Limassol, Cyprus
9 – 16 November 2025

BREAKING THE SURFACE

17th INTERNATIONAL INTERDISCIPLINARY FIELD WORKSHOP OF MARITIME ROBOTICS AND APPLICATIONS

BTS MAP

1 **Entrance**

2 **Reception**

3 **Lecture room**
Panorama

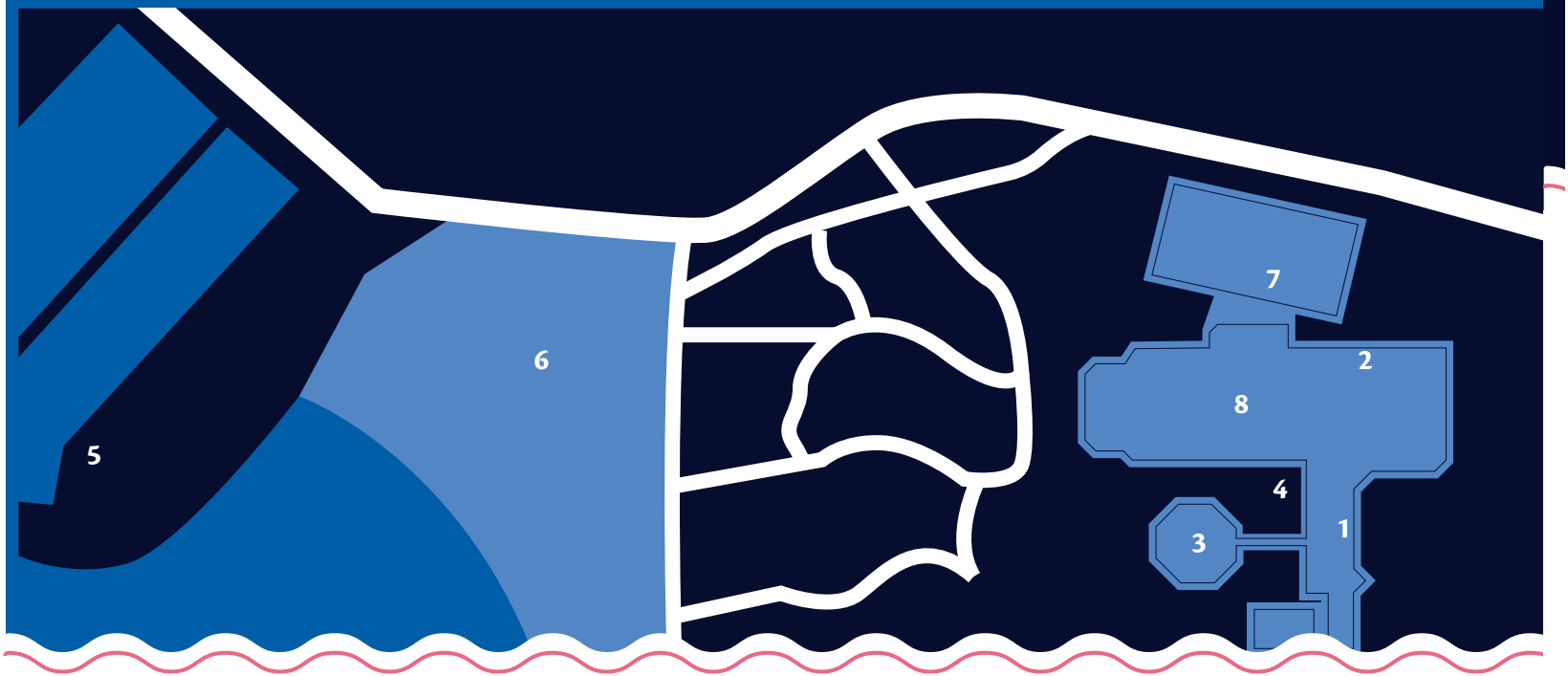
4 **Coffee Break**

5 **Demo site**
St. Raphael Marina

6 **Demo site**
St. Raphael Beach

7 **Lifts to meeting and tutorial rooms**
Atrium (Level 2), Phoenix (Level 1)

8 **Registration and stairs and lifts to restaurants/pool area/beach area**



ORGANIZED BY

University of Zagreb

Faculty of Electrical Engineering and Computing

Laboratory for Underwater Systems and Technologies

Center for Underwater Systems and Technologies

Cyprus Marine and Maritime Institute

Centre of Excellence in Maritime Robotics and Technologies for Sustainable Blue Economy

ABOUT BTS

The Breaking the Surface – BTS is an international interdisciplinary field workshop of maritime robotics and applications. Ever since 2009, it has served as a meeting place for international experts, university professors, scientists, industry representatives and students from various fields.

BTS 2024 IN NUMBERS

23 COUNTRIES

198 ATTENDEES

14 LECTURES

11 TUTORIALS

10 DEMOS

COMMITTEES

COMMITTEES CHAIRS

Prof. Zoran Vukić, PhD
Honorary General Chair

Prof. Nikola Mišković, PhD
General Chair

Ioannis Kyriakides, PhD
General Co-Chair

Prof. Roee Diamant, PhD
Programme Chair

Marina Loizidou
Organizing Committee Chair

Ana Golec
Organizing Committee Co-Chair

Christos Keleshis, PhD
Technical Committee Chair

Nadir Kapetanović, PhD
Technical Committee Co-Chair

PROGRAMME COMMITTEE

Ioannis Kyriakides; Asgeir Sorensen; Massimo Caccia; Fausto Ferreira; Bill Kirkwood; Nuno Cruz; Bridget Buxton; Gil Gambash; Irena Radić Rossi; Jeff Neasham

ORGANIZING COMMITTEE

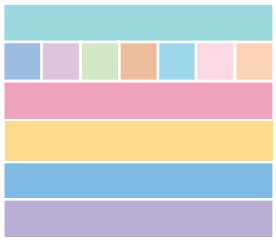
Marina Loizidou; Ana Golec; Stella Fyfe; Blanka Gott

TECHNICAL COMMITTEE

Christos Keleshis, PhD; Nadir Kapetanović, PhD; Igor Kvasić, PhD; Đula Nađ, PhD

LEGEND

SESSION COLOURS



- Lectures
- Tutorials
- Demonstrations
- Challenge
- Centre of Excellence
- Company programme

CATEGORIES

- Marine Robotics (MAROB)
- Maritime Archaeology (MARCH)
- Marine Biology (MARBIO)
- Marine Oceanography (MAROCEAN)
- Company Presentation

LOCATIONS

- **Lecture Room**
  All lectures and presentations
- **Beach / marina**
  Equipment demonstrations
- **Tutorial room**
  Tutorials
- **Pool**
  Tutorials
- **Phoenix Bar**
  Social events

	SUNDAY, 9.11.	MONDAY, 10.11.	TUESDAY, 11.11.
09:00 – 09:15		Opening session	Geophysical challenges in mapping ancient harbor systems: preliminary insights from the SHIPs project *Michael Lazar*
09:15 – 09:30		Smart buoy developments and technologies applied in Cyprus *Nikolas Flourentzou, Lefteris Economou*	
09:30 – 09:45			
09:45 – 10:00			Between Tradition and Innovation: Breaking the Surface in Underwater Cultural Heritage Management in Cyprus *Anna Demetriou Patsalidou*
10:00 – 10:15		Enabling Intelligent Multi-Modular Structures for Ocean Energy Harvesting *Dong Trong Nguyen*	
10:15 – 10:30			
10:30 – 10:45			COFFEE BREAK
10:45 – 11:00		COFFEE BREAK	
11:00 – 11:15			Maritime Data Analytics *Dimitris Zissis*
11:15 – 11:30		From Arctic Expeditions to Coastal Labs: Robotic Infrastructure for Marine Monitoring *Martin Ludvigsen*	
11:30 – 11:45			
11:45 – 12:00			The Mini Adaptive Sampling Test Run (MASTR) Experiment: Yucatan Channel (2024-2025) *Steven F. DiMarco*
12:00 – 12:15		Monitoring the Mobility of Sea Turtles in Video Footage *Marko Barisic*	
12:15 – 12:30			
12:30 – 12:45		Automated Detection of Sperm Whale Clicks Under Interference from Noise Transient *Meisam Jahanshahi*	
12:45 – 13:45		LUNCH	LUNCH
13:45 – 14:00			Demonstrations / Challenge
14:00 – 14:15		Demonstrations	
14:15 – 14:30			
14:30 – 14:45			
14:45 – 15:00			
15:00 – 15:15			
15:15 – 15:30			Tutorial 2 Intro: Marine Policy and Co-Management in Marine Protected Areas – Through Serious Play *Barbara Čolić, Hrvoje Čižmek*
15:30 – 15:45		Tutorial 1 Intro: Underwater Noise Maps – a demonstration of the HARMONI-SN webtool and tutorial of practical acoustic measurements *Mark Shipton*	
15:45 – 16:00			
16:00 – 16:15			Tutorial 3 Intro: Subsea Object Recovery with a ROV in the MARUS Simulator *Natko Kraševac*
16:15 – 16:30			
16:30 – 16:45		Robotic Navigation Challenge Introduction	
16:45 – 17:00			
17:00 – 17:15	REGISTRATION		Tutorial 2 hands-on *Group 1* / Tutorial 3 hands-on *Group 2*
17:15 – 17:30		Robotic Navigation Challenge hands-on *Group 1* / Tutorial 1 hands-on *Group 2*	
17:30 – 17:45			
17:45 – 18:00			
18:00 – 18:15			Tutorial 2 hands-on *Group 2* / Tutorial 3 hands-on *Group 1*
18:15 – 18:30		Robotic Navigation Challenge hands-on *Group 2* / Tutorial 1 hands-on *Group 1*	
18:30 – 18:45			
18:45 – 19:00	WELCOME DRINK		
19:00 – 19:15			
19:15 – 19:30			
19:30 – 20:30	DINNER	DINNER	DINNER

WEDNESDAY, 12.11.	THURSDAY, 13.11.	FRIDAY, 14.11.	SATURDAY, 15.11.
Sustainability Robotics – Lifelike robots for Environmental Sensing *Mirko Kovac*	**Introduction on the Centres of Excellence**	**Unfolding the Marine Protected Areas in the Republic of Cyprus** *Maria Christou*	
	Intro CMMI		
	Intro MARBLE		
Amphibious Data: Sensing and Robotics Where Land Meets Water *Maarja Kruusmaa*	**Intro INESC TEC OCEAN**	**Understanding and monitoring the effects of stressors on shallow water habitats** *Louis Hadjioannou*	
	Panel Discussion		
COFFEE BREAK		**COFFEE BREAK**	
Mapping Seascapes – a top to bottom approach *Dimitris Poursanidis*	**COFFEE BREAK**	**Fuelink: Where Digitalization Meets Decarbonization in Marine Fuel Procurement** *Konstantin Bronetskiy*	
	Company presentation: Nortek AS *Kristian Sem, Cristobal Molina*		
From Passion to Action: Building Opportunities in Marine Conservation *Carlo Cerrano*		**How deep we can understand biology without biology** *Sandi Orlić*	
	LUNCH		
LUNCH		**LUNCH**	
	Demonstrations / **Challenge**		**FIELD TRIP**
Tutorial 4 Intro: Microplastics Detection *Giannis Loizides, Maria-Christina Constantinouli*		**Challenge presentation**	
Tutorial 4 hands-on *Group 1 and 2*	**Centre of Excellence CMMI**	**Tutorial 6 Intro: The Climarest Marine Restoration Digital Toolbox: An Online Decision-Support Platform** *Lara Veylit, Antonio Vasiljevic, Hassan Elkholy*	
Demonstrations / **Challenge**	**Centre of Excellence MARBLE**	**Tutorial 7 Intro: Rapid Integration Loop via Simulation: Underwater Docking** *Gabriele Kasparaviciute, Ambjørn Waldum*	
		Tutorial 6 hands-on *Group 1* / **Tutorial 7 hands-on** *Group 2*	
Tutorial 5 Intro: The Need for Speed! Enjoying the Thrill of Autonomous Guidance *Marco Bibuli*	**Centre of Excellence INESC TEC OCEAN**		
Tutorial 5 hands-on *Group 1 and 2*		**Tutorial 6 hands-on** *Group 2* / **Tutorial 7 hands-on** *Group 1*	
DINNER	**DINNER**	**CLOSING CEREMONY**	

SOCIAL EVENTS

9.11.
Sunday, 16:30 – 18:00
Hotel Lobby
REGISTRATION

9.11.
Sunday, 18:00 – 19:30
Hotel Lobby
WELCOME DRINKS

10.11.
Monday, from 20:30
Phoenix
IEEE PARTY

11.11.
Tuesday, from 20:30
Phoenix
CULTURE EVENT - POTTERY EXPERIENCE

13.11.
Thursday, 20:30 – 21:30
Hotel Restaurant (Palladium)
CYPRUS NIGHT

13.11.
Thursday, from 21:30
Phoenix
PUB QUIZ

14.11.
Friday, 19:30 – 21:00
Panorama Main Lecture Room
CLOSING CEREMONY AND GALA DINNER

14.11.
Friday, from 21:00
Panorama Main Lecture Room
BTS KARAOKE NIGHT

15.11.
Saturday, 09:00 – 17:00
FIELD TRIP

LOCATION

St. Raphael Resort and Marina
Amathus Avenue 502
4534, Pyrgos, Limassol
Cyprus

VENUE

BTS 2025 is taking place in St. Raphael Resort and Marina in Limassol, Cyprus.

