

OCEANS 2024 - Singapore

Singapore
15-18 April 2024

Pages 1-669



IEEE Catalog Number: CFP24OCF-POD
ISBN: 979-8-3503-6208-4

**Copyright © 2024 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:	CFP24OCF-POD
ISBN (Print-On-Demand):	979-8-3503-6208-4
ISBN (Online):	979-8-3503-6207-7

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

TABLE OF CONTENTS

Study on the Influence of the Towing Parameters Variations on the Towing Depth.....	1
<i>Yang Ning, Feng Zhang, Bo Jin</i>	
Impact of Initial Heading Error on Trajectory Accuracy of Underwater Gliders	8
<i>Yingjie Wang, Wendong Niu, Yan Liang, Lianhong Zhang, Shaoqiong Yang</i>	
Motion Simulation and Force Analysis of a CFD-Based DP Vessel Under Environmental Interference.....	15
<i>Bing Li, Yuanhui Wang</i>	
Mooring Optimal Heading Control Based on Finite-Time Convergent Disturbance Observer for FPSO with Structural Reliability and Thruster Assistance	21
<i>Haoyu Hui, Yuanhui Wang, Xiaoyue Zhang, Bing Li</i>	
Using Reinforcement Learning for Hydrostatic Maneuvering with Autonomous Underwater Vehicles	28
<i>Grzegorz Wozniak, Sriharsha Bhat, Ivan Stenius</i>	
Non-Binary Polar Coded Continuous Phase Modulation for Underwater Acoustic Communication	36
<i>Xinrun Liu, Kai Niu, Zhiqiang He, Tao Wang</i>	
Simulation and Analysis on Hydrodynamic Characteristics of Wing Stabilizers for Yachts	41
<i>Lihua Liang, Yinling Jiang, Yang Li, Qiang Zhang</i>	
Breaking the Waves: A Region-Based Feature Matching Method in Wave Images Using Improved Coherent Point Drift	50
<i>Feng Wang, Qidan Zhu, Wei Fu, Lingxin Kong</i>	
Comprehensive Influence of Bow Shape on Gliding Motion and Water-Entry Impact Force of an Airdropped Underwater Glider.....	55
<i>Pengyao Yu, Xiangcheng Wu, Qiang Wang, Jinxing Ba, Tianlin Wang, Xin Chang</i>	
An Improved Underwater Target Detection Algorithm Based on YOLOX.....	62
<i>Jiajia Zhou, Danmi Xu, Xuyu Min, Di Wu</i>	
Development and Sea Trials of the Wenhai-1 Hybrid Underwater Vehicle for Comprehensive Survey of Gravity, Magnetism, Topography, and Sampling.....	69
<i>Jian Wang, Cong Chen, Deyong Yu, Jixiang Zhou, Yuangui Tang, Yu Cheng, Xi Chen, Rui Dou, Fuli Wang, Huimin Liu, Jixu Li, Shuo Li</i>	
Numerical Simulation of Water Exit of Two-Dimensional Hydrofoil	76
<i>Honglu Yun, Liyang Dong, Zhaoyu Wei, Lian Lian</i>	
A CNN-Based Hybrid Dehazing and Regression Model for Sea Surface Wind Speed Retrieval from Rain-Contaminated Marine Radar Data	83
<i>Zhiding Yang, Weimin Huang</i>	
Experimental Validation of the Capture Chamber Model in Mutriku MOWC Wave Power Plant.....	88
<i>Aitor J. Garrido, Jon Lekube, Amparo Villasante, Izaskun Garrido</i>	
A Phase Unwrapping Algorithm Based on Periodicity Extension.....	92
<i>Wei Ma, Jianlong Li, Ting Zhang, Wen Xu</i>	

Adaptive Model Predictive Control with Online System Identification for an Unmanned Underwater Vehicle	97
<i>Yang Hu, Boyang Li, Chih-Yung Wen</i>	
A Predictable Design and Production Workflow for Field Deployable Underwater Soft Actuator Applications.....	107
<i>Alexander Yin, Michael Daeffler, Russell Shomberg, Stephen Licht, Brennan Phillips</i>	
Pixel-Level Sea Ice Concentration Retrieval from Sentinel-1 SAR Imagery and Ancillary Data Via Regional Loss Representations.....	115
<i>Xinwei Chen, Muhammed Patel, Linlin Xu, Yuhao Chen, David A. Clausi, K. Andrea Scott, Weimin Huang</i>	
Adaptive Neural Motion Control for a Hovercraft Subject to Dynamic Asymmetric Constraints	120
<i>Qiusu Wang, Mingyu Fu, Yuchao Wang, Yujie Xu, Chonglang Lai, Han Sun</i>	
Disturbance Observer-Based Formation Control for Multiple Unmanned Surface Vessels	125
<i>Han Sun, Xiaogong Lin, Qiusu Wang, Chonglang Lai</i>	
Event-Based Distributed Control for Multiple Fully-Actuated MSVs Under Prescribed Performance Constraints	131
<i>Chonglang Lai, Xiaogong Lin, Han Sun, Qiusu Wang</i>	
Bioindication Complex Based on Underwater Digital Holography	136
<i>Victor Dyomin, Alexandra Davydova, Igor Polovtsev</i>	
Design and Experiments of a Sustainable Hybrid Power Unmanned Surface Vehicle for Maritime Patrol	140
<i>Jun Wang, Jian Wang, Zhao-Yang Liu, Xiao-Feng Liang, Hong Yi</i>	
International Management of Underwater Noise Pollution in the Northeast Atlantic	145
<i>Nathan D. Merchant</i>	
Dynamic Target Tracking of Bionic Fish Based on Sliding Mode-CPG Controller.....	149
<i>Wei Zhang, Ruichi Sun, Qingshuo Gong, Peiyu Han, Zhe Zhang, Yefan Shi</i>	
Research on Unbalance Force and Stability of Rotary Energy Recovery Device in Seawater Reverse Osmosis System.....	155
<i>Tianzhuang Ye, Xinchao Hu, Kaiyuan Wang, Yunfei Qu, Lei Jiao, Shuai Fu, Renjiang Yuan</i>	
Underwater Three-Dimensional Microscope for Marine Benthic Organism Monitoring.....	160
<i>Xinzhe Xie, Buyu Guo, Peiliang Li, Qingyan Jiang</i>	
Multipath Propagation Characteristics of Line-Spectrum Noise Radiated by Underwater Targets Under a Fluctuating Sea Surface	164
<i>Xuedong Zhang, Yubo Qi, Shihong Zhou</i>	
A Multi-Stage Visual Positioning Method for Autonomous Underwater Docking	169
<i>Xinlong Chen, Shuo Liu, Tao Wang, Jingyang Li, Tian Xia</i>	
A Litopenaeus Vannamei Status Classification Method Based on MRANet.....	174
<i>Jikang Ma, Keyu Chen, Wei Su, En Cheng</i>	
Modelling of Underwater Target for Sector Scan Sonar Imaging Using K-Wave Toolbox.....	180
<i>Midhila Madhusoodanan, Mahesh Raveendranatha Panicker; Mimisha M Menakath</i>	

The Design of a Global Oceanic Plastic Debris Monitoring System Using Imaging Spectroscopy Onboard Low-Flying Satellites	184
<i>Jurgen Vanhamel, Jasper Bouwmeester</i>	
A Comparison of Beamforming Algorithms for Underwater 2D Acoustical Imaging	189
<i>Midhila Madhusoodanan, Mahesh Raveendranatha Panicker, Mimisha M Menakath</i>	
A Key Agreement Algorithm for Securing Underwater Acoustic Communications	193
<i>Roe Diamant, Paolo Casari, Francesco Ardizzone, Stefano Tomasin, Thomas Corner, Benjamin Sherlock, Jeff Neasham</i>	
Enhancing Maritime Cybersecurity: Strategies for Process Automation of Threat Mitigation	198
<i>Correia Carlos, Rodrigues Da Silva Alberto, Lobo Victor</i>	
Effective Sonar Image Segmentation Method Based on Beam Analysis for Object Recognition of AUV	205
<i>Minsung Sung, Son-Cheol Yu</i>	
Acoustic Positioning Enhanced Optical Image Mosaics: A Collaborative Robot-Assisted Approach	210
<i>Abu Bakr Azam, Nguyen Trung Kien, Wesley Loke, Ardijan Tosuni, Aris Tsanas, Basman Elhadidi, Yiyu Cai</i>	
Learning an End-To-End Policy for AUV Control Within Just Forty Minutes Using Parallel Simulation	217
<i>Shuguang Chu, Dejun Li, Mingwei Lin</i>	
Content-Adaptive Efficient Transformer for No-Reference Underwater Image Quality Assessment	222
<i>Pengli Zhu, Huan Ma, Kuangqi Ma, Yancheng Liu, Siyuan Liu</i>	
Spiral Beacon Calibration and Experiments for Underwater Localization.....	231
<i>Rúben S. Viegas, Friedrich Zabel, João Gomes, António Silva</i>	
Numerical Research on the Effect of Propeller Rotation Direction on the Propulsion Performance and Load Difference of Inner and Outer Propeller in a Four-Screw Ship	240
<i>Wenxuan Ma, Xin Chang, Yu Lu, Wenquan Wang</i>	
Underwater Robot with Bioinspired Multimodal Locomotion Expands the Scope of Ocean Exploration.....	245
<i>Mrudul Chellapurath, Ivan Stenius</i>	
Portable and Flexible Seabed Station with a Fly-Out Vehicle	251
<i>Antonio Vasiljevic</i>	
Developing a Marine Energy Workforce Pipeline Through STEM Education.....	257
<i>Arielle Cardinal, Jennifer Daw, Elise Degeorge, Adam Kanter, Bree Mendlin, Betsy Stratton</i>	
Doppler-Shift Tolerant Digital Modulation and Demodulation Scheme for Fast Moving Underwater Acoustic Communication Systems.....	262
<i>Shingo Yoshizawa, Kazuhiro Shirokane</i>	
Underwater Wreck Detection Based on Mixed AnalogRealistic and Mixed Audiovisual Datasets	266
<i>Tian Rong, Ying Liu, Chenxu Wang, Yuhang Wang, Yingchun Li, Qua Luo, Jinlong Wang</i>	
Propeller Hydrodynamic Performance Optimization Based on Deep Learning.....	271
<i>Nan Gao, Zhenju Chuang, Ankang Hu</i>	

