

# **2021 IEEE 23rd International Workshop on Multimedia Signal Processing (MMSP 2021)**

**Tampere, Finland  
6 – 8 October 2021**



**IEEE Catalog Number: CFP21MSP-POD  
ISBN: 978-1-6654-3289-4**

**Copyright © 2021 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:	CFP21MSP-POD
ISBN (Print-On-Demand):	978-1-6654-3289-4
ISBN (Online):	978-1-6654-3288-7
ISSN:	2163-3517

**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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# TABLE OF CONTENTS

HYPERSPECTRAL IMAGE RECONSTRUCTION FROM MULTISPECTRAL IMAGES USING NON-LOCAL FILTERING .....	1
<i>Frank Sippel, Jürgen Seiler, André Kaup</i>	
A SUB-BAND APPROACH TO DEEP DENOISING WAVELET NETWORKS AND A FREQUENCY-ADAPTIVE LOSS FOR PERCEPTUAL QUALITY .....	7
<i>Caglar Aytekin, Sakari Alenius, Dmytro Paliy, Juuso Gren</i>	
ANALYSIS OF TOP-DOWN CONNECTIONS IN MULTI-LAYERED CONVOLUTIONAL SPARSE CODING .....	13
<i>Joakim Edlund, Christine Guillemot, Mårten Sjöström</i>	
BLIND IMAGE SEPARATION FOR DOCUMENT RESTORATION USING PLUG-AND- PLAY APPROACH .....	19
<i>Xhenis Çoba, Fangchen Feng, Azeddine Beghdadi</i>	
REGULARIZING THE DEEP IMAGE PRIOR WITH A LEARNED DENOISER FOR LINEAR INVERSE PROBLEMS .....	25
<i>Rita Fermanian, Mikael Le Pendu, Christine Guillemot</i>	
ATTENTION-BASED STYLISATION FOR EXEMPLAR IMAGE COLOURISATION .....	31
<i>Marc Gorriz Blanch, Issa Khalifeh, Noel E. O'Connor, Marta Mrak</i>	
RULE OF THIRDS AND SIMPLICITY FOR IMAGE AESTHETICS USING DEEP NEURAL NETWORKS .....	37
<i>Steve Göring, Alexander Raake</i>	
OUTSIDE: MULTI-SCALE SEMANTIC SEGMENTATION OF UNIVERSAL OUTDOOR SCENES .....	43
<i>Christoph Gerhardt, Florian Weidner, Wolfgang Broll</i>	
SPATIAL CROSS-ATTENTION RGB-D FUSION MODULE FOR OBJECT DETECTION .....	49
<i>Shangyin Gao, Lev Markhasin, Bi Wang</i>	
LEADER AND BREAKAWAY DETECTION IN RACING SPORTS VIDEOS .....	55
<i>Sotirios Papadopoulos, Charalampos Symeonidis, Ioannis Pitas</i>	
CONVOLUTIONAL NEURAL NETWORK-DRIVEN OPTIMAL PREDICTION FOR IMAGE REVERSIBLE DATA HIDING .....	60
<i>Xiaoya Zhang, Yuanzhi Yao, Nenghai Yu</i>	
HOW TO TRAIN NO REFERENCE VIDEO QUALITY MEASURES FOR NEW CODING STANDARDS USING EXISTING ANNOTATED DATASETS? .....	66
<i>Lohic Fotio Tiotsop, Tomas Mizdos, Enrico Masala, Marcus Barkowsky, Peter Pocta</i>	
BENCHMARKING OF OBJECTIVE QUALITY METRICS FOR POINT CLOUD COMPRESSION .....	72
<i>Davi Lazzarotto, Evangelos Alexiou, Touradj Ebrahimi</i>	
A POINT-TO-DISTRIBUTION JOINT GEOMETRY AND COLOR METRIC FOR POINT CLOUD QUALITY ASSESSMENT .....	78
<i>Alireza Javaheri, Catarina Brites, Fernando Pereira, João Ascenso</i>	