REGISTRATION

The registration package includes :

- accreditation
- access to all technical programs (lectures, tutorials, demos, workshops)
- access to our social program: coffee breaks, social events, gala dinner on Friday evening, field trip on Saturday

A corporate registration includes:

- 2 accreditations
- access to all technical programs (lectures, tutorials, demos, workshops)
- access to our social program: coffee breaks, social events, gala dinner on Friday evening, field trip on Saturday
- a 30 min time-slot for the presentation of the product gamut
- logistical / infrastructural local support and organization collaboration for an expo / hands-on demonstration activity at the prescribed site

TYPE	EARLY BIRD BY 31ST AUGUST	REGULAR BY 26TH OCTOBER
Student	free	free
Standard	300 €	380 €
Corporate	2000 €	2500 €

Lectures

Smart Buoy Developments And Technologies Applied In Cyprus

Nikolas Flourentzou, Lefteris Economou, SignalGeneriX Ltd., Cyprus

Climate and environmental blind spots of sea water raised an alarm decades ago. Although sea monitoring started years ago, the information was not sufficient to allow sea status, evaluation of climate change, early warnings for water contamination or other marine hazards, and sustainable resource management. The advancements in underwater sensor technologies, wireless communication systems, and data analytics platforms have recently given us the opportunity to develop smart buoys to address the aforementioned challenges. Smart buoys are transforming the way we observe and understand the ocean by providing near real-time information of areas far from the coast. Smart buoy technologies represent the evolvement of several disciplines, such as ocean engineering, environmental monitoring, and innovation of electronics and digital technologies. Some of the remarkable technological achievement for smart buoys are the uninterrupted wireless communication, energy autonomy through solar systems, and integration of edge computing for onboard processing of data, energy management, and alerting system. The applications span diverse sectors, including climate research, aquaculture management, coastal protection, maritime safety, and decision-making supporting processes with reliable and accurate data. The lecture focus on completed smart buoys deployed in Cyprus. It includes details of smart buoys for monitoring the physical and chemical parameters to identify the metocean changes, for measuring chemical and biological parameters that observe the biodiversity or may harm the ecosystem, and for evaluating seawater currents and waves for preventing erosion or graduate damage to underwater structures.

Nikolas Flourentzou *is an accomplished expert in power electronics for electrical power systems, blending extensive project management experience in interdisciplinary projects with a profound research background. He received a PhD in Power Engineering, MSc in Power Electronics and Drives, and BEng in Electronic and Communication Engineering. He is currently a senior research engineer and project manager at SignalGeneriX Ltd. Previously, he worked as a senior associate scientist at the Cyprus Marine and Maritime Institute, a post-doctoral research fellow at KIOS CoE of the University of Cyprus, and maintenance and commissioning engineer at Digicom Ltd. Nikolas was bestowed the First Prize in the ElectricaAwards2010 International Innovation contest for the future of electricity networks by AREVA T&D (former ALSTOM Grid and now known as General Electric Grid Solutions) and the Best Paper Award at the 8th international conference on Power Electronics and Drive Systems (IEEE PEDS'09). His fields of interest are High-Voltage DC Power Transmission Systems, Electric Vehicle Chargers, IoT integration, Marine Engineering, and Renewable Energy. His research expertise includes Critical Infrastructure Protection, Cyber-Physical Systems, Voltage-Source Converter topologies, Selective-Harmonic Elimination PWM methods, and Power Electronics for Electrical Power Systems.*

10.11.2025
09:15 – 10:00
MAROB
Nikolas Florentzou
Lefteris Economou

Dr. Lefteris Economou *received the BEng degree and his PhD from the department of Electrical and Electronic engineering, from the University of Manchester Institute of science and Technology (UMIST) UK in 1995 and 1998 respectively. From 1998 until 2001 he worked at UMIST as a post doctorate research associate in the field of HF Spectral Occupancy. From 2001 to 2014 he worked as an assistant professor in the Computer Science department of Intercollege Cyprus. In 2015 he joined SignalGeneriX as a senior research engineer and since 2021 he is the company's research program manager. His duties include among others technical development and management of projects involving localisation and communication technologies. Dr. Economou has numerous journal and conference publications mainly in the field of Signal Processing and Digital Communications.*

Enabling Intelligent Multi-Modular Structures For Ocean Energy Harvesting

Dong Trong Nguyen, Department of Marine Technology, NTNU, Norway

Offshore solar platforms offer a promising solution by utilizing abundant areas available at sea, but their high cost and harsh conditions can be a challenge. This lecture presents a novel idea of creating intelligent multi-modular offshore platforms designed to harvest solar energy. While the multi-modular design allows for covering vast ocean areas, it also introduces complexities related to potential high load at the connectors and wake effects. The key innovation lies in investigating active control of structural dynamics by using the connection points as actuators, allowing the platform dynamic to adapt to changing sea states, mitigating the risk of resonances. By adjusting the stiffness of the connectors, the platform's natural frequencies can be shifted away from dominant excitation frequencies. This lecture covers four main areas, under development at the department of Marine Technology, NTNU: (1) the conceptual modelling of intelligent multi-modular structures, (2) preliminary simulation and experimental results validating the feasibility of adaptive connectors, (3) the smart material potential for controllable stiffness at connectors, and (4) the exploration of control algorithms for optimal performance. The research aims to support next-generation and cost-efficient offshore solar energy platforms, contributing to the transition to renewable energy on a global scale.

10.11.2025
10:00 – 10:45
MAROB
Dong Trong Nguyen

Prof. Dong Trong Nguyen *brings over 20 years of experience in digitalisation and sustainable ocean-based industries at NTNU's Department of Marine Technology. His expertise spans renewable energy, marine cybernetics, green shipping, and digital twin. His research interests integrate structures, control systems, and smart materials to drive innovation in green ocean industries. He has designed interdisciplinary courses at NTNU and authored 13 journal papers and 30 conference papers on marine robotics, dynamic positioning, renewable energy, and digital twin.*

From Arctic Expeditions To Coastal Labs: Robotic Infrastructure For Marine Monitoring

Martin Ludvigsen, Norwegian University of Science and Technology (NTNU), Norway

The impact from research in marine robotics emerges in innovative implementations in joint projects combing science and technology. To challenge the knowledge fronts, development of tools and methods beyond the state-of-the-art are often necessary. Through the Nansen Legacy project, robotics and autonomy have been developed to map and monitor the physical and biological conditions in the Arctic. To address the sampling problem – approaches to adaptive mission planning for AUVs have been developed. Both physical process studies in the Polar Front region and primary production have been investigated using data-driven and onboard planning for AUVs. This work has paved the way for collaborative and adaptive robotic missions taking advantage of communication to enable Remote Operating Centres (ROCs) in the project SFI Harvest. The distribution and density of zooplankton are the objectives of the project. The ROC operation, enabled by efficient communication channels, enables USV and AUV operators to be collocated increasing communication and cognitive capacity of both operators and researchers. USV, wavegliders and AUVs can hence cooperate on data driven and adaptive missions, controlled from the ROC more than 100 km away. To develop technology that can be brought to this kind multidisciplinary operation requires a strong infrastructure that is sufficiently flexible to allow deployment of new and unique solutions, while being sufficiently mature to work reliably in the field. Fjordlab will build on the Applied Underwater Robotics Laboratory and be a national field laboratory, jointly operated by NTNU and SINTEF. It is designed to accelerate innovation in marine autonomy, robotics, ocean observation, and sustainable aquaculture.

10.11.2025
11:15 – 12:00
MAROCEAN
Martin Ludvigsen

Martin Ludvigsen *is a Professor at the Department of Marine Technology, and his research interests cover underwater robotics and its applications with a focus on perception and autonomy. Ludvigsen has extensive at-sea experience and has been involved in research projects in deep sea, in the upper water column, and the Arctic deploying robotic underwater vehicles. He is co-founder and manager of the Applied Underwater Robotics Laboratory (AUR-Lab) at NTNU, Trondheim, Norway. AUR-Lab is a platform for multidisciplinary marine research at NTNU, facilitating research within both engineering disciplines and marine science by providing ROV, AUV and USV operations.*

Monitoring the Mobility of Sea Turtles in Video Footage

Marko Barišić, University of Zagreb Faculty of Electrical Engineering and Computing, Croatia

Monitoring the behavior of marine fauna in captivity is an efficient method for understanding the impact of anthropogenic activities as well as exploring behavioral indicators. Sea turtles, which are migratory animals, are particularly difficult to track in-situ and efforts to understand their physiology and behavior are mostly conducted in captivity. A particular interest is to study the dose–response relationship of stress in sea turtles through monitoring their activity over time. An efficient, non-invasive approach for this is behavioral analysis through the processing of video footage of sea turtles to detect changes in their dynamics. However, video recordings produce large files that are impossible to process manually, and their analysis requires the application of automatic pattern recognition and classification techniques. In this research, we present a classification model for monitoring the behavior of a single sea turtle in a rehabilitation water tank. Our method detects breathing events when the sea turtle raises its head above the water level, thus identifying excessive breathing which is an indicator of stress: the so-called fight-or-flight response. Our processing is based on the ResNet model, pre-trained for image classification with training for the top two layers. Training and testing was performed on video footage from two cameras overlooking the sea turtles. Through manual tagging, we identified 500 instances where the turtle's head was above the water level. The results show an accurate and robust detection ability. The model will be used in a research project to test the stress response of sea turtles to shipping noise disturbance.

Marko Barišić *is a is a researcher and PhD student at the Faculty of Electrical Engineering and Computing, University of Zagreb. His work focuses on applying computer vision and machine learning to marine robotics, with current research centered on monitoring sea turtle behavior and motion characterization. He previously worked on multimodal fish size estimation and sensitive data detection using deep learning. Marko's interdisciplinary approach bridges AI, ecology, and robotics to enhance marine research and conservation.*

10.11.2025
12:00 – 12:45
MARBIO
Marko Barišić

Automated Detection of Sperm Whale Clicks Under Interference from Noise Transient

Meisam Jahanshahi Zeitouni, University of Zagreb Faculty of Electrical Engineering and Computing, Croatia

Sperm whales produce powerful and broadband echolocation clicks that serve as their primary means of communication and prey localization in deep ocean environments. Passive Acoustic Monitoring (PAM) systems provide a non-invasive approach to study these animals by detecting and analyzing their clicks over long temporal and spatial scales. However, accurate click detection is often hindered by both natural and anthropogenic noise transient sources that overlap with sperm whale clicks in the time and frequency domains. Such overlap leads to high false detection rates and reduced system reliability. In this study, we propose a novel PAM-based detection method that leverages the impulsive characteristics of sperm whale clicks to separate them from noise transients. It begins with the estimation of a click model derived from 3000 manually verified clicks. Then, we design a custom wavelet specifically matching the temporal and spectral structure of the estimated click model. Acoustic recordings are then decomposed using this tailored wavelet and then reconstructed under optimized wavelet settings to enhance impulsive components. This reconstruction efficiently preserves click energy while attenuating Gaussian background noise and suppressing strong noise transient events. Performance evaluation is conducted using Receiver Operating Characteristic (ROC) analysis to assess the trade-off between true and false positive detection probabilities under varying signal-to-noise ratios (SNRs). The evaluation utilizes several datasets: 25,000 manually annotated clicks from Dominica Island recordings, 3.5 hours of Dominica noise-only data, a 3.6-hour subset of seven months of Mediterranean Sea recordings contains manually verified noise transients, and synthetic datasets as additive Gaussian noise and noise transients. Compared with the Teager–Kaiser Energy Operator (TKEO) benchmark, our method demonstrates superior robustness, achieving a more favorable balance between probability of true positive and false positive detections across all SNR levels and consistent behavior across geographically distinct noise environments in terms of false alarm rate.