Research on Characteristics and Mechanism of Fluid Exciting Force in Seawater Reverse Osmosis System	276
<i>Xinchao Hu, Kaiyuan Wang, Yunfei Qu, Tianzhuang Ye, Renjiang Yuan, Lei Jiao</i>	
Energy Assessment of a Wave Energy Converter in Ustica Island. a Case Study	284
<i>Pierluca Martorana, Malik Ali Judge, Andrea Guercio, Vincenzo Franzitta, Marzia Franzitta, Maria Claudia De Bernardis</i>	
Evaluation of the Potential Environmental Impacts from an Offshore Wind Energy Farm in the Mediterranean Sea.....	288
<i>Andrea Guercio, Roberta Rincione, Domenico Curto, Sonia Longo, Pierluca Martorana, Francesco Guarino, Maurizio Cellura</i>	
A Sustainable Energy Mix for Small Islands in the Pacific Oceans. the Case Study of Vanuatu	294
<i>Malik Ali Judge, Maurizio Cirrincione, Ali Mohammadi, Pierluca Martorana, Domenico Curto</i>	
Underwater Human-Robot and Human-Swarm Interaction: A Review and Perspective.....	300
<i>Sara Aldhaheri, Federico Renda, Giulia De Masi</i>	
Selection of a Renewable Energy Mix by Using Economic and Environmental Criteria. a Case Study in the Mediterranean Sea.....	309
<i>Miriam Mantegna, Manuela Scozzaro, Daniele Milone, Domenico Curto, Malik Ali Judge</i>	
Electro-Mechanical WEC Stabilization for Onshore Wave Energy Exploitation.....	315
<i>Pierluca Martorana, Antonella Castellano, Marco Cammalleri, Vincenzo Franzitta</i>	
Optimization of a PTO for Wave Energy Harvesting on Breakwaters	321
<i>Pierluca Martorana, Miriam Mantegna, Vincenzo Frazitta, Malik Ali Judge, Marzia Franzitta, Vito Vitrano</i>	
Advanced Hardware-In-The-Loop System for Guidance and Navigation Control Systems of Autonomous Underwater Vehicle.....	325
<i>Moon Hwan Kim, Teasuk Yoo, Kyungwon Nam</i>	
Acoustic Field Fluctuation of Source-Generated Internal Waves and a Robust Detection Method	331
<i>Zhaoyang He, Bo Lei</i>	
Box-Supervised Ocean Object Instance Segmentation Based on Object-BoxInst Network.....	337
<i>Yuxin Sun, Li Su, Shouzheng Yuan, Hao Meng, Haibo Yao</i>	
Underwater Object Localization and Detection of Square Shaped Target Using Edge AI in Video Streams	342
<i>Jinka Venkata Aravind, Shanthi Prince</i>	
Acoustic Simulation Study of Subway Underwater Tunnels Based on EASE	347
<i>Shuai Fu, Yongbiao Song, Linwei Shen, Xinchao Hu, Tianzhuang Ye</i>	
Parametric Modeling, Coupling Influence Analysis and Multi-Performance Sensitivity Analysis for Pedigree Underwater Gliders.....	352
<i>Wei Han, Ming Yang, Cheng Wang, Huihui Zhou, Shaoqiong Yang</i>	
The Optimal Tracking Control for Autonomous Underwater Vehicles Using ESO and MPC Algorithms.....	358
<i>Kangkang Zhao, Yanhui Wei, Yongkang Hou, Tianlong Yang, Jianyuan Wu, Yongqiang Xie</i>	

Research on INS/GNSS Integrated Navigation Positioning Based on an Improved Pre-Integration Algorithm	368
<i>Yinhao Xiong, Yanhui Wei, Xi Wang, Xuerui Zhang</i>	
An Adaptive Order Variation Mathematical Modeling of Ship Maneuvering Motion Under Environmental Changes.....	377
<i>Qi Dong, Ning Wang, Cunlong Zou, Lizhu Hao, Kai Qu</i>	
Development of an Energy-Efficient Control System for Underwater Gliders	384
<i>Guangwei Lv, Shangshang Wu, Xu Zhao, Deyuan Mi, Jieru Song, Shiquan Lan, Shaoqiong Yang</i>	
REX 18 – Robotic Exercises 2018 Multi-Robot Field Trials	390
<i>Mario Monteiro Marques, Ricardo Mendonça, Francisco Marques, Barracosa Santos, Bruno Damas, Victor Lobo</i>	
A Security System for Spreading Information About Malicious Behaviors in Underwater Wireless Sensor Networks.....	395
<i>Filippo Donegà, Edoardo Bortolozzo, Roberto Francescon, Filippo Campagnaro, Michele Zorzi</i>	
Design and Evaluation of an AUV with Dual Acoustic Communication Modems	401
<i>Moon Hwan Kim, Taesuk Yoo, Yoonho Jeon, Hyungi Jung</i>	
Countermeasures for Unreliable Inputs and Observations in Multi-AUV Cooperative Localization	407
<i>Xiaoyu Wang, Bo Xu, Yu Guo</i>	
Multibeam Multi-Frequency Characterization of Water Column Litter	412
<i>Pedro Alves Guedes, Hugo Silva, Sen Wang, Alfredo Martins, José Miguel Almeida, Eduardo Silva</i>	
Design and Optimization of Wing Shape for Underwater Glider Based on CFD.....	418
<i>Yuanhao Li, Changli Xue, Zidu Wei, Tongshuai Sun, Shaoqiong Yang</i>	
LOTUS: Learning from Operational Teaming with Unmanned Systems.....	425
<i>Helene Lechene, Benoit Clement, Karl Sammut, Paulo Santos, Andrew Cunningham, Gilles Coppin, Cedric Buche</i>	
Development of High Accuracy CTD Sensor: 5EL-CTD	430
<i>Kensuke Kirimoto, Jun Han, Shoichiro Konashi</i>	
Hydrodynamic Investigation of a Free Fall Lander for the Descent Trajectory Control	438
<i>Enrico Di Maria, Takeshi Nakatani, Yosaku Maeda, Tomoya Inoue</i>	
Simulator for Underwater Acoustic Vector Sensor's Recorded Pressure and Particle Velocity Signals for User Defined Scenarios	444
<i>Sandhya Prajapati, Arun Kumar, Rajendar Bahl</i>	
Long-Term Forecasting of Ocean Sound Speeds at Any Time Via Neural Ordinary Differential Equations.....	450
<i>Ce Gao, Lei Cheng, Ting Zhang, Jianlong Li</i>	
Performance Estimation of Parameter Fusion Strategies for Improved Seafloor Classification for Mn-Crust Survey Using AUV Data.....	456
<i>Umesh Neetiyath, Harumi Sugimatsu, Blair Thornton</i>	