ASSESSING THE PERFORMANCE OF IMAGE QUALITY ASSESSMENT METRICS .....	84
<i>Theyab Alotaibi, Farid Bourennani, Ishtiaq Rasool Khan</i>	
SHAPLEY-VALUE-BASED QUALITY DEGRADATION ANALYSIS METHOD FOR ADAPTIVE BITRATE STREAMING SERVICES .....	90
<i>Yoichi Matsuo, Kazuhisa Yamagishi, Shoko Takahashi</i>	
ON FEASIBILITY OF GAN-BASED FINGERPRINT MORPHING .....	96
<i>Andrey Makrushin, Mark Trebeljahr, Stefan Seidlitz, Jana Dittmann</i>	
ENCOUNTER CU AGAIN: HISTORY-BASED COMPLEXITY REDUCTION STRATEGY FOR VVC INTRA-FRAME ENCODER.....	102
<i>Jian Cao, Yifan Jia, Fan Liang, Jun Wang</i>	
AN OPTIMIZATION ALGORITHM FOR COLOR TABLE GENERATION OF PALETTE MODE FOR VVC .....	108
<i>Minghong Mo, Fan Liang, Jun Wang</i>	
VVC PARTITIONING DECISION DRIVEN BY MACHINE LEARNING FOR A COMPREHENSIVE HARDWARE ENCODER.....	113
<i>Madhukar Bhat, Jean-Marc Thiesse, Patrick Le Callet</i>	
MULTI-RATE DEEP SEMANTIC IMAGE COMPRESSION WITH QUANTIZED MODULATED AUTOENCODER.....	119
<i>Dorsaf Sebai</i>	
GLOBAL RATE-DISTORTION OPTIMIZATION OF VIDEO-BASED POINT CLOUD COMPRESSION WITH DIFFERENTIAL EVOLUTION.....	125
<i>Hui Yuan, Raouf Hamzaoui, Ferrante Neri, Shengxiang Yang, Tingting Wang</i>	
INCEPT: INTRA CU DEPTH PREDICTION FOR HEVC .....	131
<i>Vignesh V Menon, Hadi Amirpour, Christian Timmerer, Mohammad Ghanbari</i>	
FAST DECODING AND PARAMETERS SELECTION FOR CS-JPEG VIDEO CODEC .....	137
<i>Evgeny Belyaev</i>	
POINT-VOTING BASED POINT CLOUD GEOMETRY COMPRESSION .....	143
<i>Chaofei Wang, Wenjie Zhu, Yingzhan Xu, Yiling Xu, Le Yang</i>	
CODING OF VOLUMETRIC CONTENT WITH MIV USING VVC SUBPICTURES.....	148
<i>Maria Santamaria, Vinod Kumar Malamal Vadakital, Lukasz Kondrad, Antti Hallapuro, Miska M. Hannuksela</i>	
WISH: USER-CENTRIC BITRATE ADAPTATION FOR HTTP ADAPTIVE STREAMING ON MOBILE DEVICES.....	154
<i>Minh Nguyen, Ekrem Çetinkaya, Hermann Hellwagner, Christian Timmerer</i>	
HDR IMAGE CONSTRUCTION FROM TRIFOCAL MULTIEXPOSURE IMAGES.....	160
<i>Alper Koz, Baris Demirkiliç, Yunus Bilge Kurt, Ahmet Oguz Akyüz, Sinan Kalkan, A. Aydin Alatan, Alan Chalmers</i>	
FAST SPATIO-TEMPORAL COMPRESSION OF DYNAMIC 3D MESHES .....	165
<i>Gerasimos Arvanitis, Aris S. Lalos, Konstantinos Moustakas</i>	
TIME DIFFERENCE OF ARRIVAL ESTIMATION OF MULTIPLE SIMULTANEOUS SPEAKERS USING DEEP CLUSTERING NEURAL NETWORKS .....	171
<i>Mikko Parviainen, Pasi Pertilä</i>	

