

2022 10th European Workshop on Visual Information Processing (EUVIP 2022)

**Lisbon, Portugal
11-14 September 2022**



**IEEE Catalog Number: CFP2206K-POD
ISBN: 978-1-6654-6624-0**

**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:	CFP2206K-POD
ISBN (Print-On-Demand):	978-1-6654-6624-0
ISBN (Online):	978-1-6654-6623-3
ISSN:	2164-974X

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

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

SPECIAL SESSION 1: CURRENT STANDARDIZATION ACTIVITIES ON DYNAMIC MESH COMPRESSION

Compression of Time-Varying Textured Meshes Using Patch Tiling and Image-based Tracking	1
<i>Jean-Eudes Marvie, Maja Krivokuca, Céline Guede, Julien Ricard, Olivier Mocquard, François-Louis Tariolle</i>	
V3C-Based Coding of Dynamic Meshes.....	7
<i>Patrice Rondao Alface, Aleksei Martemianov, Lauri Ilola, Lukasz Kondrad, Christoph Bachhuber, Sebastian Schwarz</i>	
Video and Subdivision Based Mesh Coding	13
<i>Khaled Mammou, Jungsun Kim, Alexis M. Tourapis, Dimitri Podborski, David Flynn</i>	
Formal Visual Evaluation and Study of Objective Metrics for MPEG Dynamic Mesh Coding	19
<i>Mathias Wien, Joel Jung, Vittorio Baroncini</i>	
Ensemble Learning for Efficient VVC Bitrate Ladder Prediction.....	25
<i>Fatemeh Nasiri, Wassim Hamidouche, Luce Morin, Nicolas Dholland, Jean-Yves Aubié</i>	
Features Denoising for Learned Image Coding.....	31
<i>Daniele Mari, Simone Milani</i>	
Overfitting Multiplier Parameters for Content-Adaptive Post-filtering in Video Coding	37
<i>Maria Santamaria, Ruiying Yang, Francesco Cricri, Honglei Zhang, Jani Lainema, Ramin G. Youvalari, Hamed R. Tavakoli, Miska M. Hannuksela</i>	
Lossless Coding of Multimodal Image Pairs Based on Image-To-Image Translation	43
<i>Joao O. Parracho, Lucas A. Thomaz, Luis M. N. Tavora, Pedro A. A. Assuncao, Sergio M. M. Faria</i>	

SPECIAL SESSION 2: MACHINE LEARNING FOR IMMERSIVE CONTENT PROCESSING

Computational Hyperspectral Imaging with Diffractive Optics and Deep Residual Network	49
<i>Ayoung Kim, Ugur Akpınar, Erdem Sahin, Atanas Gotchev</i>	
Deep 3D Model Optimization for Immersive and Interactive Applications.....	55
<i>Elena Camuffo, Federica Battisti, Francesco Pham, Simone Milani</i>	
FuRA: Fully Random Access Light Field Image Compression	61
<i>Hadi Amirpour, Christine Guillemot, Christian Timmerer</i>	
Double-Deep Learning-Based Point Cloud Geometry Coding with Adaptive Super-Resolution	67
<i>Manuel Ruivo, André F. R. Guarda, Fernando Pereira</i>	

ORAL SESSION 2: IMAGE AND VIDEO SEGMENTATION

Opto-UNet: Optimized UNet for Segmentation of Varicose Veins in Optical Coherence Tomography	73
<i>Maryam Viqar, Violeta Madjarova, Vipul Baghel, Elena Stoykova</i>	

Semantic-SRF: Sparse Multi-view Indoor Semantic Segmentation with Stereo Neural Radiance Fields	79
<i>Cem Eteke, Jinpeng Zhang, Eckehard Steinbach</i>	
Change Detection in Moving-Camera Videos Using a Shift-Invariant Dissimilarity Metric	85
<i>Thadeu L. B. Dias, Eduardo A. B. Silva, Sergio L. Netto, Lucas A. Thomaz</i>	
Transfer Learning Based Retinal Layer and Fluid Segmentation Using Fully Convolutional Networks	91
<i>Esther Parra-Mora, Alex Cazañas-Gordon, Luís A. Da Silva Cruz</i>	