10.11.2025
12:00 – 12:45
MARBIO
Meisam Jahanshahi Zeitouni

Meisam Jahanshahi Zeitouni *received his bachelor's degree in electrical engineering, specializing in Telecommunication Networks, from Sistan and Balouchestan University, Zahedan, Iran, in 2012. He went on to earn his master's degree in electrical engineering with a focus on Telecommunication Systems from Shiraz University of Technology, Shiraz, Iran, in 2015. His master's research primarily centered on Radar Signal Processing. Currently, Meisam is pursuing his Ph.D. at the Faculty of Electrical Engineering and Computing – University of Zagreb, where his research focuses on developing enabling techniques for the monitoring of marine biofauna. His academic interests include signal processing, remote sensing, and the application of advanced technologies for environmental monitoring and marine research.*

Geophysical Challenges In Mapping Ancient Harbor Systems: Preliminary Insights From The Ships Project

Michael Lazar, Department of Marine Geosciences, Charney School of Marine Sciences, University of Haifa, Israel

Geophysical methods have become standard in archaeology due to the non-destructive manner in which information from the subsurface is obtained. Large areas can be mapped quickly, without the need to dig and "hope for the best". Coastal areas, often rich in archaeological and historical significance, present a unique, yet difficult environment for applying such methods. The SHiPs project sets out to redefine ancient harbor archaeology by conceptualizing these sites as dynamic systems rather than static architectural entities. This paradigm shift expands the scope of investigation beyond monumental structures to include bays, beaches, river mouths, and mooring zones—areas often overlooked in traditional studies. This broader perspective presents significant challenges for land and marine geophysical surveys. Mapping a port system in its entirety requires integrating diverse environments—submerged, intertidal, and terrestrial, each with unique constraints. SHiPs employs a suite of geophysical techniques to tackle these issues and applies them across three case studies: Caesarea (Israel), Terracina (Italy), and Port-Vendres (France). Key challenges include differentiating anthropogenic features from natural sedimentary structures in complex coastal stratigraphy; detecting small-scale anomalies such as iron anchors in shallow waters; correlating geophysical data with sediment cores to reconstruct paleo-environmental conditions and harbor usage over time; adapting survey strategies to variable salinity, moisture, and urban overburden in coastal zones. This presentation will outline the methodological framework developed by the SHiPs team, discuss preliminary results, and reflect on the potential of geophysics to transform our understanding of ancient maritime infrastructure.

11.11.2025
09:00 – 09:45
MARCH
Michael Lazar

Michael Lazar; *I am a professor of marine geophysics, co-founder of the Dr. Moses Strauss Department of Marine Geosciences at the University of Haifa, Israel and Head of the Laboratory for Applied Geophysics. My work revolves around examination of the shallow subsurface through high-resolution geophysical methods to detect, analyze and interpret Holocene-recent effects of tectonics and geology on the environment and on human populations. I am interested not only in how natural geological processes shaped human settlement patterns in the past (tsunamis, sea level rise, etc), but also how ancient settlers shaped their natural environment and in doing so, changed geological process (quarrying stone along the coast increased coastal erosion and created beaches where there were none; redirecting river patterns; etc.). I am also a professional multidisciplinary artist bridging the gap between science and art while making science more accessible to various communities. Over the last few years, along with my scientific courses, I have also begun to teach to courses – "Sound and Environment in Arts and Science" uses sound as a way to explore scientific and artistic concepts; "An Interdisciplinary Approach to Environmental Problems (or Climate Change for Artists)", provides*

students of the arts with the basic scientific background on environmental change they need to deepen their artistic research. In 2021, I co-curated an online artistic exhibition at COP-26 together with the UN's Race to Zero (entitled Echoes of the Future). Since 2022, I have organized and co-chaired a special session at the European Geosciences Union (EGU) annual meeting on the art-science interface, and am currently guest editor for a special collection of papers on the topic in Cell Press's prestigious journal iScience.

Between Tradition And Innovation: Breaking The Surface In Underwater Cultural Heritage Management In Cyprus

Anna Demetriou Patsalidou, Cyprus Marine and Maritime Institute (CMMI), Cyprus

New technologies have been closely linked with the development of underwater archaeology since its very beginnings. Advances in exploring what lies beneath the seabed and in mapping underwater sites provided the means to overcome the limitations imposed by the aquatic environment on the study and documentation of underwater remains. Cyprus has long served as a testing ground for new technologies in maritime archaeology, from Jeremy Green's pioneering surveys at Cape Andreas in the late 1960s to more recent applications aimed at improving the documentation and interpretation of underwater sites. Today, Cypriot institutions are investing in equipment, training, and expertise to further explore the potential of marine robotics and advanced sensing technologies in the field. This presentation will provide a historical overview of the use of technological developments in underwater archaeological research in Cyprus. With the aim of examining how new and emerging technologies are reshaping the field, special emphasis will be placed on contemporary initiatives. The objective is to highlight that, at the intersection of new technologies and traditional research methods, interdisciplinary approaches in underwater archaeology can "break the surface" in the management of underwater cultural heritage by introducing an integrated framework for its protection, preservation, study and promotion.

Anna Demetriou Patsalidou *received her BA degree in History and Archaeology from the Aristotle University of Thessaloniki (Greece) and her MA in the Management of Archaeological Sites, at the University College of London (United Kingdom). In 2019 she was awarded her doctoral title by the University of Cyprus which focused on the examination of ancient shipwrecks as places of interaction and engagements in contemporary society. She continued her studies in the field at a Post-doctoral level at the University of Cyprus with the project SHARE: "Mapping SHipwreck ARchaeologies in the Eastern Mediterranean: the sites, the people, and the environment" which focused on investigating the history*

11.11.2025
09:45 – 10:30
MARCH
Anna Demetriou Patsalidou

of the development of shipwreck archaeological practice in the wider eastern Mediterranean. Since 2008 Anna has been actively involved in the maritime archaeological field in Cyprus: as the Executive Director of Thetis Foundation (2008-2012), as Research Assistant at the Maritime Archaeological Research Laboratory (MARELab) of the University of Cyprus (2013-2014), and since 2015 through her participation in research projects of the MARELab. In this framework she has been involved in the different aspects of the field: underwater archaeological surveys and excavations, museum exhibitions, as well as public archaeology and archaeological ethnographic projects. Since 2022 she has joined the CMMI; in this framework her work was expanded to include the monitoring and preservation of maritime antiquities from the effects of climate change, as well as participation in interdisciplinary projects related to the study, management, and promotion of maritime heritage. Anna's main research interests focus on maritime archaeology, shipwreck archaeology, archaeological ethnography, public archaeology and the perception and use of antiquity in contemporary society.

Maritime Data Analytics

Dimitris Zissis, University of Aegean, Greece

As the maritime industry accelerates its digital transformation, data analytics has emerged as a key enabler for operational efficiency, safety, and sustainability. This talk explores the evolving landscape of Maritime Data Analytics, drawing on practical experience and research at the intersection of industry, technology, and policy. We will examine the integration of heterogeneous data sources—ranging from AIS and sensor telemetry to satellite imagery and weather models—and how these inform real-time decision-making in modern fleet operations. Particular emphasis will be placed on the role of AI and machine learning in supporting predictive maintenance, anomaly detection, and dynamic routing, as well as on the growing relevance of autonomous vessels and the data infrastructure required to support them. The session will reflect on key lessons learnt from deploying large-scale analytics solutions in maritime environments, including issues of data reliability, system scalability, and human–machine collaboration. In parallel, it will highlight emerging challenges such as privacy-preserving computation, edge analytics, explainability, and the need for shared data frameworks across actors in the maritime domain. Participants will gain insights into how maritime analytics is reshaping the industry—and what technological, organizational, and regulatory shifts are still needed to unlock its full potential, particularly in the era of intelligent and autonomous maritime systems.

11.11.2025
11:00 – 11:45
MAROCEAN
Dimitris Zissis

Dimitris Zissis *is a Full Professor of Information and Communication Systems at the Department of Product and Systems Design Engineering, University of the Aegean, Greece. He serves as Head of the Intelligent Transportation Systems Laboratory and Director of the MSc Programme in "Autonomous Systems". He currently represents Greece as National Delegate to the Horizon Europe Programme Committee (Cluster 4: Digital, Industry and Space). He has also served as an appointed member of two High-Level Expert Groups of the European Commission: the "Business-to-Government Data Sharing" group and the "Facilitating the use of new data sources for official statistics" group. His professional background includes executive roles in the deep tech sector, most notably as a member of the founding team and leadership board of MarineTraffic.com. His research interests include Information and Communication Systems, Big Data, Artificial Intelligence, and Machine Learning. He has authored more than 120 scientific publications, and his work has attracted over 5,000 citations, with several articles being highly cited in the fields of maritime informatics and data-driven innovation.*

The Mini Adaptive Sampling Test Run (MASTR) Experiment: Yucatan Channel (2024-2025)

Steven F. DiMarco, Geochemical and Environmental Research Group, Texas A&M University, USA

The international MASTR (Mini-Adaptive Sampling Test-Run) Experiment (funded by US National Academies of Science – UGOS Program) simultaneously deployed multiple autonomous measurement platforms (i.e., ocean buoyancy gliders, subsurface floats, surface drifters), moorings, aircraft, and high-frequency coastal radar in the deepwater south-eastern Gulf of México and western Caribbean Sea. The principal motivation of the 2024-2025 experiment was for end-to-end data flow demonstration (simultaneous collection to dissemination) of multiple observing platforms located in multiple exclusive economic zones (Mexico, Cuba, US). The complexity of the four-dimensional structure of the Loop Current system and the spatial and temporal evolution of the circulation is revealed as the combined response to multiple forcings including topographic, tidal, geostrophic, ageostrophic, and wind forcing. Many of the near real time observations were assimilated into government, industry, and academic forecast models, with the larger dataset used in a broad range of model validation studies by academics and industry. Of value was the development of adaptive sampling tools to provide autonomous vehicle (e.g., ocean buoyancy glider and airborne assets) pilots near real-time guidance using ensemble-based uncertainty maps to identify target regions where glider data would be most useful. Another product, glider reachability maps, was similarly developed to forecast the envelope of locations a glider could reach based on the glider flight characteristics and key members of the ensemble. The tools of combined uncertainty and reachability maps as piloting aides of mobile platforms under environmental stresses are assessed in the context of optimization of trajectories.