Spatial Undersampling SAS Imaging Algorithm Utilizes Dual Carrier Frequency Azimuth Compressed Sensing.....	461
<i>Kun Ji, Peng Wang, Yanbo Jiao, Pengfei Zhang, Shiping Chen, Lulu Ren, Linzhe Wei</i>	
Development of a Jellyfish Removal Device to Equip on Underwater Robot and Its Suction Performance Evaluation	466
<i>Shoun Masuda, Jonghyun Ahn, Kazuo Ishii</i>	
Study of SNR Improvement of an Equivalent Pressure Signal Obtained from an Inertial Type Acoustic Vector Sensor.....	472
<i>Sandhya Prajapati, Arun Kumar, Rajendar Bahl</i>	
A Dyson Brownian Motion Model for Scintillation in Waveguides.....	479
<i>Tarun K. Chandrayadula</i>	
Experimental Deployment of Automatic Buoy Identification Monitoring System (ABIMS) for Sustainable Fishery and Healthy Oceans.....	485
<i>Kiseon Kim</i>	
A DVL Measurement Correction Method in High Dynamic Environment and Its Application for SINS/DVL Integrated Navigation	490
<i>Bo Xu, Yu Guo, Xiaoyu Wang</i>	
Online Informative Sampling Using Semantic Features in Underwater Environments	497
<i>Shruti Vishal Thengane, Yu Xiang Tan, Marcel Bartholomeus Prasetyo, Malika Meghjani</i>	
Marine Seismic P-Phase Picking Network for Floating Seismographs Using Transfer Learning.....	503
<i>Weipeng Zhang, Gaofeng Cheng, Shihong Zhou, Qingwei Zhao</i>	
Towards Autonomous Subsea Maintenance on Offshore Structures with Unmanned Underwater Vehicles	508
<i>Simon Pedersen, Jesper Liniger, Malte Von Benzon, Fredrik F. Sørensen, Christian Mai</i>	
SeaTecHub: Croatia-Cyprus Excellence Hub on Eco-Innovative Technologies for Healthy and Productive Seas	515
<i>Barbara Arbanas Ferreira, Nikola Miskovic, Marina Loizidou, Mateo Ante Bosnic, Ivana Bujas Rupic, Hrvoje Cizmek, Anna Foka, Demetris Hadjigeorgiou, Nicolas Ioannou, Mateo Ivanac, Marios Josephides, Josip Madunic, Demetra Orthodoxou, Damir Slamic, Konstantinos Smagas, Ioannis Kyriakides</i>	
Incipient Fault Analysis of Thruster Propellers from Offshore Operations	520
<i>Malte Von Benzon, Fredrik Sorensen, Christian Mai, Simon Pedersen, Jesper Liniger</i>	
A Preliminary Study on Spectral Unmixing for Marine Plastic Debris Surveying.....	528
<i>José Maravalhas-Silva, Hugo Silva, Ana Paula Lima, Eduardo Silva</i>	
Quantum Key Distribution for Secure Encryption in Underwater Networks	534
<i>Jacopo Lazzarin, Filippo Campagnaro, Matteo Padovan, Edoardo Rossi, Ilektra Karakosta-Amarantidou, Francesco Picciariello, Francesco Vedovato, Giuseppe Vallone, Paolo Villoresi, Michele Zorzi</i>	
Experimental Assessment of Miniature Wave-Energy-Converter Performance: Output Analysis in Simulated Wave Conditions	542
<i>Louis Leon Rautmann, Minhaz Ahmed, Torben Dankwort, Sascha Kosleck, Björn Gojdka</i>	

Comparison of Performance in Assisted and Automatic Berthing Maneuvers with the Research Vessel DENEB	550
<i>Agnes U. Schubert, Robert Damerius, Torsten Jeinsch, Sandro Fischer, Gerd Milbradt, Michael Gluch, Matthias Kirchhoff</i>	
Guidance, Navigation and Control of Couplable Unmanned Surface Vehicles.....	559
<i>Robert Damerius, Tobias Hahn, Ian Karez, Agnes Schubert, Björn Kolewe, Torsten Jeinsch</i>	
Inland Waterway Vessel Autonomy: Sensor and Communication Design.....	567
<i>Jan-Philipp Schreiter, Jan-Nicolas Kugler, Alexander Schmitz, Felix Ballin, Axel Heßler, Horst Hellbrück</i>	
Exploiting Behaviour Trees in Underwater Autonomous Robotic Networks.....	576
<i>Gabriele Ferri, Alessandro Faggiani, Federico Celi, Alessandra Tesei, Robert Been</i>	
SPEC: Simulating Acoustic Scattering for Wide Aperture Sparse Array Multibeam Receivers	586
<i>Ben Stringer, Bikramjit Banerjee, Gero Nootz</i>	
Charting the Path to Stronger and More Stable International Environmental Agreements: Insights from Mathematical Modelling and Game Theory	596
<i>Dhouha Kbaier, Ian Kenny, Mark McJury, Richard Fairchild</i>	
Bridging the Sim-To-Real GAP for Underwater Image Segmentation.....	601
<i>Luiza Ribeiro Marnet, Stella Grasshof, Yury Brodskiy, Andrzej Wasowski</i>	
Power Demand Forecasting for a Hybrid Marine Energy System with Shallow and Deep Learning	607
<i>Jake M. Walker, Andrea Coraddu, Luca Oneto</i>	
SubPipe: A Submarine Pipeline Inspection Dataset for Segmentation and Visual-Inertial Localization.....	615
<i>Olaya Álvarez-Tuñón, Luiza Ribeiro Marnet, Martin Aubard, László Antal, Maria Costa, Yury Brodskiy</i>	
Sparse Representation of the Acoustic Ocean Impulse Response for Real-Time Simulation of Sonar Reverberation	622
<i>Xavier Cristol, Antoine Blachet</i>	
RAMI23: An Inspection & Maintenance Robotics Challenge to Form the New Generation of Marine Scientists and Engineers.....	629
<i>Gabriele Ferri, Alessandro Faggiani, Tommaso Fabbri, Robert Been, Giovanni Sembenini</i>	
Passive Multi-Sensor Fusion for Tracking Underwater Targets: Field Experience from REPMUS22.....	637
<i>Giovanni Soldi, Gabriele Ferri, Alessandro Faggiani, Pietro Stinco, Alessandra Tesei, Robert Been</i>	
URoBench: Comparative Analyses of Underwater Robotics Simulators from Reinforcement Learning Perspective	644
<i>Zebin Huang, Markus Buchholz, Michele Grimaldi, Hao Yu, Ignacio Carlacho, Yvan R. Petillot</i>	
A Wirelessly-Enabled, Power-Optimized, Low-Cost, and Open-Source Durafet-Based pH Instrument for Continuous, Long Term Environmental Monitoring	652
<i>Amelia L. Ritger, David C. Burnett</i>	
An Efficient Signal and Noise Simulator for Imaging Sonar	658
<i>Tessin K Jose, Subhalakshmy A B, Hareesh G</i>	

Design, Analysis, and Test of a Miniaturized Air-Droppable Underwater Glider	665
<i>Liugen Wang, Hongwei Gao, Wei Ma, Wendong Niu, Zhanzhan Miao, Shaoqiong Yang</i>	
Unmanned Boat Motion Prediction Based on GRU-SVR Model.....	670
<i>Huixuan Fu, Zhouqi Yang, Zixiang Tian, Yuchao Wang</i>	
Quantized Model-Parameter-Free Tracking Control for Autonomous Underwater Vehicles with Dead-Zone Nonlinearity	675
<i>Enhua Zhang, Jian Wang, Zhaoyang Liu, Xiaofeng Liang, Hong Yi</i>	
Concepts of Resilience Design for Unmanned Marine Systems and Applications on Underwater Glider.....	684
<i>Zhen Wang, Ming Yang, Shaoqiong Yang</i>	
Investigation of the Collaborative Beampattern Performance of a Cylindrical Random Array	690
<i>Kristopher Buchanan, Roanne Manzano-Roth, Annie Lin, Gabriella Loaiza, Meghan Sills, Jin Li, Sounak Chakrabarti, Travis Moscicki, Sara Wheeland, Anthony Jones</i>	
Direction Finding for Shipborne HFSWR Based on Integral Reconstruction and Virtual Array Transformation	700
<i>Cheng Wang, Ling Zhang, Xiaozhong Zhang, Jiong Niu, Zhaokai Liu, Zongtai Li, Jiangnan Zhong</i>	
Flight Dynamics of an Underwater Glider with Passively Adapting Flapping Wings.....	704
<i>Jonas Thyrann, Jonas Pabst, Henrik Langosch, Sascha Kosleck</i>	
Underwater Noise Reduction by Blade Tip Optimization of a Ship Propeller	714
<i>Keun Woo Shin, Joseph Praful Tomy, Max Steden, Ege Lundgren, Jens Ring Nielsen</i>	
On Line Identification Method of Roll Center Deviation for Underwater Glider	722
<i>Shangshang Wu, Guangwei Lv, Shaoqiong Yang</i>	
Instance Segmentation for Active Sonar Image Based on Image Segmentation Foundation Model.....	728
<i>Hongji Liu, Gaofeng Cheng, Jian Liu</i>	
An Improved IMMENS Framework to Handle Conflicting Temporal Plans in mAritime Environments.....	734
<i>A. Van Keeken, M. J. R. Van Den Heuvel, H. Hildmann, C. P. C. Elenbaas, H. J. Veltman, Z. Papp, C. I. De Hartog, J. A. A. J. Janssen</i>	
Sail-Rudder Collaborative Control of Unmanned Sailboat Based on Reinforcement Learning.....	744
<i>Yifan Chen, Shuo Liu, Tao Wang, Zhaozhao Zhang, Tian Xie, Yu Zhang</i>	
An Array Calibration Method Based on Beam Pattern and Neural Network in Underwater USBL System	750
<i>Yi Lu, Jiaxun Lu, Jingyu Qian, Fengzhong Qu, Yan Wei</i>	
Ship Open Set Recognition Based on Auditory Deep CNN	755
<i>Kaifeng Zheng, Honghui Yang, Junhao Li, Minqing Wang</i>	
LSFT-GAN for Underwater Acoustic Target Signals Generation.....	760
<i>Lanhao Fang, Honghui Yang, Xingjian Huang</i>	
Sensitivity Analysis of Propagation Loss at Quarter Wavelength in the Sound Field to Bathymetry Perturbation	767
<i>Gexiang Li, Qingyin Wang, Xiao Feng, Cheng Chen</i>	