SPECIAL SESSION 3: BIOMETRIC RECOGNITION EXPLAINABILITY

Demystifying Face-Recognition with Locally Interpretable Boosted Features (LIBF).....	96
<i>Martin Winter, Werner Bailer, Georg Thallinger</i>	
Impact of Digital Face Beautification in Biometrics	102
<i>Nelida Mirabet Herranz, Chiara Galdi, Jean-Luc Dugelay</i>	
A Novel Framework for Assessment of Deep Face Recognition Systems in Realistic Conditions.....	108
<i>Yuhang Lu, Luca Barras, Touradj Ebrahimi</i>	
Impact of Conventional and AI-Based Image Coding on AI-Based Face Recognition Performance	114
<i>Naima Bousnina, João Ascenso, Paulo Lobato Correia, Fernando Pereira</i>	

ORAL SESSION 3: IMAGE AND VIDEO PROCESSING

EGAIN: Extended GAN INversion.....	120
<i>Wassim Kabbani, Marcel Grimmer, Christoph Busch</i>	
Multilayer Perceptron to Boost Colorimetric Capacities of 2D RGB and Hyperspectral Snapshot Cameras	126
<i>Eric Lopez-Lopez, Roi Mendez-Rial</i>	
Residual Swin Transformer Channel Attention Network for Image Demosaicing	132
<i>Wenzhu Xing, Karen Egiazarian</i>	
CNN-Based Euler's Elastica Inpainting with Deep Energy and Deep Image Prior	138
<i>Karl Schrader, Tobias Alt, Joachim Weickert, Michael Ertel</i>	

ORAL SESSION 4: 3D IMAGE PROCESSING

Visually Relevant Point Clouds Features Extraction by Radial Angular Point Cloud Filtering.....	144
<i>Tiziana Cattai, Azeddine Beghdadi, Gaetano Scarano, Stefania Colonnese</i>	
Incorporating Spatio-Temporal Information in Frustum-ConvNet for Improved 3D Object Detection in Instrumented Vehicles	149
<i>Venkatesh G M, Noel E. O'Connor, Suzanne Little</i>	
Enhanced Local Optimization Framework for Light Field Disparity Estimation.....	155
<i>Rui Lourenco, Lucas A. Thomaz, Eduardo A. B. Da Silva, Sergio M. M. De Faria</i>	
3D Object Detection on Synthetic Point Clouds for Railway Applications	161
<i>Michael Neri, Federica Battisti</i>	

ORAL SESSION 5: BIOMETRICS AND MEDICAL IMAGING

Fusion of Deep Features for Differential Face Morphing Attack Detection at Automatic Border Control Gates.....	167
<i>Jag Mohan Singh, Raghavendra Ramachandra</i>	
HEROES: A Video-Based Human Emotion Recognition Database	172
<i>Ilaria Mannocchi, Kamal Lamichhane, Marco Carli, Federica Battisti</i>	
Real-Time Style Transfer for Videos to Enhance the Realism of Simulation of Laparoscopic Surgeries.....	178
<i>Marine Shao, James Clark, David Huson, Jon Hardeberg</i>	
Hybrid Attention Mechanism for Liver Tumor Segmentation in CT Images.....	184
<i>Ming Gong, Baixiang Zhao, John Soraghan, Gaetano Di Caterina, Derek Grose</i>	