11.11.2025
11:45 – 12:30
MAROCEAN
Steven F. DiMarco

Dr. Steven F. DiMarco *is a Professor in the Department of Oceanography and the Department of Ocean Engineering and is Director of the Geochemical and Environmental Research Group at Texas A&M University. He was elected Fellow of the Marine Technology Society (MTS) in 2020. His research specializes in the interactions of physical and biogeochemical processes of the coastal and deep ocean. He has served as Chief Scientist on 37 oceanographic cruises. He has served as a Plank Owner Member (2010-2017) of the National Science Foundation University-National Oceanographic Laboratory System (UNOLS) Ocean Observing Science Committee (OOSC); he also served on the National Academy of Science, Engineering, and Medicine Committee to Advance the Understanding of the Gulf of Mexico Loop Current (2017). He currently is Principal Investigator the Texas Automated Buoy System (TABS), a real-time ocean observing network in the western Gulf of Mexico, which includes moored, shipboard, hi-frequency radar, and autonomous vehicles (principally funded by the Texas General Land Office – Oil Spill Division). From 2003-2018, he led a large group of Principal investigators from seven institutions that investigated the processes that lead to and sustain the hypoxic region of the northern Gulf of Mexico (http://mchatlas.tamu.edu; NOAA-funded). From 2007-2014, he led a research group investigating the circulation characteristics of the northwestern Indian Ocean and Sea of Oman (funded through the Sultanate of Oman). He was Co-PI and Executive Committee Member of the Gulf Integrated Spill Research Consortium funded by the Gulf of Mexico Research Initiative. DiMarco received his PhD from the University of Texas at Dallas (Physics, 1991). ORCID: 0000-0002-4394-9094*

Sustainability Robotics – Lifelike Robots For Environmental Sensing

Mirko Kovac, Swiss Federal Laboratories for Materials Science and Technology (Empa),
Swiss Federal Institute of Technology in Lausanne (EPFL), Switzerland

Environmental sciences rely heavily on accurate, timely and complete data sets which are often collected manually at significant risks and costs. Robotics and mobile sensor networks can collect data more effectively and with higher spatial-temporal resolution compared to manual methods while benefiting from expanded operational envelopes and added data collection capabilities. In future, robotics and AI will be an indispensable tool for data collection in complex environments, enabling the digitalisation of lakes, off-shore energy systems, corral reefs and the polar environment. However, such future robot solutions will need to operate more flexibly, robustly and efficiently than they do today. This talk will present how animal-inspired robot design methods can integrate adaptive morphologies, functional materials and energy-efficient locomotion principles to enable this new class of environmental robotics. The talk will also include application examples, such as flying robots that can place sensors in forests, aerial-aquatic drones for autonomous water sampling, drones for aerial construction and repair, and impact-resilient drones for safe operations in underground and tunnel systems.

12.11.2025
09:00 – 09:45
MAROB
Mirko Kovac

Mirko Kovac *is director of Laboratory of Sustainability Robotics at the Swiss Federal Laboratories for Materials Science and Technology (Empa) in Zürich and the École Polytechnique Fédérale de Lausanne (EPFL). Before his appointment at EPFL he was full Professor at Imperial College London and still holds a honoary Professor position at Imperial. His research group focusses on the development of novel mobile robots for distributed sensing and autonomous manufacturing in complex natural environments. Prof. Kovac's particular specialisation is in robot design, hardware development and multi-modal sensor mobility. He was post-doctoral researcher at Harvard University and obtained his PhD at the Swiss Federal Institute of Technology in Lausanne (EPFL). He received his undergraduate degree in Mechanical Engineering from the Swiss Federal Institute of Technology in Zurich (ETHZ) in 2005. Since 2006, he has presented his work in more than 100 peer reviewed publications in leading conferences and journals, has won several best paper awards and has delivered over 100 keynote and invited lectures. He also regularly acts as advisor to government, investment funds and industry on robotics opportunities.*

Amphibious Data: Sensing And Robotics Where Land Meets Water

Maarja Kruusmaa, Tallinn University of Technology (TalTech), Estonia

Collecting data from the dynamic interface between land and water — such as surf zones, shallow coastal waters, river estuaries, and soft coastlines — remains an underdeveloped frontier in environmental monitoring. These areas pose unique challenges: they are too shallow and turbulent for traditional underwater vehicles and too soft, wet, or unstable for standard land robots. As a result, critical information about flow dynamics, sediment transport, and ecosystem health often goes unmeasured. Tackling these gaps requires rugged, adaptable technologies that can sense and move reliably across muddy, sandy, and submerged terrains. In this talk, I will share our recent work developing specialized flow sensors for shallow water environments and amphibious robotic platforms capable of traversing soft and saturated ground. Together, these tools promise to open up new possibilities for high-resolution data acquisition where it is needed most: at the ever-shifting edge between land and water.

12.11.2025
09:45 – 10:30
MAROB
Maarja Kruusmaa

Maarja Kruusmaa *is a professor of Biorobotics in Tallinn University of Technology (TalTech) leading a research group of bio-inspired underwater technologies. She investigates how to gain flow information (e.g. currents, turbulence) in natural field conditions and how to use this information for navigating robots. She also works on novel actuation and control methods for underwater robot and robots for low-yield environments.*

Mapping Seascapes – A Top To Bottom Approach

Dimitris Poursanidis, Foundation for Research and Technology Hellas, Greece

Mapping and monitoring seascapes require an integrated approach that captures the complexity of marine ecosystems from the surface to the seafloor. A "top to bottom" framework leverages multi-source Earth Observation data and field-based measurements to provide a holistic understanding of coastal and marine environments. Satellite imagery and drone data offer synoptic views of surface features and water quality, while water column profiling adds insights into biophysical conditions. At the seafloor, techniques such as Satellite-Derived Bathymetry (SDB), acoustic surveys, and benthic habitat classification enable detailed mapping of underwater topography and ecosystems like seagrasses and coral reefs. This integrated approach supports the detection of habitat changes, informs conservation and restoration strategies, and contributes to blue carbon assessments. By fusing surface, mid-water, and benthic data layers, the "top to bottom" methodology enhances spatial planning and ecosystem management, particularly in data-limited or remote regions. The resulting multi-scale products serve as decision-support tools for sustainable ocean governance in the face of climate change and anthropogenic pressures.

12.11.2025
11:00 – 11:45
MARBIO
Dimitris Poursanidis

Dimitris Poursanidis, Ph.D., *is a marine scientist and Earth observation analyst focused on understanding our seascapes. With expertise in marine ecology and biodiversity, he has dedicated his career to studying marine ecosystems and the impacts of human activity. Driven by a passion for conservation, Dimitris investigates the relationships between marine life and their environment, promoting biodiversity protection and sustainable practices. A key area of his work is seagrass ecosystems, where he uses advanced technologies like satellites and drones. Through remote sensing, he monitors the health and extent of seagrass meadows, offering valuable insights into their dynamics and resilience under environmental stress. Beyond monitoring, Dimitris contributes to seagrass restoration, applying his knowledge in marine ecology to design effective strategies. Working with interdisciplinary teams, he merges science and field practice to boost seagrass recovery amid growing anthropogenic pressures. His holistic approach to conservation seeks to inspire action and raise awareness of seagrasses' vital role in coastal biodiversity and human well-being. Dimitris exemplifies a deep commitment to ocean protection and a sustainable future. He is a member of the UNESCO GOOS Biodiversity and Ecosystems Panel, co-leads the Seagrass EOV, and is part of the UN/CMS 2030 Seagrass Breakthrough. He also belongs to the Mediterranean Posidonia Network and co-authored the "Guidelines for the Restoration of Posidonia oceanica" (2024). He was lead author of UNEP/GRID's "Out of the Blue: The Value of Seagrasses" (2020) and has published 60+ peer-reviewed articles on seagrass mapping, monitoring, and biodiversity. He is also an underwater multimedia creator, producing content to raise local awareness.*

From Passion To Action: Building Opportunities In Marine Conservation

Carlo Cerrano, Università Politecnica delle Marche, Italy

The ocean is full of wonder, but also of profound challenges. Today, one of the most pressing issues is not scientific, but systemic: the growing gap between the number of passionate, talented young scientists and the limited job opportunities in marine science and conservation. In this talk, I will share how we can actively create new paths through competence, innovation, and collaboration. As a Full Professor of Zoology at the Polytechnic University of Marche, my work has explored the ecology and taxonomy of hard-bottom zoobenthos (Porifera and Cnidaria), the role of bioeroders as habitat formers, and the dynamics of animal forests in a changing climate, including in the Mediterranean mesophotic zone. I've merged academic research with scientific diving and conservation practice across polar, temperate, and tropical seas. To turn research into real-world impact, I founded two academic spin-offs, secured three patents, and launched four nonprofits. These initiatives aim to connect science, society, and industry toward shared goals of sustainability. As Local Coordinator of the IMBRSea international master and Editor-in-Chief of the European Zoological Journal, I also support the next generation of marine scientists. My goal is to inspire others to be proactive, transforming passion into action for the ocean's future.

12.11.2025
11:45 – 12:30
MARBIO
Carlo Cerrano

Carlo Cerrano *is a Full Professor of Zoology at the Polytechnic University of Marche (Italy), I specialize in marine biology, with a research focus on the ecology and taxonomy of hard-bottom zoobenthos, particularly Porifera and Cnidaria. My work has pioneered the concept of biomineralogy, exploring selective sediment incorporation and interactions between biological systems and minerals. I investigate bioerosion and the habitat-forming role of bioeroders, as well as the life histories and resilience of animal forests across climate gradients, extending into the mesophotic zone. My research integrates conservation, management, and restoration of coastal marine habitats, supported by scientific diving techniques applied across polar, temperate, and tropical environments. I have been among the first to directly explore the Mediterranean mesophotic zone studying benthic assemblage dynamics. I lecture on Zoology, Marine Protected Areas, Restoration of Hard-Bottom Habitats, and Marine Resources at UNIVPM, and on Scientific Diving and Marine Biology at ITS Malta. I serve as Local Coordinator of the International Master IMBRSea and Editor-in-Chief of the European Zoological Journal (Taylor & Francis). I have authored over 280 scientific papers (SCOPUS H-index: 48), and was awarded the Golden Trident in 2020 for my contributions to scientific diving and mesophotic exploration. As a co-founder of academic spin-offs (Ubica srl, MUDS srl) and associations (Reef Check Italia, AIOSS, Fano–Università del Mare, Reef Alert Network), I am committed to connecting science, innovation, and conservation. I hold three patents in the marine science field.*

Unfolding The Marine Protected Areas In The Republic Of Cyprus

Maria Christou, Department of Fisheries and Marine Research (DFMR) of the Ministry of Agriculture, Rural Development and the Environment of the Republic of Cypru, Cyprus

The Department of Fisheries and Marine Research, of the Ministry of Agriculture, Rural Development and the Environment of the Republic of Cyprus, is the Competent Authority for the protection and preservation of the marine environment in Cyprus. In order to achieve this goal, it is necessary to maintain in good quality and protect the marine biodiversity and ecosystems. A major tool for this purpose is the designation and establishment of Marine Protected Areas (MPAs) based on scientific surveys and public consultations. This presentation will unfold the MPAs in the Republic of Cyprus.

14.11.2025
09:00 – 09:45
MARBIO
Maria Christou

Maria Christou *holds a Bachelor's in Biological Sciences and a PhD degree in Fisheries Biology from Aristotle University of Thessaloniki and a Master's Degree in Ecology and Environmental Management from University of York. She is working at the Department of Fisheries and Marine Research since 2022 and she is currently involved in the LIFE IP Physis /Pandoteira project which aims to achieve and maintain a favourable conservation status for important species and habitat types in Cyprus. She has experience in different biological/environmental aspects and she enjoys delivering educational trainings/workshops related to environmental topics.*

Understanding And Monitoring The Effects Of Stressors On Shallow Water Habitats

Louis Hadjioannou, Cyprus Marine and Maritime Institute, Cyprus

The Eastern Mediterranean Sea (EMS) is a global hotspot of various stressors that have resulted in dramatic losses of native species, driven by the synergistic effect of warming, bioinvasions, more frequent and intense storms, pollution and unsustainable coastal development. The coastal, intertidal and subtidal zones being particularly vulnerable. We will discuss technological advances that facilitate faster and more accurate understanding and monitoring of shallow water ecosystems. These include photogrammetry, advanced sensors for pollutants as well as underwater experimental designs/tools for measuring metabolic functions of important/sensitive species.