AUDIO-TO-SCORE ALIGNMENT USING DEEP AUTOMATIC MUSIC TRANSCRIPTION .....	177
<i>Federico Simonetta, Stavros Ntalampiras, Federico Avanzini</i>	
EVALUATING SPECTRAL MAGNITUDE REPRESENTATION AND SPECTRAL ENERGY FOR AUDIO-BASED ACTIVITY DETECTION .....	183
<i>Anastasios Vafeiadis, Ioannis Papadimitriou, Anastasis Papanagnou, Dimitrios Giakoumis, Konstantinos Votis, Dimitrios Tzovaras</i>	
VISUALLY SUPERVISED SPEAKER DETECTION AND LOCALIZATION VIA MICROPHONE ARRAY .....	189
<i>Davide Berghi, Adrian Hilton, Philip J. B. Jackson</i>	
EXPLORING CROWDSOURCING FOR SUBJECTIVE QUALITY ASSESSMENT OF 3D GRAPHICS .....	195
<i>Yana Nehmé, Patrick Le Callet, Florent Dupont, Jean-Philippe Farrugia, Guillaume Lavoué</i>	
RELIABILITY OF CROWDSOURCING FOR SUBJECTIVE QUALITY EVALUATION OF TONE MAPPING OPERATORS .....	201
<i>Abhishek Goswami, Ali Ak, Wolf Hauser, Patrick Le Callet, Frederic Dufaux</i>	
AVRATE VOYAGER: AN OPEN SOURCE ONLINE TESTING PLATFORM .....	207
<i>Steve Göring, Rakesh Rao Ramachandra Rao, Stephan Fremerey, Alexander Raake</i>	
ON THE IMPACT OF COVID-19 ON SUBJECTIVE DIGITAL MEDIA QUALITY ASSESSMENT .....	213
<i>Hans-Jürgen Zepernick, Kerstin Pieper, Robert P. Spang, Ulrich Engelke, Matthias Hirth, Babak Naderi</i>	
COMPARISON OF REMOTE SUBJECTIVE ASSESSMENT STRATEGIES IN THE CONTEXT OF THE JPEG PLENO POINT CLOUD ACTIVITY .....	219
<i>Stuart Perry, Luis A. Da Silva Cruz, Emil Dumic, Nhung Hong Thi Nguyen, António Pinheiro, Evangelos Alexiou</i>	
A PERCEPTUAL STUDY OF THE DECODING PROCESS OF THE SOFTCAST WIRELESS VIDEO BROADCAST SCHEME .....	225
<i>Anthony Trioux, Giuseppe Valenzise, Marco Cagnazzo, Michel Kieffer, François-Xavier Coudoux, Patrick Corlay, Mohamed Gharbi</i>	
A MACHINE-LEARNING FRAMEWORK TO PREDICT TMO PREFERENCE BASED ON IMAGE AND VISUAL ATTENTION FEATURES .....	231
<i>Waqas Ellahi, Toinon Vigier, Patrick Le Callet</i>	
NO-REFERENCE MESH VISUAL QUALITY ASSESSMENT USING GRAPH-BASED DEEP LEARNING.....	237
<i>Ilyass Abouelaziz, Aladine Chetouani, Mohammed El Hassouni, Hocine Cherifi</i>	
PERCEPTUAL EVALUATION OF 360 AUDIOVISUAL QUALITY AND MACHINE LEARNING PREDICTIONS.....	243
<i>Randy Frans Fela, Nick Zacharov, Søren Forchhammer</i>	
MULTI-MODAL AESTHETIC ASSESSMENT FOR MOBILE GAMING IMAGE .....	249
<i>Zhenyu Lei, Yejing Xie, Suiyi Ling, Andréas Pastor, Junle Wang, Junyu Dong, Patrick Le Callet</i>	
CONVOLUTIONAL NEURAL NETWORK FOR 3D POINT CLOUD QUALITY ASSESSMENT WITH REFERENCE .....	254
<i>Aladine Chetouani, Maurice Quach, Giuseppe Valenzise, Frédéric Dufaux</i>	

