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Members are encouraged to submit copy highlighting 1) Chapter Events, 2) People & Company News, 3) Student & Young Professional News, 4) Technology Updates, or 5) other material of broad interest to the OES. Please send to Beacon Editor-in-Chief, Harumi Sugimatsu <harumis@iis.u-tokyo.ac.jp>. Word format, 1-1/2 space; Photos (always encouraged): jpg, 300 dpi preferred. Material becomes property of IEEE-OES. Please send e-mail or physical address corrections or updates to the EIC.

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Table of Contents

| | |
|--|-------|
| <i>OCEANS 2026 Sanya</i> | Cover |
| <i>Member Benefits—Did You Know?</i> | 3 |
| <i>From the OES BEACON Editors</i> | 4 |
| <i>From Executive VP</i> | 5 |
| <i>VPTA Report</i> | 5 |
| <i>VPPA Report</i> | 6 |
| <i>VPWS Report</i> | 7 |
| <i>VP OCEANS Report</i> | 7 |
| <i>From the EIC's Desk</i> | 8 |
| <i>Call for Expressions of Interest—Committees</i> | 9 |
| <i>Inspiring Women, Engineering the Ocean: Inaugural IEEE WIE Lectures at IIT Madras</i> | 10 |
| <i>Chapter News</i> | 12 |
| <i>The Establishment and First Event of the IEEE OES Hunan-Fujian-Guangdong Chapter</i> | 16 |
| <i>Call for OES Distinguished Lecturers 2027–29</i> | 18 |
| <i>What Makes a Variable an Essential Ocean Variable (EOV)</i> | 18 |
| <i>OES Conference Calendar</i> | 20 |
| <i>OTC Asia 2026 Report</i> | 21 |
| <i>TechDefense 2025 Report</i> | 23 |
| <i>UNWiS 2026 Report</i> | 26 |
| <i>Ad on the OTC Conferences</i> | 28 |
| <i>Ad on AUV2026</i> | 28 |
| <i>Ad on TENCON2026 in Bali</i> | 29 |
| <i>Ad on UT27</i> | 30 |
| <i>Blast From the Past!</i> | 31 |
| <i>Ad on OCEANS 2026 Monterey</i> | 32 |
| <i>Who's Who in the IEEE OES</i> | 33 |
| <i>Welcome New and Reinstated Members</i> | 35 |
| <i>How to Receive Paper Copies of Each Beacon</i> | 36 |
| <i>AqUaVision 2.0 (AUV) Challenge 2026 Second Edition of the Vision-Based Autonomous Underwater Vehicle (AUV) Challenge, IEEE Oceanic Engineering Society Ocean Decade Initiative (ODI)—Report From IIT Madras</i> | 37 |
| <i>Global Symposium on “Innovations & Technologies in Underwater Communication: Bridging Research and Industry” Report From IIT Delhi</i> | 41 |
| <i>OTC Asia 2026 Experiences</i> | 45 |
| <i>Attention OES Students</i> | 50 |
| <i>Back cover OCEANS 2026 Monterey</i> | Cover |

Member Benefits—Did You Know?

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From the OES BEACON Editors

Harumi Sugimatsu and Robert Wernli

Welcome to the June 2026 issue of the Beacon. As you'll see in this issue, OES continues to be very active. And this activity is at various levels, from those of us who have been active members for many decades to our YP, WIE and younger members who are carrying our technology into the future. Accordingly, refer to the Table of Contents for a listing of the many activities that OES has been involved in this year and next and the many new names of those helping run OES.

Reports from our Executive Committee highlight recent and upcoming activities of the society and what we can expect this year and next. Our Executive VP gives us the latest on the structure of our committees along with the latest on upcoming changes to our constitution. Our VP for Workshops and Symposia provides a list of the W&S that will keep the society active around the world this upcoming year. Three recent workshops, symposia and conferences (OTC Asia 2026, TechDefense 2025 and UNWis 2026) that OES was involved in are reported in this issue. In addition, don't miss the excellent articles from two student volunteers for the OES booth at OTC Asia.