14.11.2025
09:45 – 10:30
MARBIO
Louis Hadjioannou

Louis Hadjioannou, *a biologist specializing in marine biodiversity/ecology of Cyprus and the Mediterranean with research interests focusing on understanding the effects of natural and anthropogenic disturbances in priority habitats/vulnerable species and conservation/restoration efforts. He also has a special interest in monitoring marine protected areas (MPAs), invasive species and natural/artificial reefs through underwater visual and remote sensing techniques. He has participated in several national and international projects in the last 18 years and took part in a number of field-survey expeditions, leading some of them. He is a senior associate researcher at CMMI, leading the Marine and Coastal Ecosystem Centre's (MarCEC) efforts on coral restoration, scientific diving training program, monitoring of priority habitats/species and managing alien/invasive species, as well as developing a strategy for promoting sustainable diving tourism in Cyprus.*

Fuelink: Where Digitalization Meets Decarbonization in Marine Fuel Procurement

Konstantin Bronetskiy, Fuelink, Cyprus

This presentation will explore how digital tools can enhance transparency, coordination, and efficiency in marine fuel procurement. It will examine the operational challenges faced by the shipping industry—such as waiting times, supply chain disruptions, and emissions — and discuss how data-driven optimisation can support more sustainable and streamlined bunkering operations. Fuelink will be presented as an example of how digitalization can contribute to the industry's broader decarbonization goals.

14.11.2025
11:00 – 11:45
MARCH
Konstantin Bronetskiy

Konstantin Bronetskiy *is a tech-driven maritime executive with over two decades of experience bridging shipping, logistics, and international trade. As General Manager of Fuelink, he leads the development of a cutting-edge digital platform that automates marine fuel management and emissions compliance for the global shipping industry. Before joining Fuelink, Konstantin held senior roles at Baseblue Ltd and Bureau Veritas, managing large-scale operations, compliance systems, and industrial projects across Central Asia and Europe. With a background in law and maritime operations, and an MBA from the University of Bradford, he combines strategic, legal, and technical expertise to drive digital transformation in shipping.*

How Deep We Can Understand Biology Without Biology

Sandi Orlić, Ruđer Bošković Institute, Croatia

Advances in microbial oceanography increasingly rely on indirect approaches—modeling, chemistry, physics, and big data—to infer biological processes in the aquatic environment. But how far can we go in understanding life without direct biological observation? This presentation explores the limits and potential of studying oceanic microbial life through proxies: genomic sequences with no cultured representatives, biogeochemical signatures lacking known metabolic links, and models built without mechanistic validation. Drawing from recent studies in microbial ecology, we argue that while non-biological data streams have revolutionized our view of microbial life, they also risk reinforcing conceptual blind spots. We examine case studies where biology was inferred solely from omics and geochemical patterns, and where subsequent biological confirmation challenged or overturned initial interpretations.

Sandi Orlić *is a Senior scientist with more than 20 years of experience in microbial ecology and development of novel tools in the understanding of the microbial role in ecosystems. More than 60 papers published, 10 PhD students mentor, senior editor at ISME Communications and reviewer of different journals and funding agencies.*

14.11.2025
11:45 – 12:30
MAROCEAN
Sandi Orlić

Centres of Excellence

13th NOV
Thu

Centre of Excellence CMMI

Cyprus

13.11.2025
09:15 – 09:30 (short)
14:30 – 15:30 (detailed)
Lecture Room

Centre of Excellence Marble

Croatia

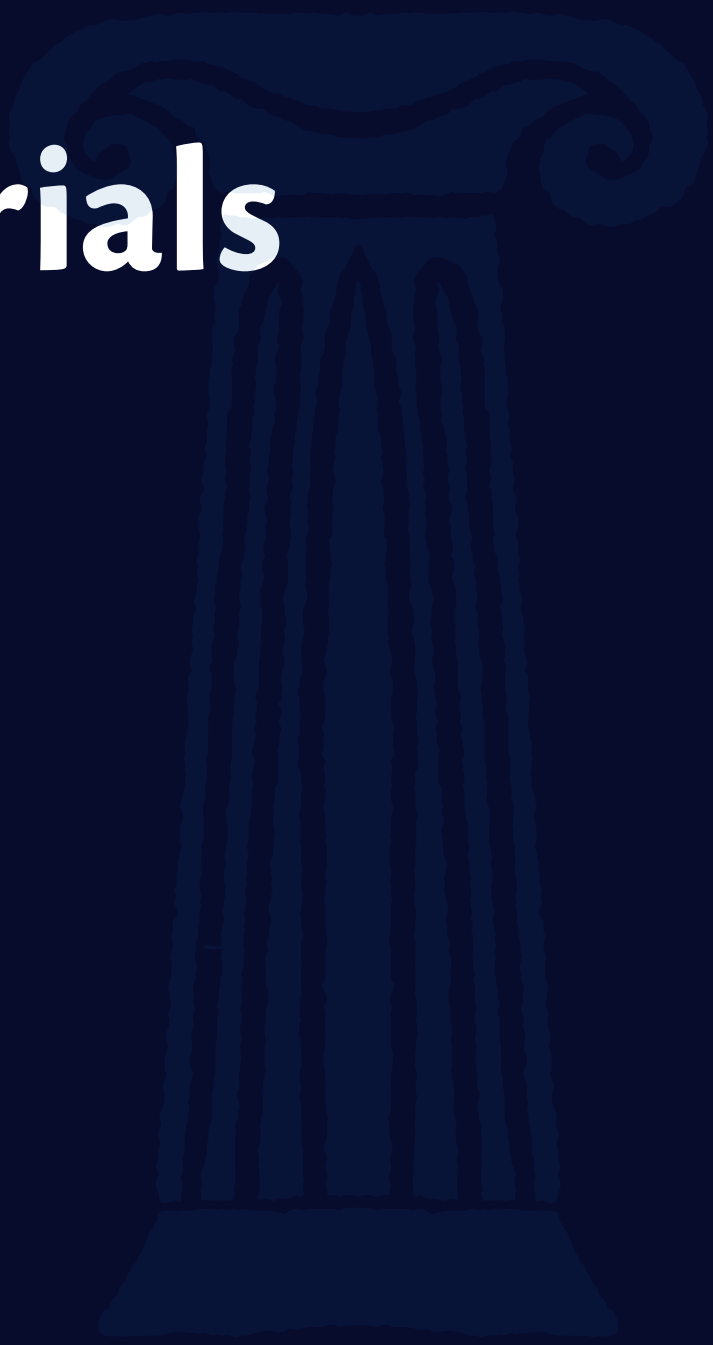
13.11.2025
09:30 – 09:45 (short)
15:30 – 16:30 (detailed)
Lecture Room

Centre of Excellence INESC TEC OCEAN

Portugal

13.11.2025
09:45 – 10:00 (short)
16:45 – 17:45 (detailed)
Lecture Room

Tutorials



Underwater Noise Maps – A Demonstration Of The Harmoni-Sn Webtool And Tutorial Of Practical Acoustic Measurements

Mark Shipton, University of Haifa, Hatter Department of Marine Technologies, Israel

Over the past decades, Underwater radiated noise (URN) from vessels has been identified as a significant threat to the health of marine ecosystems due to the adverse behavioural and physical effects it entails on marine fauna, especially marine mammals. In this regard, the ability to assess and present the spatiotemporal distribution of URN to stakeholders and decision makers acts as a crucial enabler for the promotion of environmental protection-driven policy initiatives, regulation, and long-term scientific assessment. The Hydro-Acoustic Real-time Monitoring Initiative of Shipping Noise (HARMONI-SN) is a freely accessible interactive web tool that displays the distribution of vessels and estimated URN emissions on a Geographic Information System (GIS). For the display of vessel data, HARMONI-SN integrates static and dynamic vessel data from the Automatic Identification System (AIS). For the estimation of underwater noise emission source levels for each vessel, a supervised machine learning Support Vector Machines (SVM) algorithm is used. To describe the spatial distribution of URN emissions as they propagate through the water column, a Gaussian beam ray-tracing propagation model is used. The propagation model accounts for the environmental conditions (i.e., sound speed profile and bathymetry) at each geographical location. HARMONI-SN has the potential to act as a powerful tool for stakeholders and decision makers to assess where and when URN emissions may adversely affect marine ecosystems and act as a basis for policy initiatives and regulation.

Mark Shipton *is a third-year PhD student at the University of Haifa, Hatter Department of Marine Technologies in Israel.*

10.11.2025
15:30 – 16:15
Tutorial
Tutorial Room
Mark Shipton

Marine Policy And Co-Management In Marine Protected Areas – Through Serious Play

Barbara Čolić, Hrvoje Čižmek, Marine Explorers Society - 20000 Leagues, Croatia

Marine Protected Areas (MPAs) stand among the most effective tools for safeguarding marine ecosystems, supporting biodiversity, and promoting sustainability in the rapidly evolving blue sector. This interactive tutorial, designed for emerging professionals, invites participants to explore the principles of marine policy and co-management through the lens of interdisciplinary collaboration and participatory nature of contemporary marine governance. The session highlights the importance of the approaches that blend formal authority with community participation to foster adaptive, resilient governance.

As innovative technologies increasingly shape marine research, monitoring, and surveillance and support effective enforcement and reaching conservation goals, understanding the socio-political context becomes essential. It is especially crucial that future developers understand the broader context in which their solutions will be used. This tutorial provides insight into the stakeholder landscape, policy frameworks, and practical realities driving MPA effectiveness, ensuring that new tools and methods are aligned with the needs of end users and local communities.

Through group-based play, designed to reveal the intricate interconnectedness of ecological systems, human activities, and governance mechanisms, participants will discover essential linkages and tensions. The hands-on experience that will follow after the tutorial not only deepens conceptual knowledge but also builds the collaborative mindset needed for future leaders and innovators in the blue sector.

Barbara Čolić *is a marine biologist who has focused her career on marine conservation. She has conducted study on a variety of marine ecosystems, including seagrass meadows and coral reefs, as well as species-focused studies on echinoderms, bivalves, and communities of necto-benthic fish. Her main areas of interest include marine protected zones, their efficacy, and how they affect local populations and marine biodiversity. Her work on outreach and educational programs, which combine ocean literacy and STEAM education for all age groups to bring the sea closer to everyone, runs parallel to her research interests. Barbara oversees the Janolus Ltd. nature conservation program and serves as vice president of the Croatian non-governmental organization Marine Explorers Society – 20000 Leagues.*

Hrvoje Čižmek *is a marine biologist and an expert in ecology of mediterranean benthic communities. His scientific research interest is in the ecology of marine caves, coralligenous and seagrass communities and also in marine seafloor habitat mapping. He is founder and manager of Marine Explorers Society*

11.11.2025
15:15 – 16:00
Tutorial
Lecture Room
Barbara Čolić
Hrvoje Čižmek

– 20000 Leagues NGO where he is involved in marine biology research mostly in marine protected areas (MPA) in the Adriatic Sea as well in ocean literacy education. His professional skills include: NAUI SCUBA instructor, licensed technical and rebreather diver and speleologist, underwater photographer, sailor, Croatian mountain rescue speleodiver and GIS expert.package

Subsea Object Recovery With A Rov In The Marus Simulator

Natko Kraševac, University of Zagreb Faculty of Electrical Engineering and Computing, Croatia

This tutorial will demonstrate how to perform underwater object recovery using the MARUS simulator in Unity. Participants will operate a remotely operated vehicle (ROV) equipped with a robotic manipulator to locate, approach, and retrieve objects from the seafloor. The exercise focuses on camera-guided navigation, precise control of the manipulator, and realistic physics-based interactions with submerged objects. By the end of the tutorial, users will gain practical experience in object handling and recovery tasks common in subsea exploration and industrial operations. This session highlights the capabilities of MARUS for training, research, and developing robust underwater robotic solutions.