DEEP CHESSBOARD CORNER DETECTION USING MULTI-TASK LEARNING.....	260
<i>Hyunse Yoon, Seongmin Lee, Jiwoo Kang, Sanghoon Lee</i>	
LOW-RANK DOUBLE RELAXED REGRESSION FOR DISCRIMINATIVE PROJECTION LEARNING.....	266
<i>Meenakshi Meenakshi, Seshan Srirangarajan</i>	
PIECEWISE SEGMENTATION OCCLUSION MODEL FOR IMAGE-BASED PLENOPTIC SPECTRAL ANALYSIS .....	272
<i>Weiyang Chen, Changjian Zhu, Shan Zhang</i>	
A LOSSLESS IMAGE PROCESSING METHOD WITH CONTRAST AND SATURATION ENHANCEMENT.....	278
<i>Yuki Sugimoto, Shoko Imaizumi</i>	
SPEEDDEBLUR: A FRAMEWORK TO SPEED UP CNN-BASED DEBLURRING FOR HEVC COMPRESSED VIDEO .....	284
<i>Ho Tan Nguyen, Chi D. K. Pham, Jinjia Zhou</i>	
DETECTING SOUND EVENTS USING CONVOLUTIONAL MACARON NET WITH PSEUDO STRONG LABELS .....	290
<i>Teck Kai Chan, Cheng Siong Chin</i>	
MACHINE-LEARNT BEAMFORMING FOR LARGE APERTURE 3D MICROPHONE ARRAYS, AN INDUSTRIAL APPLICATION .....	296
<i>Shahab Pasha, Arman Arian, Jan Lundgren</i>	
CONVOLUTIONAL RECEPTIVE FIELD DUAL SELECTION MECHANISM FOR ACOUSTIC SCENE CLASSIFICATION .....	302
<i>Wang Peng, Liping Yang, Xiaohua Gu</i>	
ENHANCING BLOCK-ONLINE SPEECH SEPARATION USING INTERBLOCK CONTEXT FLOW.....	308
<i>Congui Liu, Yoshinao Sato</i>	
DOMESTIC ACTIVITIES CLASSIFICATION FROM AUDIO RECORDINGS USING MULTI- SCALE DILATED DEPTHWISE SEPARABLE CONVOLUTIONAL NETWORK.....	314
<i>Yufei Zeng, Yanxiong Li, Zhenfeng Zhou, Ruiqi Wang, Difeng Lu</i>	
SPLIT RENDERING OF THE TRANSPARENT CHANNEL FOR CLOUD AR .....	319
<i>Haruhisa Kato, Tatsuya Kobayashi, Masaru Sugano, Sei Naito</i>	
PRELIMINARY STUDY OF UPPER-BODY HAPTIC FEEDBACK PERCEPTION ON CINEMATIC EXPERIENCE.....	325
<i>Ugur Alican Alma, Pablo Alvarez Romeo, Mehmet Ercan Altinsoy</i>	
ANALYSIS OF THE INFLUENCE OF HUMAN FACES FOR THE ESTIMATION OF SALIENCY IN OMNIDIRECTIONAL IMAGES .....	331
<i>Pramit Mazumdar, Giuliano Arru, Marco Carli, Federica Battisti</i>	
EFFICIENT VIEW SYNTHESIS ALGORITHM USING VIEW SELECTION FOR GENERATING 6DOF IMAGES .....	336
<i>Da-Yoon Nam, Hae-Kwang Kim, Jong-Ki Han</i>	
A DATA-AWARE DICTIONARY-LEARNING BASED TECHNIQUE FOR THE ACCELERATION OF DEEP CONVOLUTIONAL NETWORKS .....	342
<i>Erion-Vasilis Pikoulis, Christos Mavrokefalidis, Aris S. Lalos</i>	