Satellite-Based Sea Surface Prediction and Subsurface Temperature Reconstruction: Integration and Visualization in Open-Source Earth Software	771
<i>Qingyin Wang, Xiao Feng, Gexiang Li, Cheng Chen</i>	
A Variable Wingspan Scroll Telescopic Wing for Multimodal Underwater Vehicles.....	776
<i>Xiaoyan Zhao, Hui Zhi, Xinyu Fei, Xiaoya Qin, Zhengzhao Liu, Yanhu Chen, Canjun Yang</i>	
Towards Efficient Underwater Robotic Swarms: Edge-Based Comparative Analysis of Multi-Object Trackers.....	783
<i>Rim Eltobgui, Fakhreddine Zayer, Saverio Iacoponi, Giulia De Masi, Federico Renda, Jorge Dias</i>	
Designing of Preamble Signal for the Integrated Underwater Communication and Positioning	790
<i>Xiao Tan, Hufang Chen, Lei Xie, Kuang Wang</i>	
Improvement of Real-Scale Ship Model Parameter Identification Algorithm Based on Support Vector Machine.....	796
<i>Jing Xiang, Shiyang Li, Guihua Xia</i>	
Underactuated Unmanned Surface Vessel Coverage Path Planning for Marine Pier Inspection.....	802
<i>Yu Hin Ng, Yujie Hou, Yixing Yuan, Ching Wei Chang</i>	
SeLT: Sonar Echo Image Recognition for Small Targets Using Lightweight Swin Transformer.....	812
<i>Sijia Xia, Mengyang Hou, Yina Han, Ziyuan Xiao, Zihao Guo, Qingyu Liu, Yuanliang Ma</i>	
A Horizontal Spiral Motion Control Method Based on Marine Environmental Data for an Underwater Vehicle to Sample Deep-Sea Macrogenetic	817
<i>Libing Han, Shuai Fa, Haitong Zhao, Yudong Guo, Longfei Du, Yuhua Yang, Tongshuai Sun, Shaoqiong Yang</i>	
Exploring Feature Modalities with Cross Attention Network for the Detection of Remotely Operated Underwater Vehicles	823
<i>Murtiza Ali, Harsh Lakhlotra, Karan Nathwani, Pawan Kumar</i>	
Variational Mode Decomposition-Based Self-Noise Cancellation in Oceanic Environment	830
<i>Pawan Kumar, Karan Nathwani, Murtiza Ali</i>	
Acknowledgement Strategies for the JANUS Medium Access Control Protocol	836
<i>Florian Mahieu, Paul D. Mitchell, Nils Morozs, Tim C. Tozer</i>	
Enhancing Ship Maneuvering Models Through Hybrid Integration of Data-Driven Velocity Calibrator for Improved Performance	845
<i>S. Y. Li, J. Xiang, G. H. Xia</i>	
Underwater Acoustic Target Recognition Method Based on Physical Information Driving Frequency Attention	851
<i>Honghui Yang, Yining Huang, Junhao Li</i>	
Mission Planning and Safety Assessment for Pipeline Inspection Using Autonomous Underwater Vehicles: A Framework Based on Behavior Trees.....	857
<i>Martin Aubard, Sergio Quijano, Olaya Álvarez-Tuñón, László Antal, Maria Costa, Yury Brodskiy</i>	
Unmanned Vehicles: A Promising Solution to Addressing Sea Pollution.....	863
<i>Nuno Pessanha Santos, Ricardo Moura, Teresa Lourenço Antunes, Victor Lobo</i>	

To Smooth Or to Filter: A Comparative Study of State Estimation Approaches for Vision-Based Autonomous Underwater Docking.....	867
<i>David Dörner, Aldo Terán Espinoza, Ignacio Torroba, Jakob Kuttenkeuler, Ivan Stenius</i>	
Acoustic Technology for Maritime Surveillance: Insights from Experimental Exercises	876
<i>André Rodrigues Dias, Nuno Pessanha Santos, Victor Lobo</i>	
Enhancing Image Quality Assessment Using CNN-Based Edge Detection	883
<i>Vibhav Bharti, Maria Koskinopoulou, Andrea Munafo, Yvan Petillot</i>	
Real-Time Background-Agnostic Fish Localization in Underwater Videos Towards Autonomous Species Monitoring.....	888
<i>Anuj Shrivatsav Srikanth, Saicharan Thirandas, Dhanush Adithya Balamuguran, Anurag Daga, Robert Vincent, Taskin Padir, Dipanjan Saha</i>	
Adaptive Real-Time Video Transmission Through Underwater Acoustic Communication Link.....	895
<i>Jie Wu, Yanbing Fu, Jingxuan Li, Fengzhong Qu, Yan Wei</i>	
Novel Reference Trajectories for Improved Marine Surface Vehicle Path Following.....	901
<i>Nicholas Custer, May-Win Thein</i>	
Mesoscale Eddy Observations and Effect on Sound Propagation in South China Sea 2021.....	906
<i>Xuesong Yu, Hangfang Zhao, Chuanzheng Zhang, Zenan Zhu, Ruixiang Zhao</i>	
Matching-Pursuit Based Adaptive Turbo Equalization Algorithm for Underwater Acoustic Channels	914
<i>Yuru Luo, Wei Li, Rongrong Guo</i>	
Subspace Detector of Multi-Frequency Signals Using the Single Hydrophone in Bottom Bounce Zone.....	920
<i>Jiapeng Liu, Chao Sun, Mingyang Li</i>	
Enhanced LoRaWan Adaptive Data Rate for Mobile Devices in Harsh Marine Environment.....	924
<i>Chengzhi Li, Weizhi Nie, Xiaomei Fu, Yishan Su</i>	
Benefits of Neural Network-Based Receivers in Underwater Acoustic Communication Systems	929
<i>Sabna Hassan, Peng Chen, Yue Rong, Kit Yan Chan, Iftekhar Ahmad, Jinhong Yuan</i>	
Multi-View 3D Reconstruction of Vessel Hull with Spatial Density Weighted NeRF	935
<i>Han Chen, Pengli Zhu, Yancheng Liu, Xuanhe Chu, Siyuan Liu</i>	
One-Way Ranging for Mobile Underwater Acoustic Networks with Long Interaction Periods.....	942
<i>Jianyu Zhang, Filippo Campagnaro, Antonio Montanari, Michele Zorzi</i>	
Semantic Segmentation of Forward-Looking Sonar Images Based on Improved Deeplabv3+.....	949
<i>Fei Yin, Weizhi Nie, Yishan Su</i>	
A Novel UAC Modem Design with Two Core Modules	954
<i>Xianghan Wang, Zhifeng Pang, Rong Fan, Guoqing Pan, Yishan Su</i>	
Evaluating the Performance of Internal and External Modulator for Underwater Visible Light Communication System.....	959
<i>Priya Pandey, Monika Agrawal</i>	
Performance Evaluation of New Modulation Technique, OTSM, in Underwater Acoustic Channel.....	964
<i>Deeksha Varshney, Monika Agrawal, Ananya Sen Gupta</i>	

Integrating a Digital Twin Concept in the Zero Emission Sea Transporter (ZEST) Project for Sustainable Maritime Transport Using Stonefish Simulator	969
<i>Michele Grimaldi, Carlo Cernicchiaro, George Rossides, Angelos Ktoris, Elias Yfantis, Ioannis Kyriakides</i>	
Spectrally Normalized Memory Neuron Network Based Navigation for Autonomous Underwater Vehicles in DVL-Denied Environment.....	977
<i>Rajini Makam, M. P. Pramuk, Samuel Thomas, Suresh Sundaram</i>	
Estimating the Diffuse Downwelling Attenuation Coefficient from in Situ Photographs	983
<i>Derya Akkaynak, Liraz Levy</i>	
Synchronization Signal Identification and Parameter Estimation Based on Delay Autocorrelation Method	991
<i>Jingxuan Li, Zhe Lin, Jingyu Qian, Jie Wu, Yan Wei, Fengzhong Qu</i>	
Energy Analysis and Buoyancy Compensation Design for a New Underwater Glider Buoyancy-Driven System	998
<i>Muhua Ren, Jiawei Xu, Ming Yang, Cheng Wang, Shaoqiong Yang</i>	
Cooperative Control of AUVs for Obstacle Avoidance Under Trajectory.....	1005
<i>Zhao Wang, Hongjian Wang, Shuang Huang, Lihui Deng, Dan Yu, Zhenwei Lu</i>	
A Novel Pickup Technique for Enhanced Sensitivity of Energy Harvesters and Vibration Sensors	1012
<i>Rahul Kumar Gupta, Sanjeev Kumar Manhas</i>	
Experimental Study of Ship Propeller Noise Conducted in a Test Tank.....	1018
<i>Endang Widjiati, I Made Ariana, Wirawan, Dhany Arifianto, Chandra Permana, Edy Purwanto</i>	
Data-Based Acoustic Far Scattered Field Prediction in Underwater Environment	1025
<i>Yanlin Zhou, Ting Zhang, Lei Cheng, Jianlong Li</i>	
Data-Driven Strategies for Coping with Incomplete DVL Measurements	1030
<i>Nadav Cohen, Itzik Klein</i>	
Safe Navigation of Autonomous Underwater Vehicles Using Physics-Informed Neural Networks.....	1035
<i>Rudrashis Majumder, Rajini Makam, Pruthviraj Mane, Bharathwaj K S, Suresh Sundaram</i>	
Adaptive Detection Method for Dual Threshold Broadband Underwater Acoustic Signals Based on Morphological Filtering.....	1041
<i>Haocheng Wu, Zeyu Fang, Jianlong Li</i>	
Digital Twins Below the Surface: Enhancing Underwater Teleoperation	1046
<i>Favour O. Adetunji, Niamh Ellis, Maria Koskinopoulou, Ignacio Carlucho, Yvan R. Petillot</i>	
Improving SONAR Image Classification Performance Via Denoising	1054
<i>Swapna Pillai, Philippe Courmontagne, Sujit Kumar Sahoo</i>	
Distributed BSP Control Methods for Underwater Collective Manipulation	1060
<i>Enrica Zereik, Fabio Bonsignorio</i>	
Target Detection in Clutter Regions Based on 3DCNN for HFSWR	1068
<i>Jiangnan Zhong, Ling Zhang, Cheng Li, Jiong Niu, Zhaokai Liu, Cheng Wang, Zongtai Li</i>	

