

2023 IEEE International Conference on Imaging Systems and Techniques (IST 2023)

**Copenhagen, Denmark
17-19 October 2023**



**IEEE Catalog Number: CFP23IMG-POD
ISBN: 979-8-3503-3084-7**

**Copyright © 2023 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:	CFP23IMG-POD
ISBN (Print-On-Demand):	979-8-3503-3084-7
ISBN (Online):	979-8-3503-3083-0
ISSN:	2471-6162

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

Communicating Robot Intentions: Usability Study of a Socially-Aware Mobile Robot.....	1
<i>Sara Lopez Alaguero, Andrei Chirtoaca, Dimitrios Chrysostomou, Lazaros Nalpantidis</i>	
Depth Estimation and Validation of Plenoptic Light Field Camera.....	7
<i>Ali Khan, Md. Moinul Hossain, Konstantinos Sirlantzis, Alexandra Covaci, Wasif Shafaet Chowdhury</i>	
Electrode Layout Optimization for 3D Bladder Electrical Impedance Tomography with Sparse Representation.....	13
<i>Kangqi Liu, Jiangtao Sun, Peng Suo, Xu Bai, Jinzhao Wei, Mengxian Shen, Lijun Xu</i>	
An Image Reconstruction Method for Outwards Electrical Impedance Tomography Based on Inversion Mapping	19
<i>Mengxian Shen, Jiangtao Sun, Peng Suo, Zhiying Wang, Yiwei Wang, Lijun Xu</i>	
Super-Resolution of SAR Images Using Residual Four-Channel Large Kernel Attention.....	24
<i>Si Liu, Yingying Kong</i>	
Quality Assessment of Image Dataset for Autonomous Driving	30
<i>Xingyu Li, Yuang Zhang, Yunda Shi, He Zhu, Jianming Hu, Lihui Peng</i>	
DCGAN-Based Image Enhancement in Electrical Capacitance Tomography	36
<i>Zhenghang Xu, Jianping Li, Ruiyun Chen, Xingxing Liu, Yu Tan, Wenbin Tian</i>	
TraDance: A Dataset for Assessing the Performance of Greek Folk Dances Recognition Models	42
<i>Thanasis Balafoutis, Vasiliki Balaska, Antonios Gasteratos</i>	
Skeleton-Based Recognition of Traditional Greek Dance Steps Using Machine Learning Algorithms.....	48
<i>Konstantinos Tragiannis, Thanasis Balafoutis, Vasiliki Balaska, Antonios Gasteratos</i>	
Wildforest Fire Detection with ShRe-Xception Network on Aerial Optical and Infrared Images.....	54
<i>Emmanouil Zachariadis, Marios Antonakakis, Michalis Zervakis</i>	
Measurement of Absorption Spectroscopy Enabled by a Polarization-Multiplexed Dual-Comb Laser.....	60
<i>Chenghong Zhang, Gang Wang, Jingxuan Sun, Bo Fu, Lijun Xu</i>	
Defect Detection Using Weakly Supervised Learning	65
<i>Vasileios Sevetlidis, George Pavlidis, Vasiliki Balaska, Athanasios Psomoulis, Spyridon Mouroutsos, Antonios Gasteratos</i>	
A Two-Phase ResNet for Object Detection in Aerial Images	70
<i>Marios Antonakakis, Christos Trimas, Michalis Zervakis</i>	
A Method for Road Debris Detection Inside Tunnel	75
<i>Jiayang Huang, Jiayi Zhuo, Danya Yao, Shuang Chen, Lihui Peng, Yi Zhang</i>	
TunnelTrack: A Dataset for Multi-Object Tracking in Tunnel Roads.....	81
<i>Jiayi Zhuo, Jiayang Huang, Lihui Peng, Shuang Chen, Danya Yao, Yi Zhang</i>	
Macula Swelling Detection Using Retinal Fundus Images	87
<i>Rukham Mumtaz Khan, Fazal Saadat Ali Khan, Fauzia Khan, Rafia Hassan</i>	