Our VP for OCEANS provides the latest on the OCEANS conferences. This year's events include OCEANS conferences scheduled for Sanya, China, and Monterey, California. Upcoming year's approved OCEANS conferences will be held in Aberdeen and Anchorage in 2027 followed by Adelaide, Australia, and San Diego in 2028.

The VP for Technical Activities reports cover ongoing activity as described in the articles from chapters in Poland, Delhi and Japan, and from a new chapter, Hunan-Fujian-Guangdong Chapter, that are reported in this issue. This issue also includes an article on Essential OCEAN Variable (EOV) and a Call for OES DLs 2027-2029.



Harumi and Bob promoting the Beacon at OCEANS 2017 Aberdeen.



Looking good at OCEANS 2017 Aberdeen.

Our VP for Professional Activities calls for volunteers for OES several committees. In addition, an article from the new WIE ambassador, and Reports of SBC activities from IIT Madras and IIT Delhi are provided in this issue.

And don't miss this issue's report on one of our outstanding members in this issue's Who's Who in IEEE OES.

Upcoming workshops and symposia are listed in the Conference Calendar and the Journal EIC again provides a list of recently released papers that are available to our members.

Have you done something exciting lately? Received an award or professional recognition? Be sure to contact your editors about submitting an article.

There is a wealth of other information and articles in this issue that we hope you enjoy. And, as always, we'll close by inviting you to participate in your society. Submit articles and material for the Beacon. Or . . . volunteer for other society activities as a participant or an elected officer. It's your society and it is here to help you reach your professional goals. Enjoy.

Executive VP Report—The Hierarchy of Committees

Mal Heron, Executive VP



The revision of the Societies Committees is almost complete. The hierarchy of committees is buried in the Constitution, the Bylaws, and the Policies and Procedures, which are all available on the web site, but these documents are not easy bedtime reading. This is why I am writing a summary that has to be a bit selective—otherwise you may not keep

reading this column.

The Society is managed by the Administrative Committee that normally meets twice each year juxtaposed with OCEANS Conferences and has virtual meetings and e-votes as required. AdCom is the highest authority, responsible for all aspects of the Society. The Executive Committee sits below AdCom and manages the affairs of the Society between AdCom meetings.

Next in the hierarchy are the Standing Committees, which attend to the core issues like finance and governance. These committees are fixed in the Bylaws and normally include members with pretty good knowledge of the Society and its connection to the IEEE mothership.

The Operational Committees (OpComms) are usually established for special tasks like supporting workshops, symposia and conferences. The OpComms are also a focus for Young Professionals and Women-in-Engineering activities. Promotions and publications like Beacon, Earthzine, and Journal of Oceanic Engineering come under OpComms. These committees are established by AdCom as needed and are a rich ground for members to participate at an organisational level.

The Technology Committees provide the link between the wide scope of OES and activities like specialised workshops, symposia and webinars. These committees are the engine-room of OES that enable strategic coverage of our Field of Interest – as specified by IEEE TAB. It is instructive here to include some words from our Constitution in order to feel the importance of our Technology Committees:

The Field of Interest of the Society includes all aspects of science, engineering, and technology that address research, development, and operations pertaining to all bodies of water. This includes the creation of new capabilities and technologies from concept design through prototypes, testing, and operational systems to sense, explore, understand, develop, use, and responsibly manage natural resources.

Members are appointed to committees for 2-year terms and may be reappointed on review. The terms of committees are staggered, with some starting on 1 January in even numbered years, and some on odd numbered years. There is a Call for Expressions of Interest (elsewhere in this issue) for membership of committees that start on 1 January 2027. This is an opportunity for you, dear reader, to participate in your Society if it suits you on your present path.

As an epilogue, I must point out that the OES Chapters that many of you support are also committees of the Society, but I have not included them in this hierarchy because they are structured under IEEE Sections and Councils to focus on some aspect of the Field of Interest of the Society. Chapters have a local, regional aspect, and if that suits you better, please ask about OES Chapters.

VPTA Column

Shyam Madhusudhana, VP for Technical Activities



As we approach the middle of 2026, activities across the Technical Activities portfolio continue to move steadily forward, with a few important initiatives and events on the horizon.