Target Detection Based on HSV Feature Fusion and Time-Frequency Analysis for HFSWR	1072
<i>Zongtai Li, Xiaotong Zhang, Ling Zhang, Jiong Niu, Zhaokai Liu, Cheng Wang, Jiangnan Zhong</i>	
Distributed Trajectory Estimation for Multi-Autonomous Underwater Vehicle.....	1077
<i>Haihan Feng, Shuguang Chu, Mingwei Lin, Dejun Li</i>	
Reinforcement Learning Based Joint Detection and Tracking of Target for Compact HFSWR	1082
<i>Xiaotong Li, Weifeng Sun, Yonggang Ji, Yongshou Dai, Weimin Huang</i>	
Wave Induced Vibration Energy Harvesting	1086
<i>Jane Nyokabi Njeri, Maurizio Collu, Andrea Coraddu, Andrea Cammarano</i>	
Linear Time Complexity Algorithms for Time Domain Simulations of the Structural Mechanical Behaviour of Submarine Power Cables in Offshore Wind Power Applications.....	1094
<i>Clemens Schütt, Christoph Otto, Sascha Kosleck, Patrick Mutschler, Manuela Sander, Henrich Quick</i>	
Adaptive Target Track Fusion Based on Track Quality Assessment for T/R - R Composite Compact HFSWR	1104
<i>Guangzheng Han, Weifeng Sun, Yonggang Ji, Yongshou Dai, Weimin Huang</i>	
Wave Induced Vibration Energy Harvesting	1108
<i>Jane Nyokabi Njeri, Maurizio Collu, Andrea Coraddu, Andrea Cammarano</i>	
Improved Space Clustering for Single-Carrier Underwater Acoustic Communications	1116
<i>Mingyuan Zhang, Jun Tao</i>	
Dynamically Feasible, Collision-Free Trajectories for Autonomous Marine Surface Vehicles.....	1121
<i>Thomas Fuller, May-Win Thein</i>	
Hydrodynamic Performance of an Oscillating Water Column with Inclined Walls and a Submerged Plate: A Numerical Study.....	1128
<i>Vasanthakumar S, Sa Sannasiraj, V Sundar</i>	
Situation Awareness Within Maritime Applications.....	1133
<i>Rasmus Hamré, Stephan Baumgart, Baran Curuklu, Mikael Ekström</i>	
Generalized Approach for Modeling and Control of Structurally Variable Underwater Vehicles	1141
<i>Erik Rentzow, Martin Kurowski, Torsten Jeinsch</i>	
On Real-Time Underwater Acoustic Communication with a Prototype Modem Implementation	1150
<i>Henry Dol, Koen Blom, Mathieu Colin</i>	
Experimental Approach on Structural Stability and Turbidity Propagation Around Landing Units in Deep-Sea Mining.....	1155
<i>Christoph Otto, Clemens Schütt, Christoph Strehse, Stephan Schacht, Sascha Kosleck</i>	
Arctic Sea Temperature Data: Comparative Decomposition Analysis with EEMD, CEEMDAN & VMD.....	1162
<i>Anthony Luby, Dhouha Kbaier, Mark Brandon</i>	
DVL Calibration Using Data-Driven Methods.....	1167
<i>Ze'ev Yampolsky, Itzik Klein</i>	
Predictive Disturbance Rejection Method to Control Vessels in Presence of Currents and Wind.....	1172
<i>Johannes R. Marx, Robert Damerius, Torsten Jeinsch</i>	

Integrated Navigation Based on HG-RNN and EKF for Autonomous Underwater Vehicle	1178
<i>Peng-Fei Lv, Jia Guo, Jun-Yi Lv, Bo He</i>	
Braids, Knots and Links: Investigating Dynamic Human Features as Geometric Proxies for Supervised Feature Extraction in Different Ocean Acoustic Applications	1183
<i>Ananya Sen Gupta, Andrew Christensen, Timothy Linhardt, Subhajit Khush Das, Ivars Kirsteins</i>	
Simulation Study of an Underwater Imaging Method Using a Moving Single Acoustic Vector Sensor and Acoustic Source	1188
<i>Shweta Yadav, Arun Kumar, Monika Agrawal</i>	
Dictionary-Based Spread-Spectrum Modulation for Covert Underwater Acoustic Communications.....	1195
<i>Aurélien Bonvard, François-Xavier Socheleau, Sébastien Houcke, Philippe Courmontagne</i>	
A Link Quality-Aware Adaptive MAC Protocol Based on Clustering for Underwater Acoustic Network	1200
<i>Shuting Yang, En Cheng, Keyu Chen, Wei Feng, Weinan Cao, Lvqingyun Xiao</i>	
Simulation of Climate Change Impact on Underwater Acoustic Transmission Loss	1207
<i>Konstantinos Pelekanakis, Alex Kondi, Aniello Russo, Sandro Carniel</i>	
Experimental and Numerical Study of Underwater Acoustic Scattering from Cylinder with Air Cavity	1212
<i>Kian-Meng Lim, Abhishek Ray Mohapatra, Ning Ma, Koon Meng Nyang, Chin Swee Chia, Bernard How, Benjamin Wong</i>	
Underwater MEMS Gyrocompassing: A Virtual Testing Ground	1215
<i>Daniel Engelsman, Itzik Klein</i>	
TGFish: A Temporal Graph Convolutional Network for Fishing Effort Distribution Prediction	1223
<i>Yufei Jiang, Yuqi Shi, Siyuan Lin, Feng Hong</i>	
Development of a Multiparameter Sensor Chip for In-Situ Marine Ecological Monitoring	1227
<i>Wei Cai, Yiming Yu, Xu Yao, Tingyi Zhang, Shangqi Diao, Yongshun Chen, Yi Li</i>	
Learning Seabed Properties and Sensitivities from Ship Noise Spectrograms.....	1231
<i>Michael C. Mortenson, Tracianne B. Neilsen, Mark K. Transtrum, David P. Knobles</i>	
Optimization Strategies for Sail Angles of Unmanned Sailboats Based on CFD and VPP	1239
<i>Hongde Qin, Yunmei Wang, Binxuan Qi, Yifan Xue, Xiaojian Cao, Zhongchao Deng</i>	
Slender Light Array Guidance for UUV Formation Keeping and Communication	1249
<i>Chenglong Xu, Yanjie Yang, Chengyu Yin, Peiying Huang, Guang Jia</i>	
Weakly-Supervised Physics-Informed Neural Networks with Hard Constraints for Sound Propagation Problems in Complex Environments *	1253
<i>Ruojun Xu, Xiang Pan</i>	
Experimental and Simulation Analysis on Impact of three-Dimensional Graphene Material Properties on Thermo-Acoustic Sound Generation	1259
<i>Wen Hao Li, Nelson Teck Chong Tan, Zhi Lin Ngoh, Jong Jen Yu, Y Y Tan, Edwin Hang Tong Teo</i>	