Multi-Criteria Decision Making for Autonomous UAV Landing	93
<i>Tilemahos Mitroudas, Vasiliki Balaska, Athanasios Psomoulis, Antonios Gasteratos</i>	
Federated Learning Aggregation Based on Weight Distribution Analysis	98
<i>Christos Chatzikonstantinou, Dimitrios Konstantinidis, Kosmas Dimitropoulos, Petros Daras</i>	
Miniature Modular Sensor for Chemical Species Tomography with Enhanced Spatial Resolution.....	104
<i>Rui Zhang, Jiangnan Xia, Hugh McCann, Chang Liu, Ihab Ahmed, Mohamed Pourkashanian, Andrew Gough, Ian Armstrong, Michael Lengden, Walter Johnstone</i>	
Comparing YOLO-Based Detectors for Pedestrian and Car Detection in Aerial Static Video: An Evaluation of Generalization Capacity and Performance.....	109
<i>Georgios Tzedakis, Eleftheria Tzamali, Emmanouil G. Spanakis, Marios Antonakakis, Michalis Zervakis, Vangelis Sakkalis</i>	
Bird's Eye View Map for End-To-End Autonomous Driving Using Reinforcement Learning	114
<i>Zhiqi Mao, Zhihang Song, Lihui Peng, Jianming Hu, Danya Yao, Yi Zhang</i>	
Simulation of Spaceborne 1064nm Single-Photon LiDAR for Space Target Detection.....	120
<i>Linjie Lyu, Duan Li, Lijun Xu</i>	
Image Reconstruction Based on Newton-Raphson Method for Magnetic Particle Imaging	126
<i>Mingyang Zhao, Ziang Chen, Jian Zhang, Yaoyao Chen, Ying Wang, Lijun Xu, Jing Zhong, Shijie Sun</i>	
A Learning-Based Respiratory Motion Estimation with Consecutive Ultrasound Images.....	131
<i>Yingying Han, Long Lei, Baoliang Zhao, Liang Yao, Ziwen Wang, Peng Zhang, Ying Hu</i>	
Synthetic Data Generation Based on Grid Deformation for Waste Recycling Applications	137
<i>Nick Tsagarakis, Alexandros Antonaras, Michail Maniadakis</i>	
An Optimized Measurement Strategy for 3D Electrical Capacitance Tomography	143
<i>Ying Wang, Xupeng Lu, Jiangtao Sun, Lijun Xu, Shijie Sun</i>	
Metrological Analysis of HoloLens 2 for Visual Marker-Based Surgical Navigation.....	149
<i>Agnieszka Florkowska, Michal Trojak, Weronika Celniak, Maciej Stanuch, Mateusz Daniol, Andrzej Skalski</i>	
Tomographic Imaging and Deep Learning Based Reconstruction of Burner Flames.....	155
<i>Bamidele Ogunjumelo, Md. Moinul Hossain, Gang Lu, Ali Khan</i>	
Illumination Conditions Adaptation for Data-Driven Keypoint Detection Under Extreme Lighting Variations.....	160
<i>Anastasios Agakidis, Loukas Bampis, Antonios Gasteratos</i>	
Vision-Based Corrosion Identification Using Data-Driven Semantic Segmentation Techniques	166
<i>Rui Pimentel De Figueiredo, Simon Bøgh</i>	
Integrating Object Detection and Wide Area Network Infrastructure for Sustainable Ferry Operation.....	172
<i>Arslan Musaddiq, David Mozart, Neda Maleki, Tobias Olsson, Fredrik Ahlgren</i>	
A Robust Deterministic-Based Automatic Vessel Centerline Extraction Algorithm in 3-D Binary Volumes	178
<i>Hassan Saeed, Andrzej Skalski</i>	

Walk with Me: Socially Acceptable Speed and Distance Control for Mobile Wayfinding Robots	184
<i>Karl D. Hansen, Anders Clement, Hans Christian Østgård Larsen, Jonas Andersen, Oliver Beyer Lauritsen, Katrine Møller-Rahbek</i>	
JPEG-LS Compression on FPGA: A Solution for Wireless Capsule Endoscopy	190
<i>Andreas Bay Madsen, Rasmus Faurskov, Ali Sahafi</i>	
Computer Vision Based Measurement of Yellow Water Transparency in Fermentation of Chinese Baijiu Brewing Process	195
<i>Xing Chen, Li Cao, Pan Song, Suyi Zhang, Defu Xu, Lihui Peng</i>	
Comparative Study of Surface 3D Reconstruction Methods Applied in Construction Sites	201
<i>Dimitrios Katsatos, Dimitrios Alexiou, Theodora Kontodina, Ioannis Chatzikonstantinou, Ioannis Kostavelis, Dimitrios Giakoumis, Dimitrios Tzovaras</i>	
Three-Dimensional Measurement System for Inner Surface of Long Tubular Parts Based on White Light Interference	207
<i>Xuanren Rong, Zhangwei Chen, Hongfei Zu</i>	
Mixed Reality for Health and Safety Monitoring	212
<i>Tina Katika, Thomas Papaioannou, Fotios K. Konstantinidis, Anna Dabrowska, Spyridon Nektarios Bolierakis, Monika Kobus, Malgorzata Okrasa, Georgios Tsimiklis, Angelos Amditis</i>	
Few-Shot HRRP Target Recognition Based on Meta-Learning Framework and Improved Lightweight Network with CNN and Bi-GRU	218
<i>Yuxuan Zhang, Yingying Kong</i>	
Measurement of Liquid-Level in Horizontal Pipe Using 4-Electrode ECT Sensor on Robot Hand	224
<i>Xiaofei Liu, Wuqiang Yang</i>	
Exploration and Mitigation of the Impact of Lighting Conditions on Multi-Spectral Image Classification	229
<i>Savvas Sifnaios, Ioannis Zorzos, George Arvanitakis, Fotios K. Konstantinidis, Georgios Tsimiklis, Angelos Amditis</i>	
Removing Unwanted Text from Architectural Images with Multi-Scale Deformable Attention-Based Machine Learning	235
<i>Michael Lystbæk, Archontis Giannakidis, Michail J. Beliatas, Martin Olsen</i>	
Integrated Digital Reconstruction of Welded Components: Supporting Improved Fatigue Life Prediction	240
<i>Anders Faarbæk Mikkelsen, Rui Pimentel De Figueiredo, Morten Kristiansen</i>	
Spatial Suitability Analysis for Site Selection of Healthcare Facilities Using a Multimodal Machine Learning Approach	246
<i>Nicolas Douard, Joan Larovere, Matthew D. Harris, Chandler McCann, Allen Nasser, Vandan Parmar, Daniel Straulino, Corey Hanson, Mohammed Bataglia, Evan E. Afshin, Mattia Filiaci, Kim Azzarelli, George Giakos, Ebby Elahi</i>	
Imaging of Regional Lung Function by Capacitively Coupled Electrical Impedance Tomography and Image Reconstruction Using Deep Neural Network	252
<i>Mikhail Ivanenko, Waldemar T. Smolik, Damian Wanta, Przemyslaw Wróblewski, Mateusz Midura</i>	
Evaluation of Wavelets in Image Camera Source Identification	258
<i>Chijioko Emeka Nwokeji, Akbar Sheikh-Akbari, Anatoliy Gorbenko, Koushendra K. Singh</i>	