Preparations are in full swing for the IEEE-OES Summer School, scheduled to take place on May 23–24 alongside

the Sanya OCEANS conference. Following the positive reception of previous edition, this year's School aims to once again provide students and early-career professionals with an engaging foray to the broad range of ocean engineering topics, technologies, and applications. By the time this issue of Beacon reaches you, the School would have been concluded, and you may look forward to a detailed report in the next edition.

Our Distinguished Lecturer (DL) program continues to remain active, with a couple of DL talks having been delivered since my previous report. I thank both the DLs and the

Chapters involved in organizing these events, which continue to strengthen technical engagement across our global membership. While there's a separate article detailing the open call for DL nominations for the 2027–2029 term, I'd like to reiterate its importance. The vitality of our DL program depends on nominating experts who can meaningfully engage with the global OES community. I encourage you to consider recommending candidates.

On the Chapters front, I am pleased to share that a new IEEE-OES Chapter — the Hunan-Fujian-Guangdong Chapter in China — was officially approved in March. This addition further strengthens our Society's growing global presence and regional engagement activities. I congratulate the team involved in establishing the Chapter and look forward to seeing its future contributions to IEEE-OES. Readers can learn more about the Chapter and its activities in an article contributed by the Chapter Chair, Jiahua Zhu, featured in this edition of Beacon.

I would also like to remind members that the call remains open for the position of Chapters Coordinator for the 2027–2029 term. The current Chapter Coordinator's (Maurizio Migliaccio) term will conclude in December

2026. The role is central to supporting and growing our Chapter activities worldwide. Nominations and recommendations may be sent directly to the VPTA, and self-nominations are also most welcome.

Beyond boilerplate IEEE-OES activities, I am also pleased to be involved in the organization of WIO Futures 2026, an international conference being organized in Mauritius that will bring together marine scientists, policymakers, diplomats, and regional stakeholders to discuss sustainable ocean management and the evolving geopolitical and scientific landscape of the Western Indian Ocean (WIO) region. The conference aims to foster interdisciplinary dialogue and strengthen collaborations toward a sustainable ocean future for the region. A report on the event can be expected in the next edition of Beacon.

Although there are no significant updates from the Technology Committees at this point, I remain encouraged by the continued efforts of our volunteers, coordinators, DLs, and Chapter leaders in supporting the Society's technical mission. As always, I thank all of you for your continued dedication and contributions to IEEE-OES.

From the VP for Professional Activities (June 2026)

Jacqueline Nichols, Vice President for Professional Activities



The IEEE OES recently had a strong presence at both OTC Asia and OTC Houston. It was excellent to see OES volunteers actively supporting these events through technical sessions, panel discussions, booth engagement, and conference participation. These conferences continue to provide valuable opportunities to connect with the broader offshore and

ocean engineering communities.

A special thank you goes to the many volunteers who dedicated their time to representing OES throughout the

events. From organizing and participating in technical programming to staffing the booth and engaging with attendees, volunteer involvement remains essential to the OES.

Further to volunteer engagement, several committees have recently been formed and we are actively looking for volunteers. Members interested in contributing to areas such as community engagement, governance, workshops and more are encouraged to learn more through the OES website (will be updated soon), where vacant roles and committee descriptions are available. Those interested in volunteering or exploring potential opportunities are also welcome to reach out directly to learn more (*vp-professional-activities@ieeeoes.org*).

From the Vice President for Workshops & Symposia

Bharath Kalyan, Vice President for Workshops & Symposia



Hello everyone,

We have an exciting calendar of events lined up for the second half of the year.

More details on the events can be found on our website ieeeco.org or in this edition's OES conference calendar.

for energetic and enthusiastic volunteers to serve on this committee and bring in fresh ideas to improve our impact.

Unified Event Proposal Template

We have also created a unified event proposal template to streamline the proposal process. The new template can be found at <https://ieeeco.org/for-volunteers/>. If you have any exciting events in the OE domain, feel free to submit a proposal.

Get in Touch

If you wish to get involved in any of these events, propose a new workshop or symposium, or volunteer for the advisory committee, please do not hesitate to reach out to me at vp-workshops-symposia@ieeeco.org.