SUPERVISED FINE-TUNING EVALUATION FOR LONG-TERM VISUAL PLACE RECOGNITION .....	347
<i>Farid Alijani, Esa Rahtu</i>	
DEEP MULTI-MODAL DATA ANALYSIS AND FUSION FOR ROBUST SCENE UNDERSTANDING IN CAVS .....	353
<i>Andreas Papandreou, Andreas Kloukinotis, Aris Lalos, Konstantinos Moustakas</i>	
LARGE-VOCABULARY AUDIO-VISUAL SPEECH RECOGNITION IN NOISY ENVIRONMENTS .....	359
<i>Wentao Yu, Steffen Zeiler, Dorothea Kolossa</i>	
PROGRESSIVE SPATIO-TEMPORAL BILINEAR NETWORK WITH MONTE CARLO DROPOUT FOR LANDMARK-BASED FACIAL EXPRESSION RECOGNITION WITH UNCERTAINTY ESTIMATION .....	365
<i>Negar Heidari, Alexandros Iosifidis</i>	
TRANSFORMER-BASED LONG-TERM VIEWPORT PREDICTION IN 360° VIDEO: SCANPATH IS ALL YOU NEED .....	371
<i>Fang-Yi Chao, Cagri Ozcinar, Aljosa Smolic</i>	
NEURAL NETWORK MODELING OF PROBABILITIES FOR CODING THE OCTREE REPRESENTATION OF POINT CLOUDS.....	377
<i>Emre Can Kaya, Ioan Tabus</i>	
DEEP LEARNING-BASED SEMANTIC ANALYSIS OF SPARSE LIGHT FIELD RAY SETS .....	383
<i>Kelvin Chelli, Roopak R. Tamboli, Thorsten Herfet</i>	
LEARNING-BASED LOSSLESS LIGHT FIELD COMPRESSION .....	389
<i>Milan Stepanov, M. Umair Mukati, Giuseppe Valenzise, Søren Forchhammer, Frédéric Dufaux</i>	
A CALIBRATION METHOD FOR SUBAPERTURE VIEWS OF PLENOPTIC 2.0 CAMERA ARRAYS.....	395
<i>Sarah Fachada, Armand Losfeld, Takanori Senoh, Gauthier Lafruit, Mehrdad Teratani</i>	
DETECTING SPEAKING PERSONS IN VIDEO .....	401
<i>Hannes Fassold</i>	
DYNAMIC EDGE OFFLOADING FOR REAL-TIME VIDEO PROCESSING PIPELINES .....	402
<i>Jan Willem Kleinrouweler, Toni Dimitrovski, Sjors Braam, Rick Hindriks, Hans Van Den Berg, Lucia D'Acunto, Omar Niamut</i>	
SUPERVISED FINE-TUNING EVALUATION FOR LONG-TERM VISUAL PLACE RECOGNITION .....	403
<i>Farid Alijani, Esa Rahtu</i>	
A TEMPORAL FILTERING APPROACH BASED ON OPTICAL FLOW ESTIMATION FOR VIDEO CODING .....	404
<i>Bohan Li, Lauren Partin, Jingning Han, Yaowu Xu</i>	
TIMED DATA INCREMENTATION: A DATA REGULARIZATION METHOD FOR IVF IMPLANTATION OUTCOME PREDICTION FROM LENGTH VARIANT TIME-LAPSE IMAGE SEQUENCES .....	410
<i>Mehryar Abbasi, Parvaneh Saeedi, Jason Au, Jon Havelock</i>	