SPECIAL SESSION 4: CHALLENGES IN POINT CLOUD TECHNOLOGY

Subjective and Objective Testing in Support of the JPEG Pleno Point Cloud Compression Activity	190
<i>Stuart Perry, Luis A. Da Silva Cruz, João Prazeres, António Pinheiro, Emil Dumic, Davi Lazzarotto, Touradj Ebrahimi</i>	
Influence of Spatial Rendering on the Performance of Point Cloud Objective Quality Metrics	196
<i>Davi Lazzarotto, Michela Testolina, Touradj Ebrahimi</i>	
Explorations on 3D Point Clouds Coding Using Transformers and Patches.....	202
<i>Miguel Marques, Luís A. Da Silva Cruz</i>	
On the Stability of Point Cloud Machine Learning Based Coding.....	208
<i>João Prazeres, Rafael Rodrigues, Manuela Pereira, Antonio M. G. Pinheiro</i>	

POSTER SESSION

Deep Learning Based Aerial Image Segmentation for Computing Green Area Factor.....	214
<i>G M Atiqur Rahaman, Martin Långkvist, Amy Loutfi</i>	
Active Speaker Recognition Using Cross Attention Audio-Video Fusion.....	220
<i>Bogdan Mocanu, Tapu Ruxandra</i>	
ParalMGC: Multiple Audio Representations for Synthetic Human Speech Attribution	226
<i>Michael Neri, Anna Ferrarotti, Luca De Luisa, Andrea Salimbeni, Marco Carli</i>	
Invertebrates Detection with YOLOv5: Towards Study of Soil Organisms Using Deep Learning	232
<i>Emma Pruvost, Hadrien Tulet, Etienne Delort, Ghulam Sakhi Shokouh, Philippe Montesinos, Baptiste Magnier, Jourdan Christophe, Belaud Emma, Hedde Mickael</i>	
ITER-Tag: An Adaptable Framework for Robust Uncoded Fiducial Marker Detection and Identification	238
<i>Laura Gonçalves Ribeiro, Olli J. Suominen, Sari Peltonen, Emilio Ruiz Morales, Atanas Gotchev</i>	
Stabilised Inverse Flowline Evolution for Anisotropic Image Sharpening	244
<i>Kristina Schaefer, Joachim Weickert</i>	

Exploring Temporal Consistency in Image-Based Rendering for Immersive Video Transmission	250
<i>Smitha Lingadahalli Ravi, Félix Henry, Luce Morin, Matthieu Gendrin</i>	
Watermarking for Large-Scale Video Distribution Through Out-of-the-Loop Frame Replacement	256
<i>Hannes Mareen, Francis Valcke, Aaron Hallaert, Glenn Van Wallendael, Peter Lambert</i>	
A Lightweight Convolution Neural Network for Automatic Disasters Recognition.....	262
<i>Muhammad Munsif, Hina Afridi, Mohib Ullah, Sultan Daud Khan, Faouzi Alaya Cheikh, Muhammad Sajjad</i>	
Computing Particle Size Distribution of Mineral Rocks Using Deep Learning-Based Instance Segmentation	268
<i>Andrei Baraian, Vili Kellokumpu, Janne Paaso, Lauri Koresaar, Jani Kaartinen</i>	
IDALib: A Python Library for Efficient Image Data Augmentation.....	274
<i>Nicolás Vila-Blanco, Raquel R. Vilas, María J. Carreira</i>	
Autoencoder Model Exploration for Multi-Layer Video Compression.....	281
<i>Luiz Henrique Cancellier, Mateus Grellert, José Luís Güntzel, Luís A. Da Silva Cruz</i>	

ORAL SESSION 6: QUALITY ASSESSMENT

Holography Challenges on Coding and Quality Assessment	287
<i>Raquel Guerra, Elsa Fonseca, António Pinheiro, Manuela Pereira</i>	
Does Personal Interests Affect Visual Attention? - an Eye Tracking Study	293
<i>Julie Fournier, Meriem Outtas, Qiong Wang, Elise Etchamendy, Myriam Cherel, Lu Zhang</i>	
Parametric Quality Models for Multiscreen Video Systems	299
<i>Nabajeet Barman, Rahul Vanam, Yuriy Reznik</i>	
Visual Quality Assessment of Adversarially Attacked Images	305
<i>Ali H. Mezher, Yingpeng Deng, Lina J. Karam</i>	

Author Index