UBlueTec - Training Framework on Underwater Tecs as Key Enabler for Blue Careers Development	1266
<i>Fausto Ferreira, Kalliopi Baika, Jafar Anbar, Judith Gatt, Themistoklis Ioannidis, Madalin Silion, Loris Barbieri, Cátia Nunes, Wendy Lenarduzzi, Roberta Padovan</i>	
Path Planning for Unmanned Sailboats Using Improved Potential Field and A* Algorithm	1271
<i>Siju Yuan, Zhongben Zhu, Yifan Xue, Xiaokai Mu, Hongde Qin, Guiqiang Bai</i>	
Global Fast Terminal Sliding Mode Control for Underwater Manipulators Based on Extended State Observer Compensation	1278
<i>Ran Wang, Weiquan Huang, Yeqing Tang, Zongyu Zhang, Dongmei Bai, Yaru Lv</i>	
Human-Like Automatic Berthing System Based on Imitative Trajectory Plan and Tracking Control	1284
<i>Takefumi Higaki, Hiroki Nobe, Hirotada Hashimoto</i>	
Self-Prior Guided Diffusion Model for Marine Snow Removal.....	1289
<i>Haoru Zhao, Zhaorui Gu, Bing Zheng, Haiyong Zheng</i>	
Development and Demonstration Experiments of the HAMADORI Seaplane UAV.....	1296
<i>Shusaku Yamaura, Masanori Kyo, Yusuke Yokota, Hideto Shimizu, Tomonori Fujii, Kento Suzuki</i>	
Control of a Small Underwater Vehicle Manipulator System - A Highly Automated Pick and Place Experiment	1303
<i>Sven Lack, Erik Rentzow, Torsten Jeinsch</i>	
A Feasibility Study on Novel View Synthesis of Underwater Structures Using Neural Radiance Fields	1311
<i>Yuen Min Too, Hari Vishnu, Mandar Chitre, Bharath Kalyan, Luyuan Peng, Rajat Mishra</i>	
Study on the Degradation of Acoustic Waveforms Used for GNSS-A Observations	1316
<i>Yuto Yoshizumi, Yusuke Yokota, Tadashi Ishikawa, Koya Nagae, Shun-Ichi Watanabe, Yuto Nakamura, Kenji Kouno</i>	
Understanding AUV Formations Through Fluid Dynamics: Strategies for Enhanced Energetic Efficiency	1320
<i>Gen Li, Lei Duan, Ramiro Godoy-Diana, Benjamin Thiria, Dmitry Kolomenskiy</i>	
Towards Underwater Acoustic Communications for Swimmer and Diver Wearables	1325
<i>K. C. H. Blom, H. S. Dol, P. L. M. J. Van Neer, T. Schrama</i>	
Enhanced Kalman Equalization Via Channel Prediction for Single-Carrier MIMO Underwater Acoustic Communications.....	1332
<i>Kai Zhou, Jun Tao</i>	
HF Coastal Ocean Radar for Sustainable Development.....	1337
<i>Mal Heron, Thanh Huyen Tran, Jan Widera, Herman Peters, Roberto Gomez, Thomas Helzel, Pieter Dekker</i>	
Performance Evaluation of a Newly Developed Twin-Hybrid Autonomous Underwater Vehicle (THAUV) Using Integrated Airfoil and Elevator	1341
<i>Dongwook Jung, Hyeung-Sik Choi, Jiafeng Huang, Sung-Chae Lee, Tae-Hyo Cha, Joon-Young Kim</i>	
Improved ICM-DDQN Obstacle Avoidance Method for Unmanned Underwater Vehicle.....	1346
<i>Bo Zhong, Hongjian Wang, Zhao Wang, Wei Gao, Yutong Huang, Naifu Luo</i>	

Understanding the Mechanism and Variability of Chlorophyll a Concentration in the Waters Surrounding the Philippines	1356
<i>Angelo Benedict R. Ragunjan, Rizza Mae G. Ubado</i>	
Study on the Physical Changes of Structure I Methane Hydrate Under External Forces	1364
<i>Xianwu Jing, Li Zhou, Ziyi Fu, Houan Zhou</i>	
Flexible and Compact Animal-Borne Sensors for Ocean Observation.....	1368
<i>Zihong Wei, Hai Zhang, Yang Yang, Chengjing Shang, Tohru Sugahara, Shintaro Izumi</i>	
Improved Underwater Transparent Organism Detection Based on YOLOv8	1372
<i>Hongtao Li, Fengyue Guo, Jihua Wu, Peng Ren, Cai Luo</i>	
Forward-Looking Sonar Based Autonomous Aquaculture Inspection	1376
<i>Daniel Rosa, David Cabecinhas, Fausto Ferreira</i>	
OFDM Underwater Acoustic Communication Receiver Based on Deep Learning.....	1384
<i>Yang Chen, Pan Qiao, Xinmin Ren, Tianshun Han</i>	
Dual Use of High Frequency Radar for Ocean Remote Sensing and High-Speed Target Detection.....	1391
<i>Yingwei Tian, Gan Liu, Jiurui Zhao</i>	
A TDOA Method for Underwater Target Location Based on Particle Swarm Optimization with Experiment Verification.....	1395
<i>Zihao Zhou, Yang Shi, Long Yang, Ruolan Zhang</i>	
Underwater Vortex Source Localization Using an Artificial Lateral Line System with Differential Pressure and Velocity Sensors	1400
<i>Zheng Gong, Wenxiu Cao, Zhen Yang, Deyuan Zhang, Yueri Cai, Yonggang Jiang</i>	
SOUND: A Swarm of Low-Cost Floaters for Sustainable Fishing.....	1405
<i>Anja Babic, Martin Orec, Nikola Miškovic, Roee Diamant</i>	
A Novel Off-Grid DOA Estimation Approach Using Sparse Bayesian Learning.....	1410
<i>Jianbo Jiao, Xiang Pan</i>	
Novel Approach for Offshore Photovoltaic Panels Inspection with VTOL UAV.....	1415
<i>R. Morais, João J. Martins, P. Lima, A. Dias, A. Martins, J. Almeida, E. Silva</i>	
Analyzing and Classifying Fish Vocalization in the East China Sea Coastal Area.....	1421
<i>Wenbo Li, Ting Zhang, Yanlin Zhou, Wen Xu</i>	
Towards Low-Cost and Energy-Optimized Underwater Image Classification Based-On FPGA.....	1426
<i>Fenghui Huo, Yan Liu, Haiyong Zheng</i>	
Modelling and Analysis of Closed-Loop Depth Control for Underwater Glider - RoBuoy	1432
<i>Chandra Prabha G, Siddhant Panigrahi, Kailash Rs, Asokan Thondiyath</i>	
Fine-Tuning Neural Network Based Target Localization Using Sources of Opportunity	1438
<i>Sitian Wang, Ting Zhang, Wen Xu</i>	
Path Planning and Control for Remotely Operated Vehicles Focused on Autonomous Visual Inspection of Floating Offshore Wind Structure.....	1443
<i>Phillipe Santos, Edin Omerdic, Matheus Santos, Luke Fitzgerald, Cillian Fahy, H. Musselwhite-Veitch, Anthony Weir, Gerard Dooly, Daniel Toal</i>	

The JANUS Underwater Communications Standard: From Promulgation to Present	1449
<i>Roberto Petroccia, Joao Alves</i>	
Dynamic Analysis of the Magneto-Electro-Elastic Structures Using the Overlapping Finite Element Method	1458
<i>Zhilong Jiang, Yingbin Chai, Qiang Gui, Wei Li</i>	
Cooperative Navigation and Control of Multiple Autonomous Marine Vehicles Using Bimodal Acoustic/Optical Communication Networks.....	1463
<i>Miguel Bettencourt, David Cabecinhas, António Pascoal</i>	
Environment-Based Performance Optimization for Passive Sonar Network	1473
<i>Ye Wang, Zeyu Fang, Jianlong Li</i>	
Technology Requirements for Monitoring Reporting and Verification of Ocean Carbon Dioxide Removal	1479
<i>Justin E. Manley</i>	
Research on Acoustic Target Strength Based on Graphical Acoustic Computing Method.....	1485
<i>Ziyan Gu, Wei Li</i>	
Underwater Sound Source Range Estimation Based on Deep Learning	1491
<i>Yuchen Qu, Yiqian Huang, Xinmin Ren, Yang Chen, Tianshun Han</i>	
The Pareto Optimal Evasion Strategies in Reach-Avoid Differential Games Between Heterogeneous UUVs.....	1499
<i>Jinmu Tian, Shuang Huang, Hongjian Wang, Zhenwei Lu, Ling Chu, Xiansong Zha, Xinyu Wang, Bo Zhong, Zhikang Chi</i>	
Free-Rising Microstructure Profiler in Full-Water-Column of Ocean.....	1507
<i>Yuan-Zheng Lu, Ming-Quan Zhu, Shuang-Xi Guo, Sheng-Qi Zhou, Peng-Qi Huang, Guang-Hui Han, Guang Dong</i>	
Sonar SLAM in Structured Underwater Environments	1513
<i>Nicola Loi, Yan Zhi Tan, Eng Wei Goh, Marcelo H. Ang</i>	
Simulation of High-Speed Vessel Waves Based on 2D+t SPH Method	1523
<i>Yifei Wang, Wei Li</i>	
Acoustic Image Target Detection Method Based on the Fusion of RepVGG-ECA and YOLOv5	1530
<i>Zhikang Chi, Hongjian Wang, Yanhui Wei, Lihui Deng, Lei Wang, Xinyu Wang, Jinmu Tian, Bo Zhong, Zhao Wang</i>	
Economic Analysis of a Kuroshio Current Power Plant in Taiwan	1537
<i>Jenhwa Guo, Chen-Fen Huang, Lin-Ji Mu, Tien-En Ho, Sheng-Wei Huang, Edward Chen, Yu-Ting Hung</i>	
Doppler Frequency Components Separation from Range-Doppler Spectrum Using Shipboard Coherent Microwave Radar.....	1542
<i>Sitao Wu, Chen Zhao, Zezong Chen, Qinghui Xu</i>	
Achieving Time Diversity by Using Packet-Repetition Based Scheme in Translational Acoustic-RF Channels	1547
<i>Yujia He, Shaojian Yang, Jingyu Qian, Jingxuan Li, Minhao Zhang, Fengzhong Qu, Yan Wei</i>	
Comparing Different YOLO Versions for Boat Detection and Classification in Real Datasets	1553
<i>Ambre Correira, Fausto Ferreira, Nikola Miškovic</i>	