HUMAN SUBJECT DISTANCE ESTIMATION USING THE PUPILLARY DISTANCE AND HEAD ORIENTATION .....	415
<i>Michael Buron Yuen, Carlos Vazquez</i>	
HUMAN DETECTION IN MOVING FISHEYE CAMERA USING AN IMPROVED YOLOV3 FRAMEWORK .....	421
<i>Olfa Haggui, Hamza Bayd, Baptiste Magnier, Arezki Aberkane</i>	
AN ACTION-AWARE COMBAT MODEL FOR EFFICIENT VIDEO COMPRESSION OF MASSIVELY MULTIPLAYER ONLINE ROLE-PLAYING GAMES ON CLOUD GAMING PLATFORMS .....	427
<i>Sardar Basiri, Kaiwen Zhang, Stéphane Coulombe</i>	
ESTIMATING IMAGE QUALITY FOR PERSON RE-IDENTIFICATION .....	433
<i>Haoyu Chen, Edward J. Delp, Amy R. Reibman</i>	
PIANO SKILLS ASSESSMENT .....	439
<i>Paritosh Parmar, Jaiden Reddy, Brendan Morris</i>	
OPTIMIZING HOMOMORPHIC ENCRYPTION BASED SECURE IMAGE ANALYTICS .....	444
<i>Nayna Jain, Karthik Nandakumar, Nalini Ratha, Sharath Pankanti, Uttam Kumar</i>	
SAD OR SATD? HOW THE DISTORTION METRIC IMPACTS A FRACTIONAL MOTION ESTIMATION VLSI ARCHITECTURE .....	450
<i>Ismael Seidel, Vanio Rodrigues Filho, Mateus Grellert, Luciano Volcan Agostini, José Luis Güntzel</i>	
INCORPORATION OF LOCALIZATION INFORMATION FOR SOUND SOURCE SEPARATION IN SPHERICAL HARMONIC DOMAIN .....	456
<i>Mateusz Guzik, Mieszko Frasz, Konrad Kowalczyk</i>	
A FAST FOREST REVERBERATOR USING SINGLE SCATTERING CYLINDERS .....	462
<i>Shoken Kaneko, Hannes Gamper</i>	
AMBISONICS DOMAIN SINGING VOICE SEPARATION COMBINING DEEP NEURAL NETWORK AND DIRECTION AWARE MULTICHANNEL NMF .....	467
<i>Antonio J. Muñoz-Montoro, Julio J. Carabias-Orti, Pedro Vera-Candeas</i>	
TOWARDS AN EFFICIENT DEEP LEARNING MODEL FOR EMOTION AND THEME RECOGNITION IN MUSIC .....	473
<i>Srividya Tirunellai Rajamani, Kumar Rajamani, Björn W. Schuller</i>	
APPARELNET: PERSON VERIFICATION ENCOMPASSING AUXILIARY ATTACHMENTS VARIATION .....	478
<i>Bilal Hassan, Ebroul Izquierdo</i>	
MOTION-AUGMENTED CHANGE DETECTION FOR VIDEO SURVEILLANCE .....	484
<i>Yingqi Tang, Xiang Zhang, Donghang Chen, Zhizhuo Zhang, Haifei Yu</i>	
TOWARDS A REAL-TIME FACIAL ANALYSIS SYSTEM .....	490
<i>Bishwo Adhikari, Xinyang Ni, Esa Rahtu, Heikki Huttunen</i>	
AUTOMATIC MAIN CHARACTER RECOGNITION FOR PHOTOGRAPHIC STUDIES .....	496
<i>Mert Seker, Anssi Männistö, Alexandros Iosifidis, Jenni Raitoharju</i>	