Natko Kraševac *received a MSc in Computer Science from the University of Zagreb Faculty of Electrical Engineering and Computing – UNIZG FER in Zagreb (Croatia) in 2020. During the studies, his background was mainly computer vision, deep learning and AI with focus on application in autonomous driving. After graduation, Natko worked in web development field before diving into marine robotics. He is currently working as a PhD student at LABUST, FER.*

11.11.2025
16:00 – 16:45
Tutorial
Tutorial Room
Natko Kraševac

Microplastics Detection

Giannis Loizides, Maria-Christina Constantinou, AKTI Project and Research Centre, Cyprus

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Microplastic pollution is a topic of growing global concern. Due to their highly durable characteristics, plastics never fully decompose in nature (Martí et al., 2020). When exposed to the elements, physical abrasion due to wind and wave action, as well as thermal and photodegradation, leads to the fragmentation of plastics into increasingly smaller pieces, forming what are known as macro-plastics (larger than 25 mm), meso-plastics (from 25 mm to 5 mm), microplastics (from 5 mm to 1 µm), and nanoplastics (smaller than 1 µm) (Jeyasanta et al., 2020, Hengstmann et al., 2018). While increasing research focuses on microplastics, there is a significant knowledge gap regarding their abundance and distribution in coastal areas, and how this is affected by seasonality and socioeconomic factors. AKTI Project and Research Centre has been conducting field research on the detection of microplastics since 2022, creating a first-of-its-kind dataset of microplastic concentrations on Cypriot beaches. Based on a robust method, sediment samples are collected from 10 beaches four times a year (in March, July, September, and December) and analysed to determine microplastic abundance. This tutorial will inform participants about the issues of marine plastic pollution, focusing on microplastic sources, impacts and solutions, as well as techniques for microplastic identification from beach sediments. During the hands-on activity, participants will be guided towards the implementation of the microplastic collection and identification method, from sediment collection to sieving, suspension and visual analysis through a stereo microscope.

Giannis Loizides *works at AKTI Project and Research Centre as the Ocean literacy Lead, where the implements educational activities focused on raising awareness about marine plastic pollution. Through interactive presentations and community outreach, Giannis empowers young people and the wider public to understand the impact of plastic waste on our seas and inspires action for a more sustainable future. He also leads AKTI's successful campaign #Potavristou were for the entire month of September individuals or groups can get involved by picking up litter wherever they are, counting it, and sending the data and photos to AKTI's social media, thus promoting citizen science.*

Maria-Christina Constantinou *holds a Diploma and Integrated Master's degree in chemical engineering from the National Technical University of Athens (NTUA) where she specialised in plastics and polymers . Her research focused on the recycling of used PVC flooring. She later earned her MSc in Chemical Process Engineering: Advance Chemical Engineering from University College London (UCL), where she worked on optimizing water management technologies for arsenic removal. Maria-Christina has been part of AKTI since 2022 and she works on projects related to sustainability and marine plastic pollution. For the past 3 years she leads the very first field research project on the detection of*

12.11.2025
13:45 – 14:30
Tutorial
Beach
Giannis Loizides
Maria-Christina Constantinou

microplastics in Cyprus's beaches and works on the Zero Waste HoReCa program in Cyprus and Malta, which supports the green transition of HoReCa businesses.

The Need For Speed! Enjoying The Thrill Of Autonomous Guidance

Marco Bibuli, Consiglio Nazionale delle Ricerche (CNR), Istituto di Ingegneria del Mare (INM), Italy

Autonomous Surface Vehicles (ASVs) are increasingly being deployed in dynamic and demanding scenarios. For such a reason, this Tutorial explores the cutting-edge techniques of advanced autonomous guidance, with a focus on the path-following strategy based on the virtual target concept. Participants will be introduced to the theoretical foundations and practical implementations of this methodology, which enables precise and responsive motion control, even in complex guidance requirements or high-speed operations. The Tutorial will demonstrate how the virtual target-based guidance enhances performance in tasks such as exploration, data collection, up to autonomous racing. Special attention will be given to the extension of these techniques to multi-vehicle coordination, showcasing how fleets of ASVs can operate collaboratively while maintaining individual guidance objectives. Whether you're interested in robust autonomy for scientific missions or pushing the limits of autonomous platforms, this Tutorial will provide both inspiration and practical insights into the future of marine robots' capabilities.

12.11.2025
16:45 – 17:30
Tutorial
Lecture Room
Marco Bibuli

***Marco Bibuli** holds a Master's in IT Engineering (2005) and a PhD in Electronic and Computer Engineering, Robotics and Telecommunications (2010) from the University of Genoa. Since 2005, he has been with the National Research Council of Italy (CNR), focusing on navigation, guidance, and control of autonomous marine vehicles, multi-vehicle coordination, and mission control software. He has co-authored over 100 publications and participates in several National and EU projects. He currently coordinates the Italian Navy-funded PERSICO project, developing an advanced robotic fish prototype, and has participated in numerous experimental campaigns.*

The Climarest Marine Restoration Digital Toolbox: An Online Decision-Support Platform

Lara Veylit, SINTEF Ocean, Norway
Antonio Vasilijevic, Hassan Elkholy, NTNU, Norway

The tutorial will introduce the Marine Restoration Toolbox and provide a hands-on session on how to use its resources and tools.

Participants will first be guided through the resources available on the Marine Restoration Toolbox website, which will be hosted on Society for Ecological Restoration (SER)'s Restoration Resource Center (RRC) starting in October 2025. This will be followed by demonstrations of selected tools from the Marine Restoration Virtual Lab, which will be openly accessible via the European Open Science Cloud and Blue-Cloud 2026.

The hands-on session will show participants how to:

Substitute their own (or openly available) data into the demonstrators Run code and perform analyses using virtual machines Apply tools in alignment with best practices in marine restoration The goal of the session is to raise awareness of the Marine Restoration Toolbox and equip potential users with practical skills and resources to support informed, science-based restoration efforts.

Dr. Lara Veylit *is a research scientist in the Climate and Sustainability department at SINTEF Ocean located in Trondheim, Norway. Her background is in applied statistical and mathematical modelling within the field of ecology. As a developer of the marine restoration Virtual Research Environment, she brings her enthusiasm for bringing researchers from different backgrounds together for developing decision-support tools. Dr. Veylit is also engaged in the topics of marine restoration, data-driven story telling, the development of digital ocean twins for informed decision making, and data management with a specific focus on the democratization of ocean knowledge.*

Dr. Antonio Vasiljevic *is a Senior Research Advisor at the Department of Marine Technology, Faculty of Engineering, at the Norwegian University of Science and Technology (NTNU) in Trondheim. He co-leads the Applied Underwater Robotics Laboratory (AUR-Lab), where he manages daily operations and contributes to strategic development. Over the years, he has been actively involved in numerous European Horizon marine robotics projects, taking on leadership roles as coordinator and work package*

leader, while also contributing as a researcher and as an expert in innovation and exploitation. Beyond project work, he has actively contributed to the creation of a university spin-off. Drawing on extensive experience from both academia and industry, he provides a dual perspective that bridges theoretical research and real-world implementation. His research focuses on marine robotics, with recent emphasis on the remote operation of marine robotic systems, subsea residency, digital twin technologies for ocean monitoring, and AI-driven autonomy and data analysis.

14.11.2025
14:30 – 15:15
Tutorial
Lecture Room
Lara Veylit
Antonio Vasiljevic
Hassan Elkholy

***Hassan Elkholy** is a PhD candidate at the Department of Marine Technology, Norwegian University of Science and Technology (NTNU). He holds an Erasmus Mundus Joint Master's Degree in Marine and Intelligent Robotics from the University of Toulon (France) and the University Jaume I (Spain), and a Bachelor of Science in Mechatronics and Robotics from Nile University (Egypt).During his PhD, Hassan is advised by Oscar Pizarro and Martin Ludvigsen. His research focuses on applying machine learning methods for studying benthic habitats and underwater data analysis.*

Rapid Integration Loop via Simulation: Underwater Docking

Gabriele Kasparaviciute, Ambjørn Waldum, Norwegian University of Science and Technology (NTNU), Norway

This demonstration presents a rapid integration framework for developing and deploying autonomous underwater docking behaviors. Participants will write and test control code in a high-fidelity simulator replicating subsea conditions such as currents and sensor noise. The simulator shares the same software interfaces as the real robot, enabling seamless transfer of the developed code to a physical underwater vehicle. After completing simulation trials, participants will deploy their code on an actual robot performing autonomous docking in a test pool. This workflow highlights how tightly coupled simulation and real-world systems can accelerate development cycles, reduce risk, and facilitate reproducible validation of underwater autonomy algorithms.

***Gabriele Kasparaviciute** is a PhD candidate in Marine Technology at NTNU. With a background in engineering and economics, she applies interdisciplinary methods to underwater robotics with a focus on planning, autonomy, and operations research. Her 2024 Ocean Engineering paper presents an energy-aware routing framework for pipeline inspection with RAUVs, combining optimization models with field-validated vehicle data from LAUV deployments. She also works on mission planning for docking-capable underwater vehicles, contributing to both pool and fjord trials involving subsea charging stations. Her research bridges simulation, algorithm development, and real-world validation, and includes earlier work on anomaly detection in embedded systems and simulation-based learning for robotic behavior.*

14.11.2025
15:15 – 16:00
Tutorial
Lecture Room
Gabriele Kasparaviciute
Ambjørn Grimsrud Waldum

Ambjørn Grimsrud Waldum *is a PhD candidate at the Department of Marine Technology, NTNU. His research focuses on perception systems in applied underwater robotics, including computer vision, sensor fusion, SLAM, and simulation-to-deployment workflows. He has contributed to projects enabling robust autonomous docking for resident underwater vehicles, particularly in dynamic subsea environments. His work emphasizes tight integration between simulation and real-world platforms, allowing accelerated development and reproducible testing. In his IEEE UT 2025 paper, "From Virtual Waters to Real Oceans", he and colleagues demonstrate how simulation-informed architectures close the gap between virtual testing and real-world deployment of ROVs. He has also worked on real-time visual navigation, sonar object detection using synthetic data, and field validation of vision-based docking in the Trondheim fjord.*

Demonstrations

Hydrocord

Shlomi Dahan, University of Haifa, Israel

Presentation of various hydrophones, both analog and digital, designed for simple and convenient operation without the need for special equipment – quick connection to a laptop for immediate and user-friendly data access.

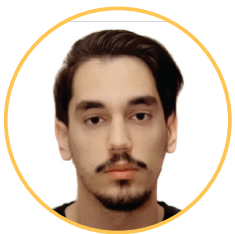
Demonstration
Beach/ Marina
Shlomi Dahan

Shlomi Dahan, *Education • M.A. in Philosophy, University of Haifa, 2023 (Graduated with Honors) • B.A. in International Business Administration, University of Humberside, 1999 • Electronics Engineering Technician, Technion, Haifa 1989 Professional Experience Deep-Sea Monitoring Engineer School of Marine Sciences, University of Haifa | 2016 – Present • Established an underwater acoustics laboratory at university of Haifa. • Project Engineer – THEMO (themo.haifa.ac.il): o Led a Mediterranean Sea monitoring project in collaboration with Texas A&M University. o Managed research buoys and underwater monitoring systems. o Initiated and led a hardware upgrade for the research buoy. • Developed underwater acoustic systems for research applications. • Administrative and Technical Integrator – SYMBIOSIS Project (symbiosis.lonsay.com): o European Union-funded research project for identifying fish species via acoustic transmitters, receivers, and cameras. o Collaborated with universities and companies from Israel, Italy, Spain, and Germany. • Project Engineer – CETI Project: o International research initiative to decipher the language of sperm whales, in collaboration with Haifa University, Harvard, and A&M Texas university. o Designed acoustic recorders and associated sensors. o Developed an acoustic monitoring system for sperm whale detection and identification.*

Maritime Situational Awareness – A Modular Lightweight Sensor Rack

Matej Fabijanić, University of Zagreb Faculty of Electrical Engineering and Computing, Croatia
Juraj Obradović, CoE MARBLE LLC, University of Zagreb Faculty of Electrical Engineering and Computing, Croatia

We present a live demonstration of a lightweight and modular multi-sensor rack designed for maritime situational awareness applications. The system integrates four synchronized cameras, a 360° LiDAR, dual GPS antennas, an inertial measurement unit (IMU), and an Automatic Identification System (AIS) receiver into a transportable structure that can be quickly mounted on chartered vessels. The design emphasizes portability, robustness, and modularity, enabling flexible deployment for both research and operational use. During the demonstration, the rack will be displayed in its operational configuration, with attendees able to inspect the hardware and discuss integration aspects. In addition, we will present a 15-minute dataset snippet collected in the Adriatic Sea using this platform, showing vessel encounters in marinas, coastal passages, and open-water environments. Finally, we will demonstrate prototype situational awareness algorithms that fuse multi-sensor data for vessel detection, classification, and trajectory estimation, offering insight into how the platform can support autonomy, surveillance, and safety-related applications. The session will be interactive, allowing attendees to explore the hardware setup, examine data samples, and discuss use cases ranging from academic research to applied maritime engineering.