A Stable Chebyshev-Padé Rational Approximation of Parabolic Equation Models for Underwater Sound Field Computation.....	1557
<i>Zeyu Fang, Jianlong Li</i>	
Ocean Noise Field-Calibration Constraints for Deep Sea Mining.....	1563
<i>Luciano De Oliveira Júnior, Orlando C. Rodríguez, Sérgio M. Jesus</i>	
Cooperative Robotic Path Planning for Comprehensive Bridge Inspection with LiDAR Technology: Navigating Unknown Structures.....	1568
<i>Ben Bartlett, Matheus Santos, Marco Moreno, Sagar Dalai, Cillian Fahy, Alexander Dow, Hector Gonzalez, Petar Trslic, James Riordan, Edin Omerdic, Dan Toal, Gerard Dooly</i>	
Single-Photon LiDAR System Noise Modeling and Virtual Image Synthesis Technology for Sea Observation	1575
<i>Tian Rong, Chenxu Wang, Yí Lou, Yingchun Li, Jinlong Wang</i>	
Optimal Dam Release Requirements for Tenualosa Ilisha Fish Migration in the Narmada Estuary: A Numerical Modeling Approach	1580
<i>P. Vengadesan, S. A. Sannasiraj, Bhallamudi S. Murty</i>	
Developing Human-In-The-Loop Digital Twin for Offshore Operations with Working Class Remotely Operated Underwater Vehicle	1584
<i>Natko Kraševac, Zdravko Eškinja, Nikola Miškovic</i>	
Estimation of Time-Varying Underwater Acoustic Channel Via Dynamic Proximal Gradient Algorithm	1589
<i>Yunfeng Hu, Jun Tao</i>	
Design of Water-Ice Amphibious Vehicle for Under-Ice Observation.....	1594
<i>Xuwang Song, Zheng Zeng, Lian Lian</i>	
An Architecture for Virtual Tethering of ROVs.....	1600
<i>Rajat Mishra, Mandar Chitre, Bharath Kalyan, Yuen Min Too, Hari Vishnu, Luyuan Peng</i>	
Analysis of Southwest Monsoon Rainfall and High Precipitation Events in Luzon Philippines.....	1606
<i>Angelo Benedict R. Ragunjan, Maureen A. De Jesus, Shandy A. Domingo</i>	
Acoustic Metasurfaces-Assisted High-Data-Rate Underwater Communication with Ocean Dynamics.....	1613
<i>Ashwini H. Raghavendra, Sanjeev Gurugopinath, G. V. Anand</i>	
COLREG Compliant Collision Avoidance System for an Unmanned Surface Vehicle.....	1623
<i>Maksym Lysak, Guilherme Silva, Carlos Almeida, Alfredo Martins, José Almeida</i>	
Extracting Coherent Wavefronts from Ocean Ambient Noise Via Beamforming: Experimental Data Analysis	1629
<i>Tianyu Ma, Wen Xu, Ting Zhang</i>	
Nonlinear Control of a Grid-Connected Floating Offshore Wind Turbine Operated in Region II: A Comparative Analysis.....	1635
<i>Williams Ukaegbu Orji, Mohamed Assaad Hamida, Franck Plestan</i>	
Wave Excitation Force Estimation for Wave Energy Converters Using Square Root Unscented Kalman Filters	1643
<i>Abdin Y. Elamin, Addy Wahyudie, Tuanku Badzlin Hashfi</i>	

Mapping the Deepest Natural Underwater Cave	1648
<i>Eduardo Soares, Carlos Almeida, Bruno Matias, Ricardo Pereira, Denys Sytnyk, Pedro Silva, Tiago Pereira, Paula Lima, Alfredo Martins, José Almeida</i>	
A Novel Reactive Control Using Maximum Power Tracking for Wave Energy Converter.....	1654
<i>Tuanku Badzlin Hashfi, Addy Wahyudie, Abdin Y. Elamin</i>	
Impact of River Inputs on Sound Speed Structures in the Bay of Bengal.....	1660
<i>Sudip Jana, Avijit Gangopadhyay, Pierre F. J. Lermusiaux, Arun Chakraborty, Patrick J. Haley</i>	
Innovative Design of a Submersible Multimode High-Speed Unmanned Surface Vehicle.....	1666
<i>Jian Wang, Xiaofeng Liang, Jun Wang, Enhua Zhang, Xiashuang Wang</i>	
Underwater Data Mule Communication Between Autonomous Underwater Vehicle and Seafloor Platform.....	1673
<i>Yang Weng, Toshihiro Maki</i>	
Development of a Low-Cost Coastal Cabled Underwater Camera Observatory as Part of ANERIS Project: Preliminary Design and Results	1677
<i>Christopher Kaba, Giorgio Salvemini, Ivar Saksvik, Artur Zolich, Vahid Hassani, Alex Alcocer</i>	
A Demonstrator for Future Fiber-Optic Active SMART Repeaters.....	1682
<i>Nuno A. Cruz, António Silva, Friedrich Zabel, Bruno Ferreira, Sérgio M. Jesus, Marcos S. Martins, Eduardo Pereira, Tiago Matos, Ruben Viegas, João Rocha, João Faria</i>	
Hybrid ROV/AUV Underwater Robotic System for Safe and Robust Remote Operations	1688
<i>Ricardo Café, David Cabecinhas, António Pascoal</i>	
Soundscaping Using a Smart Cable Prototype off the Coast of Portugal	1694
<i>R. Duarte, F. Zabel, A. Silva, S. M. Jesus</i>	
Sediment Characterization Using Seabed Seismic Measurements	1700
<i>Gopu R Potty, James H Miller, Julien Bonnel Applied, Preston S Wilson, David Knobles Knobles</i>	
Experimental Application of FMCW AoPCB Radar Technology in Support of Maritime Autonomous Docking.....	1704
<i>Halie Murray-Davis, Andrew Bennett</i>	
Underwater Acoustic Target Recognition Via Combining Adaptive Line Enhancement and Deep Neural Network	1708
<i>Xueyang Yu, Cheng Chi, Shuqiu Li, Yu Li, Haining Huang, Guanqun Wang</i>	
Assessing the Potential of SMART Subsea Cables for Advanced Ocean Monitoring.....	1712
<i>Karen Renninger-Rojas, David Trossman, Cheryl Harrison, Bruce Howe, Patrick Heimbach, Mathew Goldberg</i>	
eDNA Survey in the Arctic with an Autonomous Underwater Vehicle	1723
<i>Alfredo Martins, Carlos Almeida, António Carneiro, Pedro Silva, Pedro Marques, Ana Paula Lima, José Miguel Almeida, Catarina Magalhães</i>	

Vulnerable Marine Ecosystems Survey Pilot Missions with EVA Hybrid AUV/ROV.....	1728
<i>Carlos Almeida, Alfredo Martins, Eduardo Soares, Bruno Matias, Pedro Silva, Ricardo Pereira, Denys Sytnyk, António Ferreira, Ana Paula Lima, Mariana R. Cunha, Sofia P. Ramalho, Clara F. Rodrigues, A. Miguel Piecho-Santos, Ivone Figueiredo, Marcos Rosa, José Almeida</i>	
Robotic Data Recovery from Seabed with Optical High-Bandwidth Communication from a Deep-Sea Lander.....	1735
<i>José Almeida, Eduardo Soares, Carlos Almeida, Bruno Matias, Ricardo Pereira, Denys Sytnyk, Pedro Silva, António Ferreira, Diogo Machado, Pedro Martins, Alfredo Martins</i>	
Energy-Balanced Clustering Protocols for Underwater Sensor Networks	1742
<i>Ruiqin Zhao, Chuangyuan Liu, Xiaohong Shen</i>	
Robotic Field Experiments for Critical Infrastructure Protection in the REPMUS 2023 Military Exercise	1746
<i>Alfredo Martins, Carlos Almeida, Ricardo Pereira, Denys Sytnyk, Eduardo Soares, Bruno Matias, Pedro André Peixoto, António Ferreira, Diogo Machado, José Almeida</i>	
Submarine Escape and Rescue Field Trials with Robotic Systems at the REPMUS 2023 Exercise	1752
<i>Ricardo Pereira, Carlos Almeida, Eduardo Soares, Pedro Silva, Bruno Matias, António Ferreira, Denys Sytnyk, Diogo Machado, Pedro Martins, Alfredo Martins, José Almeida</i>	
Cross-Layer-Based Opportunistic Routing for Underwater Acoustic-Optical Hybrid Networks.....	1757
<i>Xu Zhang, Ruiqin Zhao, Ning Li, Xiang Yi</i>	
Analysis of Underwater Coral Reef Health Using Neural Networks	1761
<i>K Vyshnav, R Sooryanarayanan, T Venkata Madhav</i>	
Estimating Target Depth for Deep-Sea Active Sonars Through Channel-Impulse-Response Matching.....	1767
<i>Chunhui Chen, Haining Ruang, Cheng Chi, Yu Li, Shenglong Jin</i>	
Azimuth Direction of Arrival Estimation Using Near-Surface Tilted Arrays in Deep-Sea Bottom-Bounce Area	1772
<i>Bo Zhang, Yu Li, Cheng Chi, Haining Huang, Guanqun Wang</i>	
Tank Experiment of Underwater Wall Climbing Platform to Inspect Steel Pipe Pile.....	1777
<i>Tsukasa Kita, Toshinari Tanaka</i>	
Overview and Performance Assessment of Different Multicarrier Waveforms for Wideband Underwater Acoustic Communication.....	1781
<i>Puja Dube, Brijesh Chander Pandey, Monika Agrawal</i>	
Development of Broadband Underwater Transducers and Arrays.....	1789
<i>L. C. Lim, X. Y. Xia, J. H. Koh, F. C. Lim, L. Wang</i>	
On the Observation of Water Bodies by Means of Compact Polarimetric Synthetic Aperture Radar Imagery.....	1793
<i>M. Migliaccio, M. Zahribanhesari, A. Buono, S. Cappa, M. Dabboor</i>	
Feature-Based Global Localization for Underwater Terrain Aided Navigation Using Bag of Words	1798
<i>Qianyi Zhang, Jinwhan Kim</i>	
Design and Experiments of a Low-Cost Small Remotely Operated Vehicle System Prototype.....	1804
<i>Zhanyuan Wang, Dapeng Jiang, Kai Li, Yi Fang, Chengfu Liu, Anji Li, Yuchen Liao, Jinjun Jia, Yanze Lu, Shaojiang Wang</i>	