LOSSLESS SATELLITE DATA COMPRESSION FOR REAL-TIME NAVIGATION OF AUTONOMOUS VEHICLES .....	502
<i>Arnaud Soulier, Pauline Puteaux, Frédéric Comby, William Puech</i>	
PARETO-OPTIMIZED CODING CONFIGURATIONS FOR VVENC, A FAST AND EFFICIENT VVC ENCODER.....	508
<i>Jens Brandenburg, Adam Wieckowski, Anastasia Henkel, Benjamin Bross, Detlev Marpe</i>	
VVC ADAPTIVE LOOP FILTER OPTIMIZATION FOR SUBPICTURE-BASED VIEWPORT- ADAPTIVE STREAMING.....	514
<i>Alireza Zare, Alireza Aminlou, Miska M. Hannuksela</i>	
HARDWARE-FRIENDLY SEARCH PATTERNS FOR THE VERSATILE VIDEO CODING FRACTIONAL MOTION ESTIMATION.....	520
<i>Vanio Rodrigues Filho, Marcio Monteiro, Ismael Seidel, Mateus Grellert, José Luis Güntzel</i>	
LEVERAGING HIGH-FREQUENCY COMPONENTS FOR DEEPFAKE DETECTION .....	526
<i>Nesryne Mejri, Konstantinos Papadopoulos, Djamila Aouada</i>	
IMPROVING GENERALIZATION OF DEEPFAKE DETECTION BY TRAINING FOR ATTRIBUTION .....	532
<i>Anubhav Jain, Pavel Korshunov, Sébastien Marcel</i>	
DEFAKE: DECENTRALIZED ENF-CONSENSUS BASED DEEPFAKE DETECTION IN VIDEO CONFERENCING.....	538
<i>Deeraj Nagothu, Ronghua Xu, Yu Chen, Erik Blasch, Alexander Aved</i>	
DEEP IMAGE HASHING BASED ON TWIN-BOTTLENECK HASHING WITH VARIATIONAL AUTOENCODERS .....	544
<i>Maxim Verwilst, Nina Žižakic, Lingchen Gu, Aleksandra Pižurica</i>	
HAZING OR DEHAZING: THE BIG DILEMMA FOR OBJECT DETECTION .....	550
<i>Simoni Panayi, Alessandro Artusi</i>	
A NOVEL END-TO-END NETWORK FOR RECONSTRUCTION OF NON-REGULARLY SAMPLED IMAGE DATA USING LOCALLY FULLY CONNECTED LAYERS .....	559
<i>Simon Grosche, Fabian Brand, André Kaup</i>	
FREQUENCY-SELECTIVE MESH-TO-MESH RESAMPLING FOR COLOR UPSAMPLING OF POINT CLOUDS .....	565
<i>Viktoria Heimann, Andreas Spruck, André Kaup</i>	
LIGHT FIELD VISUAL ATTENTION PREDICTION USING FOURIER DISPARITY LAYERS.....	571
<i>Ailbhe Gill, Mikael Le Pendu, Martin Alain, Emin Zerman, Aljosa Smolic</i>	
MIXUP AUGMENTATION FOR GENERALIZABLE SPEECH SEPARATION .....	577
<i>Ashish Alex, Lin Wang, Paolo Gastaldo, Andrea Cavallaro</i>	
FRAME-BASED MAXIMUM A POSTERIORI ESTIMATION OF SECOND-ORDER STATISTICS FOR MULTICHANNEL SPEECH ENHANCEMENT IN PRESENCE OF NOISE.....	583
<i>Julitta Bartolewska, Konrad Kowalczyk</i>	
EVALUATING DEEP MUSIC GENERATION METHODS USING DATA AUGMENTATION .....	589
<i>Toby Godwin, Georgios Rizos, Alice Baird, Najla D. Al Futaisi, Vincent Brisse, Björn W. Schuller</i>	

VISUALLY EXPLORING MULTI-PURPOSE AUDIO DATA .....	595
<i>David Heise, Helen L. Bear</i>	
OPTIMAL FRAME DURATION FOR ORACLE AUDIO SIGNAL SEPARATION IS DETERMINED BY JOINT MINIMIZATION OF TWO ANTAGONISTIC ARTIFACTS.....	601
<i>Stephen Voran</i>	
TOWARDS LEARNING FOOD PORTION FROM MONOCULAR IMAGES WITH CROSS- DOMAIN FEATURE ADAPTATION .....	607
<i>Zeman Shao, Shaobo Fang, Runyu Mao, Jiangpeng He, Janine L. Wright, Deborah A. Kerr, Carol J. Boushey, Fengqing Zhu</i>	
IMPROVING DIETARY ASSESSMENT VIA INTEGRATED HIERARCHY FOOD CLASSIFICATION.....	613
<i>Runyu Mao, Jiangpeng He, Luotao Lin, Zeman Shao, Heather A. Eicher-Miller, Fengqing Zhu</i>	
DUAL ATTENTION NETWORK FOR HEART RATE AND RESPIRATORY RATE ESTIMATION.....	619
<i>Yuzhuo Ren, Braeden Syrnyk, Niranjan Avadhanam</i>	

**Author Index**