New Charter & Call for Volunteers

Happy to report that the new Workshops & Symposia Advisory Committee charter has been approved as one of the OES Operational Committees. We are on the lookout

VP OCEANS Report

Venugopalan Pallayil, Vice President for OCEANS (VPO)

Dear OES Colleagues,

By the time you receive this edition of Beacon Newsletter, OCEANS 2026 Sanya would have ended. As we have done in the past we shall carry a full report on the OCEANS Sanya conference organization in our next Beacon edition.

OCEANS 2026 Monterey is now picking up momentum. The conference has received over 600 abstracts in various categories. This is a record for the post-Covid North American OCEANS, which has seen a decline in the number of papers recently. There are exciting plenaries lined up for this conference and the details are available on the conference website. Contract review for engagement of PCO and venue are in progress for all the other four conferences scheduled for the years 2027 and 2028. These are OCEANS 2027 Aberdeen, OCEANS 2027 Anchorage, OCEANS 2028 Adelaide and OCEANS 2028 San Diego.

We have received interest to host OCEANS 2030 in Asia and North America. There is an expression of interest received for OCEANS 2032 in Asia too. However, the call for 2029 for Europe and North America OCEANS is still open. Though we have received some enquiries, we are yet to see some concrete proposals to host OCEANS 2029 conferences.



We are moving to a new conference abstract management system for all future North American conferences. I would strongly encourage you to use the same system for non-North American conferences, also to keep uniformity. The system is also available for other Workshops and Symposia sponsored by IEEE OES. We are revamping our reviewer database and looking for new reviewers in all subject areas relevant to OCEANS conferences. If you have an interest to be a reviewer for OCEANS conference

topics you may send your contact details, including your affiliation, to vp-oceans@ieeeco.org for inclusion in our database. Please indicate your area of interest as per the listing under OCEANS conference topics. If you have already enrolled as a reviewer, but have not been receiving calls for review, please let us know. Please also remember to update your contact details if there are changes.

OCEANS is currently encouraging authors to submit an extended abstract (up to 2 pages) so that a more rigorous review can be carried out leading to improvement in the quality of papers. We strongly recommend to all future OCEANS organisers to adopt this approach.

As mentioned in my last report, we are finalizing the licensing agreement with MTS to host the OCEANS

Conference Proceedings, for which they own the IP rights, on the IEEE Xplore database. This is arising from the termination of the joint agreement on OCEANS conferences between OES and MTS. This is expected to be completed in the next couple of months.

More on OCEANS and related news will be covered in the next edition of the Beacon Newsletter. You are welcome to send your suggestions on what you like or do not like at OCEANS, which may help to improve our conferences and the way we organize them. After all, OCEANS is your conference.

From the Journal Editor's desk

Karl von Ellenrieder, Journal Editor-in-Chief



Congratulations to the authors of our most recently approved papers. The following papers were published as Early Access papers on IEEE Xplore and will appear in a regular quarterly issue of the Journal soon. You'll find these papers online now:

- Yu Luo, Lina Pu, Aijun Song, Experimental Study of Underwater Acoustical Reconfigurable Intelligent Surfaces with Synthetic Reflection. <https://doi.org/JOE.2025.3617913>
- Jianmin Lin, Chen Ji, Xingliang Sun, Wen Xu, Monitoring Ship Movements with Seafloor Optical-Fiber Distributed Acoustic Sensing. <https://doi.org/JOE.2026.3664678>
- Xizhe Chen, Shihong Yin, Yujing Li, Zhengrong Xiang, Real-Time Path Planning for Multiple Autonomous Underwater Vehicles in Dense Obstacle Fields: The DA-IFDS Approach. <https://doi.org/JOE.2026.3674024>
- Junpeng Li, Yunsheng Fan, Hui Sun, Guibing Zhu, Chenlei Wang, Collision-Free Fixed-Time Distributed Formation-Containment Control for Underactuated USVs with Unmodeled Dynamics and Input Constraints. <https://doi.org/JOE.2026.3674031>
- Shuai Sun, Guchong Li, Hongguang Lyu, A Bernoulli Particle Filter for Target Tracking in a Radar Detection-Occluded Environment. <https://doi.org/JOE.2026.3674016>
- Jiawei Long, Jianhu Zhao, Quanhua Gong, Xi Zhao, Multidimensional Scour Dynamics Quantification in Offshore Wind Farms: A Multibeam Fusion Approach Integrating Temporal Registration and Surface Morphometry. <https://doi.org/JOE.2026.3681091>
- Luyuan Peng, Mandar Chitre, Hari Vishnu, Yuen Min Too, Bharath Kalyan, Rajat Mishra, SooPieng Tan, Image Compression Using Novel View Synthesis Priors. <https://doi.org/JOE.2026.3674685>
- Muhammad Salman Shaukat, Yannik Kackenmeister, Sebastian Bader, Thomas Kirste, Toward Training-Free Underwater 3-D Object Detection from Sonar Point Clouds: A Comparison of Traditional and Deep Learning Approaches. <https://doi.org/JOE.2026.3675841>
- Lina Pu, Yu Luo, Aijun Song, ML-ARIS: Multilayer Underwater Acoustic Reconfigurable Intelligent Surface with High-Resolution Reflection Control. <https://doi.org/JOE.2026.3675840>
- Wenli Wu, Huang Xiaoning, Xue Bohuan, Xiaoyu Tang, Real-Time Underwater Visual Target Sensing System with Multitasking via Edge-Cloud Collaboration. <https://doi.org/JOE.2026.3678825>
- Hao Chen, Zijian Luo, Youming Cai, Jingang Han, Nadia Ait Ahmed, Mohamed Benbouzid, Robust Pitch Control for Floating Offshore Wind Turbines Using LLF-Based Aerodynamic Modeling and Nonsingular Terminal Sliding Mode with Prescribed Performance. <https://doi.org/JOE.2026.3679232>
- Haodi Zhu, Jiayi Su, Xinyi Zhou, Shaojian Yang, Haibin Han, Wenchu Wang, Jiayi Feng, Yan Wei, Fengzhong Qu, An Effective Receptive Field-Guided Parallel Resolution ConvNet for Underwater Salient Object Detection. <https://doi.org/JOE.2026.3679238>
- Murtaza Ali, Karan Nathwani, WADNet: Improving Direction-of-Arrival Estimation in Multipath Underwater Settings Using Wavelet Scattering Transform and Self-Attention Mechanism. <https://doi.org/JOE.2026.3674394>
- Xing Fang, Xin Tan, Chengxi Zhang, Xiang Gao, Choon Ki Ahn, Intelligent Anomaly Detection for Hydraulic System in Deep-Sea Submersible. <https://doi.org/JOE.2026.3674398>
- Rim Eltobgui, Saverio Iacoponi, Federico Renda, Giulia De Masi, Jorge Dias, Underwater Robotic Swarms: Lightweight Visual Tracking and Relative Localization Approach. <https://doi.org/JOE.2026.3678798>
- Flavie Didier, Hedi Basbas, Djelalli Larioumlil, Yong-Chao Liu, Salah Laghrouche, Daniel DEPERNET, A Recurrent Neural Network-Enhanced Supertwisting Pitch Controller for Floating Offshore Wind Turbines: Nonlinear Synthesis and HIL Validation. <https://doi.org/JOE.2026.3679242>