Demonstration
Matej Fabijanić
Juraj Obradović

Matej Fabijanić *is a researcher and PhD student at the Laboratory of Underwater Systems and Technologies (LABUST) within the Faculty of Electrical Engineering and Computing (FER) at the University of Zagreb. He completed his Master of Science degree in Software Engineering and Information Systems at FER in 2024 and joined LABUST upon graduation. During his undergraduate years, Matej actively participated in EU-funded projects and published several research articles in conferences and journals. His current primary focus is on contributing to the development of AI-enabled perception systems in the marine environment.*

Juraj Obradović *is a researcher and PhD candidate at the Laboratory of Underwater Systems and Technologies (LABUST) within the Faculty of Electrical Engineering and Computing (FER) at the University of Zagreb. He earned his Master of Science degree in electrical engineering and information technology from FER in 2021 and joined LABUST shortly thereafter. During his studies, Juraj was actively involved in various robotics projects, which fostered his interest in Simultaneous Localization and Mapping (SLAM), reinforcement learning, and LiDAR-based perception. He was also a member of FER's winning team at the MBZIRC 2023 competition, contributing to advanced autonomous systems development. His current research is primarily focused on advancing perception systems for the marine environment. As part of this work, he has been involved in projects such as Besposadni Brod and Smart Blue Tourism, both of which aim to push the state of the art in maritime perception technologies.*

Deep Learning-Based Fusion Of Multiple Imus For Robust Inertial Navigation

Matko Batoš, University of Zagreb Faculty of Electrical Engineering and Computing (LABUST), Croatia

This demonstration will focus on inertial sensor modeling and its critical role in navigation and localization within marine robotics, specifically addressing surface vessels such as ships and autonomous surface vehicles (ASVs). A real-time inertial navigation system based on a multi-IMU setup enhanced with deep learning will be presented. Using only data from inertial sensors, we will show how accurate position estimation can be achieved without GNSS or other external references, which is crucial in challenging marine environments. The core of the system is a Bidirectional LSTM (Bi-LSTM) neural network trained to learn and compensate for sensor errors. The demonstration involves live streaming of accelerometer and gyroscope data from multiple IMUs mounted on a surface platform. The neural network processes the data in real time and outputs a 2D trajectory estimate, which is visualized alongside a baseline method (fusion of the same IMU setup in the EKF) for comparison. This approach highlights the benefits of data-driven IMU modeling and its potential to improve autonomous marine navigation. The demo is lightweight, reproducible, and deployable on various USV platforms, including the H2OmniX developed at UNIZG-FER LABUST. Participants will gain insights into the challenges associated with IMU data interpretation and understand the benefits of integrating deep learning and multi-sensor approaches for robust sensor characterization in navigation systems. Practical examples will highlight how these approaches are integrated within ROS2-based frameworks for real-time navigation.

Demonstration
Matko Batoš

Matko Batoš *is a research assistant and PhD student at the Laboratory for Underwater Systems and Technologies (LABUST), Faculty of Electrical Engineering and Computing (FER), University of Zagreb (UNIZG). He earned his master's degree in electrical engineering and information technology from UNIZG-FER in 2022. Since joining LABUST in 2023, his research has focused on data-driven navigation sensor modeling for marine applications, contributing to advancements in autonomous maritime systems. His current work involves leveraging deep learning approaches to enhance navigation sensor modeling, particularly aimed at improving inertial navigation and localization capabilities of autonomous surface vehicles (ASVs).*

Sound Project – Lagrangian Floater For Acoustic Detection

Ivan Lončar, University of Zagreb Faculty of Electrical Engineering and Computing, Croatia

The SOUND project studies in-situ ocean monitoring which enables tracking of marine life via low-cost Lagrangian floaters that drift with the water current, while autonomously performing acoustic fish detection and fish biomass assessment activities. The aim is to achieve simple deployment requiring no additional permits, non-invasive aquaculture support, assisting fishermen and reducing bycatch – especially in remote and developing areas. The project's technological contribution lies in two inter-related areas: underwater acoustics and marine robotics, with a novel underwater acoustic scheme for fish stock measurement integrated into a novel design of an autonomous low-power and low-cost floater as a platform for marine exploration. The goal of the demo is to show floater operation from the point of view of a user. Demo will consist of showing the floater, explaining the inner workings and hardware layout. The participants will partake in creating a simple mission through the web application and deploy the floater in the sea.

Demonstration
Ivan Lončar

Ivan Lončar *was born in Split, Croatia. He graduated from the Faculty of Electrical Engineering and Computing at the University of Zagreb in 2016. He defended his PhD at the same faculty in 2025. He started his scientific career at the Laboratory for Underwater Systems and Technologies (LABUST) in 2016. At LABUST, he participated in numerous national and international research projects. He contributed to winning the MBZIRC 2023 competition by developing a GNSS-denied long-range localization system. In 2023, Ivan was a researcher at University of Limerick. During his career, he has authored five journal articles and twelve conference papers. Since 2018, Ivan has been an active member of the IEEE and OES societies and has contributed to the formation of the IEEE OES UNIZG Student Branch Chapter.*

SeaTechHub: Innovative Low-Cost Sensing Buoy

Josip Lovrić, Magdalena Šimunec, University of Zagreb Faculty of Electrical Engineering and Computing, Croatia
Martin Oreč, CoE MARBLE LLC, Croatia
Juraj Obradović, CoE MARBLE LLC, University of Zagreb Faculty of Electrical Engineering and Computing, Croatia

We will showcase innovative low-cost sensing buoys developed within the SeaTecHub project, designed as part of our efforts in advancing the Maritime Internet of Things (IoTs). These buoys integrate with a centralized system to collect and display real-time seawater parameters, demonstrating their potential for applications in aquaculture, smart ports or maritime security. Visitors will have the opportunity to see the buoys on display and learn about their design, capabilities, and ease of deployment. In addition to the buoy platform, we will present other IoT devices currently under development within the project.

Josip Lovrić *is a Senior Researcher and mechanical engineer at LABUST, UNIZG-FER. He holds bachelor's and master's degrees in structural and energy mechanical engineering from FESB, University of Split. His expertise includes FEM, vibration and fluid dynamics analysis, and hydrodynamics of submerged systems. He has worked on structural and mechanical design for ships, offshore systems, and aquatic robotics.*

Martin Oreč *is a Senior Researcher and mechanical engineer at LABUST, UNIZG-FER. He holds bachelor's and master's degrees in structural and energy mechanical engineering from FESB, University of Split. His expertise includes FEM, vibration and fluid dynamics analysis, and hydrodynamics of submerged systems. He has worked on structural and mechanical design for ships, offshore systems, and aquatic robotics.*

Magdalena Šimunec *is a PhD candidate and researcher at the Laboratory for Underwater Systems and Technologies (LABUST), UNIZG-FER. She studied software engineering and information processing at FER and worked as a software developer at BCC Services during her master's studies. After graduation, she joined FER as a researcher and later moved to LABUST, focusing on cybersecurity in the maritime domain and communication for maritime IoT devices like buoys.*

Juraj Obradović *is a researcher and PhD candidate at the Laboratory of Underwater Systems and Technologies (LABUST) within the Faculty of Electrical Engineering and Computing (FER) at the University of Zagreb. He earned his Master of Science degree in electrical engineering and information technology from FER in 2021 and joined LABUST shortly thereafter. During his studies, Juraj was actively*

Demonstration

Josip Lovrić
Martin Oreč
Magdalena Šimunec
Juraj Obradović

involved in various robotics projects, which fostered his interest in Simultaneous Localization and Mapping (SLAM), reinforcement learning, and LiDAR-based perception. He was also a member of FER's winning team at the MBZIRC 2023 competition, contributing to advanced autonomous systems development. His current research is primarily focused on advancing perception systems for the marine environment. As part of this work, he has been involved in projects such as Besposadni Brod and Smart Blue Tourism, both of which aim to push the state of the art in maritime perception technologies.

Company presentations

NORTEK AS

Kristian Sem, Cristobal Molina, Norway

Our technology is used in oceanography and subsea navigation: Nortek's advanced Acoustic Doppler Current Profilers (ADCPs) and Doppler Velocity Logs (DVLs) use the Doppler effect to measure motion in the marine environment. ADCPs are used to measure oceanographic processes as seen in currents and waves, while DVLs help subsea vehicles to navigate underwater. We provide truly innovative, robust and accurate instruments, backed up by advanced software and comprehensive support. This ensures our customers gain valuable data from their measurements.

13.11.2025
11:30 – 12:00
Company presentation
Kristian Sem, Cristobal MolinaFiciat

Kristian Sem, *my background in technology began in 2018 when started my bachelor's degree in Drone Technology at the University of Tromsø – The Arctic University of Norway. This laid the foundation for continuing with a master's degree in Subsea Technology at the Norwegian University of Science and Technology (NTNU) in 2021. While studying at NTNU, I spent two years volunteering with Vortex NTNU, a technical student organization focused on developing autonomous underwater and surface vehicles (AUVs and USVs) for student competitions. It gave me a lot of hands-on experience in robotics and learn what it's like to work on bigger, long-term projects. In 2023, I joined Nortek, where I currently work in the Trondheim department. My role involves field testing and research and development (R&D), for both new and existing products.*

Cristobal Molina, *my journey began with a variety of small jobs up until the age of 21, which I consider essential in shaping my work ethic and skills. After that, I balanced my university studies for becoming and electronic engineer, with part-time roles as a draftsman at several engineering firms. In 2007, my career shifted toward environmental applications; starting with rivers and meteorology (OTT) and, since 2013, specializing in marine instrumentation (Nortek). Currently, my role involves delivering solutions for the oceanographic industry across Latin America and the Mediterranean region. My work allows me to interact daily with three elements I deeply value: (1) technology, (2) the natural environment; oceans, seas, lakes, and rivers, and (3) diverse cultures and countries. It's a combination I truly enjoy.*

Aalen University

Manuel Häußermann, Philipp Bolsinger, Germany

With five faculties, around 60 degree programs, more than 130 international partnerships, and over 4,000 students, Aalen University of Applied Sciences is one of the largest universities of applied sciences in Baden-Württemberg. It ranks among the leading universities in research, with strong ties to regional "hidden champions" and global companies. As one of Germany's most research-active universities of applied sciences, Aalen University drives innovation in electromobility, Industry 4.0, new materials, production technologies, and battery research. Two modern research centers – ZiMATE (Center of Innovative Materials and Technologies for Efficient Electrical Energy Converter Machines) and ZTN (Center of Technology for Sustainability) – provide excellent conditions for applied research. Laboratory for Power Electronics and Electrical Drives Within this strong research environment, the laboratory, with a dedicated team of about 10 researchers, is continuously engaged in numerous of research projects. The core expertise includes the design of electric machines, development of advanced power electronics (such as DC/DC converters, inverters, and grid filters), as well as control strategies and embedded software implementations. A flagship example is the Deep Sea Protection project, which highlights the capabilities in maritime technologies. For an autonomous underwater vehicle, the lab has developed various electronics and motors, including contactless power transfer systems, specialized thrusters for propulsion, and servo motors with the corresponding converters and control electronics for applications such as rudders and winches. In addition, a high-pressure test tank was procured within the project to test electronics under extreme conditions of up to 600 bar water pressure to simulate depths of 6,000 meters.