3D Detection and Tracking of Mooring Lines of Floating Offshore Wind Turbines by Autonomous Underwater Vehicle	1811
<i>Sehwa Chun, Hiroki Yokohata, Masaki Ohashi, Kenji Ohkuma, Shouhei Ito, Shinichiro Hirabayashi, Toshihiro Maki</i>	
Channel Model for Massive MIMO Shallow Underwater Acoustic Communications	1818
<i>Thomas Chové, Pierre-Jean Bouvet, Christophe Laot, Nicolas Le Josse</i>	
Design, Simulation and Experimental Research on an Underwater Dredging Robot	1824
<i>Xu Zhang, Xinyang Li, Jian Fu, Baoheng Yao, Lian Lian, Yong Hu</i>	
Underwater Target Detection Based on Magnetic Gradient Tensor.....	1831
<i>Yipeng Meng, Xueting Zhang, Zhenlong Xu, Hao Li, Jiafeng Han, Guoqing Yang, Zefei Zhu, Fanzong Zeng</i>	
Cross-Medium Communication Combining Infrared Optical and Acoustic Waves	1837
<i>Jingyu Qian, Yujia He, Yanbing Fu, Jingxuan Li, Jiayi Su, Yi Lu, Fengzhong Qu, Yan Wei</i>	
Fractional Fourier Transform Based Channel Estimation in Underwater Acoustic Communications.....	1842
<i>Jeffrey Shao, Chenyang Zhang, Yixuan Xie, Deepak Mishra, Yue Rong, Peng Chen, Jinzhong Yuan</i>	
Investigation of Three-Dimensional Sound Field Horizontal Refraction in Heterogeneous Topography.....	1848
<i>Xiao Feng, Gexiang Li, Qingyin Wang, Cheng Chen, Kunde Yang</i>	
Design and Testing of an Amphibious Cycloidal Propeller Unmanned Underwater Vehicle.....	1853
<i>Jonathan Lephuoc, Chenliang Zhang, Cayden Brown, David Coleman, Moble Benedict</i>	
A Guidance Method for a Small Unmanned Surface Vehicle Wireless Charging	1863
<i>Chia-Cheng Hsu, Sheng-Wei Huang, Ho-Yueh Huang, Feng-Yeang Chung, Chi-Min Liao, Edward Chen, Jenhwa Guo</i>	
UPAD: A Large-Scale Passive Sonar Benchmark Dataset for Vessel Detection and Classification.....	1868
<i>John Fischer, Marko Orescanin</i>	
Development of Desktop-Size Marine Swarm Research Platform.....	1877
<i>Jinzhi Cai, Scott Mayberry, Huibo Zhang, Fumin Zhang</i>	
A Distributed “Any-Communication” Task Allocation Approach to Information-Based Planning Underwater	1883
<i>Shashank Swaminathan, Brian Williams</i>	
Segmentation of Multibeam Echosounder Bathymetry and Backscatter.....	1889
<i>Jeremy Paul Coffelt, Amos Smith, Niklas Conen, Peter Kampmann</i>	
Basic Study of Deep Learning Based Efficient Hermit Crabs Detection from Drone-Captured Images	1895
<i>Fan Zhao, Dianhan Xi, Yijia Chen, Bangzhang Ma, Yongying Liu, Jiaqi Wang, Katsunori Mizuno</i>	
Global Significant Wave Height Retrieval from Spaceborne GNSS-R Using Transformers	1900
<i>Xin Qiao, Weimin Huang</i>	
A Positioning Method Based on Path Control of Multiple Autonomous Underwater Vehicles.....	1904
<i>Tatsuya Furukawa, Takumi Matsuda</i>	

Robust Monocular Visual SLAM of Multiple Autonomous Underwater Vehicles Against the Keypoint Loss.....	1909
<i>Hiroki Hosoi, Takumi Matsuda</i>	
First and Second-Order Response Prediction of Deep and Ultra-Deepwater FPSO System.....	1914
<i>K. Sridhar, S. A. Sannasiraj, R. Sundaravadivelu</i>	
The Feasibility Assessment of Zero-Meter Isobaths Localization Using the UNet Architecture	1922
<i>Wei-Po Huang, Hsien-Yi Liao</i>	
On the Importance of Domain Knowledge for Real-Time Event Detection.....	1926
<i>Janina Schneider, Daniel Lukats, Elmar Berghöfer, Iring Paulenz, Lars Nolle, Frederic Stahl, Jochen Wollschläger</i>	
Design and Development of an Observational Network and Associated Technologies for Subsea Carbon Sequestration Site Assessments	1932
<i>A. Marouchos, D. Hughes, T. Ryan, A. Passmore, E. Van Ooijen, B. Tilbrook, P. De Boer, A. Filisetti, A. Ross, J. Myers</i>	
Informative Path Planning in Complex Marine Environments: Gap Imputation and Variance Minimization in Satellite Data.....	1933
<i>Diajeng Wulandari Atmojo, Christoph Manss, Janina Schneider, Oliver Zielinski</i>	
Passive Acoustic Environment in Kao-Ping Submarine Canyon at the Southwest of Taiwan	1943
<i>James Chen, Barry B. Ma, Ying-Jang Yang, Linus Chiu</i>	
Concept of an Autonomous In-Situ Sensor System for Monitoring Object Movements Caused by Sea Swells	1948
<i>Michael Wenrich, Helge Renkewitz, Sascha Kosleck</i>	
Performance Evaluation of INS Coarse Alignment Methods in Real Drift Conditions.....	1952
<i>Adriano Frutuoso, Felipe O. Silva, Ettore A. De Barros</i>	
A Study on the Algorithm for Measuring Sea Fog Intensity Using Real Sea Images and Its Performance Verification.....	1958
<i>Shinhyuk Hwang, Saeyong Park, Seunggyu Kim, Taeho Im</i>	
Wave Induced Vibration Energy Harvesting	1964
<i>Jane Nyokabi Njeri, Maurizio Collu, Andrea Coraddu, Andrea Cammarano</i>	
Flexible Biotag with a Kirigami-Inspired Design for Suppression of Crosstalk in Multimodal Sensing	1972
<i>Qipei He, Tianyu Sheng, Lu Wang, Yonggang Jiang</i>	
Application of Blue Whale Wave Gliders in Nearshore Areas	1976
<i>Huabin Mao, Yongfeng Qi, Yufeng Qin, Xing Wei</i>	
Development of a Triboelectric Nanogenerator Toward Self-Powered Ocean Observatory	1982
<i>Yang Yang, Yuan Chao Pan, Haonan Feng, Chang Xin Liu, Chenjing Shang, Chang Bao Han</i>	
Sand Textual Distribution on Cross-Shore Slope at Gyungpo Beach in Korea	1986
<i>Dongseob Song</i>	
Systematizing Rotor-Based Morphable Unmanned Aerial-Aquatic Vehicles Design: From Theory to Prototype	1990
<i>Dongyue Huang, Xuchen Liu, Minghao Dou, Ben M. Chen</i>	

Addressing the Climate Crisis on the Coastal Ecosystem Using the Agenda 2030 1999
Anthi Pournara, Fani Sakellariadou

Study on Hydrodynamics and Wake Structures of a Fast and Big Thunniform Fish Robot 2004
Phan Huy Nam Anh, Hyeung-Sik Choi, Chi-Woong Yoon, Ruochen Zhang, Dae Hyung Ji

Author Index