- Alik Pramanick, Akshay Daydar, Sonal Kumar, Arijit Sur, V. Vijaya Saradhi, PLUM: A Prompt-Guided Lightweight Unified Model for Enhancement of Multidegraded Underwater Image.
<https://doi.org/JOE.2026.3680311>
- Marina Ivasic-Kos, Domagoj Palinic, Miran Pobar, Ensemble of Vision Transformers for Sea State Classification.
<https://doi.org/JOE.2026.3674388>
- Riya Rani S S, Sumit Datta, Adaptive Spectral Line Enhancement Using Deep Feature Extraction Guided FISTA-Net for Noise-Resilient Underwater Passive Sonar Detection and Classification.
<https://doi.org/JOE.2026.3675821>
- Mehron Talebi, Sultan Mahmud, Adam Khalifa, Md Jahidul Islam, BlueME: Robust Underwater Robot-to-Robot Communication Using Compact Magnetolectric Antennas.
<https://doi.org/JOE.2026.3675822>
- Jingyu Qian, Chengwei Zhu, Mingjinghan Wang, Yujia He, Jiayi Su, Yufan Yuan, Yan Wei, Jiang Zhu, Hu Wang, Fengzhong Qu, A Phase Noise Reduction Method for Reliable Cross-Medium Communication.
<https://doi.org/JOE.2026.3675823>
- Pedro Diniz, Caio Cesar Marques Pereira de Alcantara, Stilson Veras Cardoso, Rafael Bruno de Jesus Trindade, Rodrigo Soares de Freitas, Fernando Luiz de Magalhaes, Orlando de Jesus Ribeiro Afonso, Obtaining a Reverberant Tank's Transfer Function and Its Application to the Calibration of Acoustic Transducers and Recorders.
<https://doi.org/JOE.2026.3674035>

Call for Expressions of Interest—Committees

From the OES Administrative Committee

OES 12 Technology Committees, along with several Standing Committees and Operational Committees, will undergo their biennial membership renewal process this October/November, with new terms beginning on 1 January 2027.

These committees play a vital role in supporting and advancing the Society, and we are eager to welcome new members and fresh perspectives. A list of the committees open for renewal is provided below. If any align with your interests or professional expertise, we encourage you to reach out - we would be delighted to have you involved. Additional information can be found on the OES website (will be updated soon), and as explained in the Executive VP report in this issue.

All appointments are subject to approval by the Administrative Committee.

- 1) All of the Technology Committees are up for renewal:
 - Autonomous Maritime Systems
 - Data Analytics and AI
 - Energy
 - Living Resources
 - Moorings and Structures

- Optics and Imaging
 - Oceanography and Meteorology
 - Remote Sensing
 - Metrology and Instrumentation
 - Underwater Acoustics
 - Underwater Communication and Positioning
 - Emerging Technologies & Other Oceanic Engineering Topics
- 2) Operational Committees up for renewal:
 - OCEANS Central Coordination Committee
 - Awards committee
 - 3) Some of the Standing Committees are being renewed:
 - Governance Committee
 - Strategic Planning Committee
 - Standards Committee
 - Nominations and Appointments Committee

In addition to the above committees, there are occasional volunteer vacancies throughout the year. If you are interested in volunteering in the above committees starting in 2027, or filling current vacancies, please refer to the volunteer interest form: <https://tinyurl.com/VolunteerOES>.

Inspiring Women, Engineering the Ocean: Inaugural IEEE WIE Lectures at IIT Madras

Vijaya Lakshmi Thiagarajan, IEEE OES WIE Ambassador 2026–2027 Co-Chair, IEEE OES Student Branch Chapter, IIT Madras

March 2026 marked a historic milestone for the Department of Ocean Engineering at the Indian Institute of Technology Madras with the formal establishment of the IEEE Women in Engineering (WIE) Student Branch Affinity Group. This initiative, launched under the patronage of Prof. Abdus Samad, Head of the Department of Ocean Engineering, represents a decisive step toward championing gender equity and celebrating the contributions of women in ocean science and engineering.

The formation of the WIE Student Affinity Group was guided by Dr. Barasa Deka, Assistant Professor in the Department of Ocean Engineering and WIE Mentor, whose vision and dedication were instrumental in bringing this group to life. The initiative received the support of the IEEE Student Branch IIT Madras under the counsel of Prof. S.A. Sannasiraj, IEEE Student Branch Councillor, and was co-organized with the IEEE OES Student Branch Chapter IIT Madras. Prof. V. Sriram, IEEE OES Madras Section Chair, and Prof. M.A. Atmanand, our guiding lamp in ocean engineering at IIT Madras, lent their invaluable encouragement and support. Ms. Sangeetha, WIE Chair, anchored the organizational efforts and played a pivotal role in making these inaugural events a reality.

