum, Germany

F-14 MMS-MSG: A Multi-purpose Multi-Speaker Mixture Signal Generator...466

Tobias Cord-Landwehr, Thilo von Neumann, Christoph Böddeker and Reinhold Häb-Umbach Paderborn University, Germany

Demonstrations C

- DC-01 Low Delay Processing for PureSound...N/A Lars Dalskov Mosgaard and David Pelegrin Garcia WS Audiology, Germany/Denmark
- DC-02 Real-time DNN-based Acoustic Echo and Noise Removal...N/A

Sebastian Braun

Microsoft, USA

DC-03 Ava: Online Captioning & Speaker Diarization...N/A

Alexey Ozerov Ava, USA/France