Manuel Häußermann *was born in Stuttgart-Hedelfingen, Germany, in 1989. He received the B.Eng degree in Electronics and the M. Sc. degree in Advanced Systems Design from Aalen University, Aalen, Germany, in 2017 and 2020 respectively. He worked for two years as a hardware design engineer in automotive industries and for four years as a Research Assistant with the Laboratory of Power Electronics and Electrical Drives at Aalen University. Since 2021 he is working on a maritime research project called "Deep Sea Protection" with a consortium of eight members. His focus within this project lays on hardware development, design of wireless power transfer, hardware related software, control algorithms, testing of deep sea equipment and mechanical design of the motor prototypes. In former non maritime research projects and automotive projects where he developed a 2 kW Dual Active Bridge DC/DC converter and various other power electronics he earned the knowledge and experience to be able to design and test the demanding deep sea capable electronic.*

Philipp Bolsinger *is a researcher at Aalen University of Applied Sciences in the Laboratory for Power Electronics and Drives. He completed a State-Certified Electrical Technician qualification at the Technical School Aalen in 2020, earned his B.Sc. in Electrical Engineering at Aalen University in 2023, and his M.Sc. in 2024. Both theses supported the Deep Sea Protection project, focusing on position and speed control of underwater motors for autonomous underwater vehicles (AUVs). Since then, he has been developing a high-voltage DC/DC converter to step traction-battery voltages (~500–1,000 V) down to 230 V for refrigerated trucks. His expertise spans sensorless FOC control, discrete control systems, simulation and design of control strategies using MATLAB, as well as power electronics (DC/DC converters, inverters) and DSP-Boards. Additionally, he works on the design and optimization of electronic components and PCB layouts to create compact, application-optimized electronics suitable for demanding environments.*

Cyprus Subsea Consulting And Services (CSCS) Ltd

Sergey Vekli, Rana Abualhaija, Cyprus

Cyprus Subsea Consulting and Services Ltd (CSCS) is a marine technology company based in Nicosia, Cyprus, specializing in autonomous systems, oceanographic monitoring, and data-driven marine research. Founded in 2012, CSCS blends scientific expertise with engineering innovation to deliver advanced solutions for environmental monitoring and operational oceanography. CSCS provides end-to-end services spanning equipment supply, integration, deployment, and data analysis. The company is an authorized distributor for leading ocean technology manufacturers, including R2Sonic, 4H Jena, and Nortek, and maintains a wide range of high-quality oceanographic instruments available for rental and field support. Its team combines strong academic and technical backgrounds with extensive seagoing experience, ensuring precise and reliable operations in diverse marine environments. As part of its commitment to innovation, Cyprus Subsea develops and demonstrates advanced autonomous platforms such as Seagliders and instrumented buoys for acoustic and environmental data collection. A Seaglider, equipped with a particle profiler will be demonstrated at the BTS. The system enables high-resolution environmental monitoring across depth and spatial scales. Cyprus Subsea supports Seaglider users worldwide with technical support, spare parts and consumables, glider rentals, maintenance, sensor integration, piloting, deployment and recovery, glider telecommunication servers and transmission services, data management, and mission analysis. Through its work, Cyprus Subsea continues to lead in advancing marine autonomy and environmental intelligence facilitating ocean monitoring and observation.

Sergey Vekli *is an Underwater Robotics Engineer at Cyprus Subsea Consulting and Services Ltd (CSCS), where he leads the company's Seaglider operations, including system maintenance, piloting, basestation management, and mission support. Sergey combines deep technical knowledge with practical engineering experience in marine robotics, data communications, and embedded systems. He holds a Master's degree in Radiophysics from Kuban State University, Russia (2006), and began his career in information technology, earning Cisco CCNA certification and developing strong expertise in network engineering, electronic design, and embedded systems programming. His multidisciplinary skill set bridges hardware design, software development, and real-world marine operations. At CSCS, Sergey has advanced the integration of cutting-edge ocean sensors into autonomous platforms. He has successfully integrated passive and active acoustic systems, a Lab-on-a-Chip nutrient analyzer for in situ nitrate detection and quantification, and the MicroSTAF primary productivity sensor into Seagliders — enhancing their capability to measure biological and biogeochemical processes across ocean depths. In the ClinBlu-Feed project, Sergey developed and validated new methods for optical and oceanographic data acquisition using Seagliders with the UVP6-LP and PAR sensors. Sergey contributed to the design and development of the SMART Cable, a programmable low-power cable assembly enabling intelligent connectivity and data processing between marine sensors and data platforms. His engineering innovations have supported multiple local and European projects, including OS-Aqua, BIOGLIDER, and TechOceanS Through his work, Sergey continues to expand the frontier of autonomous ocean observation, developing reliable and efficient solutions that transform how scientists monitor and understand the marine environment.*

Rana Abualhaija *is the Managing Director of Cyprus Subsea Consulting and Services Ltd (CSCS), where she leads environmental assessments and the delivery of complex marine and maritime projects. With over a decade of experience in marine ecology, ocean observing, and the blue economy, Dr. Abualhaija combines scientific insight with operational expertise to advance sustainable ocean monitoring across the Eastern Mediterranean and beyond. At BTS, Dr. Abualhaija will present a Seaglider equipped with a UPV6 particle profiler, showcasing its application in plankton research and high-resolution environmental monitoring. The system enables detailed observation of plankton distribution and ocean structure across depth and time scales—a tool for understanding ecosystem dynamics in rapidly changing marine environments. Before becoming Managing Director in 2024, Dr. Abualhaija served as Project Manager at CSCS, overseeing the coordination and implementation of national and international research initiatives. She designed and led the first open-sea plankton monitoring program in the Eastern Mediterranean, generating new insights into plankton ecology and*

contributing to improved regional baseline data for environmental management. Her previous work includes studies on pollutant bioaccumulation (PERSEUS) and sustainable aquaculture system design (OSAqua). Holding a PhD in Environment, Energy and Atmospheric Science from The Cyprus Institute, Dr. Abualhaija is skilled in oceanographic data processing, mapping, and visualization, and actively contributes to international networks. Her work bridges research, technology, and policy—promoting evidence-based approaches to ocean stewardship and sustainable marine development.

List of participants

Registered participants until 26th October:

Aalen University, DE
Manuel Häußermann
Philipp Bolsinger

Åbo Akademi University, FI
Mehdi Asadi

AKTI Project and Research Centre, CY
Maria-Christina Constantinou
Giannis Loizides
Demetra Orthodoxou
Ioannis Loizides
Xenia Loizidou

CNR - Institute of Marine Engineering, IT
Elena Ciappi
Angelo Odetti
Elena Paifelman
Marco Bibuli
Enrica Zereik
Raffaella Beroldo
Giorgio Bruzzone
Massimo Caccia

CoE MARBLE, CRO
Eugen Kutleša
Marina Gajski
Ana Golec
Barbara Arbanas Ferreira
Igor Kvasić
Juraj Obradović
Magdalena Šimunec
Martin Oreč
Nadir Kapetanović

Croatian Chamber of Economy, CRO
Ivan Katicic
Nikolina Udovičić

Croatian Navy, CRO
Ivana Biliskov
Roberto Kramaric

Cyprus Chamber of Commerce and Industry, CY
Maria Klokkari

Cyprus Marine and Maritime Institute, CY
Ioannis Kyriakides
Marina Loizidou
Alberto Sposito
Christos Keleshis
Michalis Mavros
Kyriacos Clerides
Neoklis Hadjigeorgiou
Stelios Panagiotou
Andreas Demosthenous
Daniel Hayes
Nikhil Thomas
Anna Demetriou
Maria Hadjimichael
Christos Constantinides
Andreas Hadjipieris
Michael Picas
Zacharias Siokouros
Demetris Demetriou
Andreas Hadjisoteriou
Antri Theodorou
Charalambos Rotsides
Neofytos Dimitriou
Louis Hadjioannou

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Marios Josephides
Maria Rousou
Evangelia Ntatsi
Konstantinos Antoniadis
Maria Patsalidou
Maria Christou

DIH Agrifood Croatia, CRO
Kresimir Kovac
Ivana Bujas Rupić
Matija Bumbak
Nikolina Perkov Marin

Equinor ASA, NO
Kjetil Eik
Jonas Sørensen
Georgy Ushakov

Fameline Energy Ltd, CY
Stella Fyfe
George Kazamias

Foundation for Research and Technology Hellas, GR
Dimitris Poursanidis

Fuelink, CY
Konstantin Bronetskiy

Geochemical and Environmental Research Group, Texas A&M University, USA
Steven F. DiMarco

IN2 Ltd, CRO
Bojan Colnago
Josip Madunić
Daria Ivanišević
Adela Lovrečić Marković

INESC TEC OCEAN, PT
Nuno Cruz

KTH, SE
Ivan Stenius

Marine Explorers Society - 20000 Leagues (20kL), CRO
Barbara Čolić
Hrvoje Čižmek

MARINN Maritime Innovation Cluster, CRO
Bože Čolak
Ana Odak
Ana Mihočinec
Marko Žabojec

Merchant Marine Academy of Macedonia, GR
Maria Vasileiadou
Charalambos Yakinthos
Veronika Fanara
Charalambos Tsigkis
Giannis Liozidis
ALEKSANDRO GUCI
Dhionisios Balona
Niki Krasia
Giorgos Ellinas

Ministry of Science, Education and Youth, CRO
Mateo Ante Bosnić

National University of Singapore, SG
Mandar Chitre

Nortek AS, NO
Cristobal Molina
Kristian Sem

Norwegian University of Science and Technology, NO
Ambjørn Waldum
Gabriele Kasparaviciute
Dong Trong Nguyen

Martin Ludvgisen
Roger Skjetne
Øyvind Ødegård
Asgeir J. Sørensen
Antonio Vasilijevic
Erik Liu
Enio Krizman
Hassan Elkholy

Polytechnic University of Marche, IT
Carlo Cerrano

Ruđer Bošković Institute, CRO
Sandi Orlić
Neven Cukrov

Sapienza Università di Roma, IT
Gabriele Costantino Muniz

Šibenik-Knin County, CRO
Damir Slamić

Signal Generix, CY
Lefteris Economou
Nikolas Flourentzou

SINTEF Ocean, NO
Lara Veylit

Swiss Federal Laboratories for Materials Science and Technology (Empa), Swiss Federal Institute of Technology Lausanne (EPFL), CH
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Tallinn University of Technology, EE
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Bauyrzhan Zhakanov
Yuya Hamamatsu

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Javier Alonso Fernández

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Niv David

Universitat de Girona, ES
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Dimitris Zissis

University of Bristol, UK
Avgi Stavrou

University of Cyprus, CY
Antonia Charalambous

University Of Florence, IT
Fausto Fedi
Filippo Parati

University of Genova, IT
Youssef Mohsen Mahmoud Attia
Luca Tarasi
Juri Khanmeh

University of Gothenburg, SE
Vignesh Gokuladas Menon

University of Haifa, IL
Roee Diamant
Michael Lazar
Shlomi Dahan
Mark Shipton

University of Montenegro, ME
Igor Radusinovic
Slavica Tomovic

University of Porto, PT
Murillo Villa
Paula Graça

University of Rostock, DE
Sven Lack
Carsten Rethfeldt

University of York, UK
Paul Mitchell

University of Zagreb, Faculty of Electrical Engineering and Computing, CRO
Ivan Petrović
Vladimir Slošić
Luka Mandić
Đula Nađ
Marko Barišić
Mario Tanfara
Meisam Jahanshahi
Bernard Jurešić
Fran Polić
Andrej Vujković
Blanka Gott
Ivan Lončar
Josip Lovrić
Matej Fabijanić
Matko Batoš
Natko Kraševac

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Stjepan Bogdan
Fausto Ferreira


LABUST


CUST


CYPRUS
MARINE &
MARITIME
INSTITUTE


CoE MARBLE


IEEE
OES
IEEE Oceanic
Engineering Society


UWIN~LABUST


SeaTecHub


uBlueTec