Cognitive Fusion-Based Path Planning for UAV Inspection of Power Towers	264
<i>Dimitrios Alexiou, Kosmas Tsiakas, Georgios Zampokas, Evangelos Skartados, Ioannis Tzanakis, Nikolaos Roussos, Ioannis Kostavelis, Dimitrios Giakoumis, Antonios Gasteratos, Dimitrios Tzovaras</i>	
Fall Detection Paradigm for Embedded Devices Based on YOLOv8	270
<i>Stavros N. Moutsis, Konstantinos A. Tsintotas, Ioannis Kansizoglou, Shan An, Yiannis Aloimonos, Antonios Gasteratos</i>	
Concurrent Detection of Known Defects and Out-Of-Distribution Instances in Building Inspections: Advancements in Deep Classification	276
<i>Carlos Marcos Torrejón, Udayanga G. W. K. N. Gamage, Silvia Tolu</i>	
Domain Adaptation Method for Semantic Segmentation in Marine Vessel Inspection	282
<i>Mateusz Dyduch, Rasmus Eckholdt Andersen, Evangelos Boukas</i>	
Semantic-Based Visual Vocabulary for Loop Closure Detection	288
<i>Ioannis Tsampikos Papapetros, Katerina Maria Oikonomou, Ioannis Kansizoglou, Konstantinos A. Tsintotas, Antonios Gasteratos</i>	
Online Learning for Obstacle Detection in Construction for a Multi-Robot Setting.....	293
<i>Rasmus Eckholdt Andersen, Ronja Güldenring, Junru Ren, Dimitrios Arapis, Patrick Schmidt, Ole Ravn, Evangelos Boukas, Lazaros Nalpantidis</i>	
Attention-Guided Feature Fusion for Small Object Detection	299
<i>Jiaxiong Yang, Xianhui Liu, Zhuang Liu</i>	
OV ² SLAM on EuRoC MAV Datasets: A Study of Corner Detector Performance	305
<i>Anthony Burghoffer, Jérémy Seyssaud, Baptiste Magnier</i>	
Preoperative Planning for Coronary Artery Disease Using 3D Segmentation and Mixed Reality	310
<i>Manahil Zulfiqar, Maciej Stanuch, Andrzej Skalski</i>	
Novel Micro-Structure Design of Dielectric Layer for Capacitive Tactile Sensor	316
<i>Haoyu Zhao, Xiaofei Liu, Wuqiang Yang</i>	
3D Pose Estimation Using a Global and Local Cross-Attention Mechanism.....	321
<i>Theocharis Chatzis, Dimitrios Konstantinidis, Kosmas Dimitropoulos, Petros Daras</i>	
Design Optimization of a Multiphase Coplanar Capacitive Sensor	327
<i>Mahmoud Altrabolsi, Mahdi Saleh, Imad H. Elhadj, Daniel Asmar</i>	
SwinMotionSeg: A Point Cloud Moving Object Segmentation Model Based on Swin-Transformer	333
<i>Kang Zeng, Jiehao Luo, Yuanfang Zhang, Jintao Cheng, Xiaoyu Tang</i>	
Optimizing Robot-To-Human Object Handovers Using Vision-Based Affordance Information	339
<i>Daniel Lehotsky, Albert Christensen, Dimitrios Chrysostomou</i>	
Deep Stochastic Image Segmentation for Autonomous Robotic Inspection	345
<i>Jacopo Gaetani, Rasmus Eckholdt Andersen, Evangelos Boukas</i>	
Adaptive Perception and Manipulation for Autonomous Robotic Kitting in Dynamic Warehouse Environments.....	351
<i>Philip Lund Møller, Milad Jami, Karl Damkjær Hansen, Dimitrios Chrysostomou</i>	
Nav2CAN: Achieving Context Aware Navigation in ROS2 Using Nav2 and RGB-D Sensing.....	357
<i>Tristan Schwörer, Jonathan Eichild Schmidt, Dimitrios Chrysostomou</i>	

Author Index