To inaugurate the WIE Student Affinity Group, two distinguished guest lectures were organized in collaboration with the IEEE OES Student Branch Chapter, the IEEE Student Branch IIT Madras, and the IEEE OES Madras Chapter, with the support of the Department of Ocean Engineering. Both lectures were held in the Seminar Hall on the Second Floor of the Department of Ocean Engineering, IIT Madras, and were attended by faculty, research scholars, and students.

Lecture 1: Climate Resilience in Coastal Protection

Speaker: Dr. Vijaya Ravichandran, Scientist-G & Deputy Director (Operational Projects),

National Institute of Ocean Technology (NIOT), Chennai
Date: 20 March 2026 | 11:00 AM–12:00 PM

The inaugural guest lecture set a powerful tone for the WIE group’s mission. Dr. Vijaya Ravichandran, a distinguished scientist at NIOT, with decades of leadership in operational oceanography, delivered a compelling talk on “Climate Resilience in Coastal Protection.” Drawing from her extensive experience in deploying ocean observation



(Top) Dr. Vijaya Ravichandran (right) felicitated by Dr. Barasa Deka; (Bottom) Group photo with faculty, organizers, and attendees.

systems and coastal infrastructure projects, Dr. Ravichandran highlighted the growing vulnerability of India's coastline to the impacts of climate change—rising sea levels, intensifying cyclones, and accelerating coastal erosion.

She presented case studies from NIOT's operational projects that have pioneered innovative solutions for coastal resilience, including real-time monitoring networks, wave energy dissipation structures, and nature-based approaches to shoreline stabilization. Dr. Ravichandran emphasized that addressing coastal vulnerability demands an interdisciplinary approach, blending engineering with environmental science and community engagement. Her call for more women to assume leadership roles in climate adaptation and coastal management resonated deeply with the audience. The lecture was followed by a vibrant interactive session in which students engaged the speaker on career pathways in ocean technology and the future of India's coastal defence strategy.

Lecture 2: Imagineering Futuristic Infrastructure

Speaker: Dr. N. Anandavalli, Director, CSIR–Structural Engineering Research Centre (CSIR-SERC), Chennai

Date: 24 March 2026 | 3:00 PM – 4:00 PM

The second lecture in the IEEE WIE Technical Talk Series brought another remarkable woman leader to the podium. Dr. N. Anandavalli, Director of CSIR-SERC and a gold medalist from the University of Madras, delivered a visionary talk titled “Imagineering Futuristic Infrastructure.” With over two decades of expertise in structural dynamics, blast- and impact-resistant structures, and advanced computational modelling, Dr. Anandavalli offered the audience a glimpse into the future of infrastructure engineering.

Her lecture explored how emerging technologies—advanced materials, digital twins, additive manufacturing, and artificial intelligence—are transforming the way engineers design and build infrastructure. She drew compelling connections between structural resilience research at CSIR-SERC and the needs of marine and offshore infrastructure, making the talk especially relevant for ocean engineering students. Dr. Anandavalli also shared her journey as a woman in a traditionally male-dominated field, highlighting the importance of persistence, curiosity, and mentorship.

A Fellow of the Institution of Engineers (India) and a recipient of the Raman Research Fellowship, Dr. Anandavalli exemplified how scientific excellence and leadership go hand in hand. Her contributions to research publications, patents, and national standards development underscored the breadth of impact that dedicated engineers can achieve. The talk concluded with an engaging question-and-answer session during which students explored topics from computational techniques for extreme loading to career opportunities in structural research.



(Top) Prof. Abdus Samad motivating the audience about women empowerment; (Bottom) Dr. N. Anandavalli (right) with Dr. Barasa Deha.

Looking Ahead

The inauguration of the IEEE WIE Student Affinity Group at the Department of Ocean Engineering, IIT Madras, through these two landmark lectures, signals a new era of inclusive excellence. By bringing together distinguished women leaders from NIOT and CSIR-SERC, the events showcased the extraordinary depth and breadth of women's contributions to engineering and technology in India. The success of these inaugural events was made possible through the collaborative spirit of the Department of Ocean Engineering, the IEEE OES Student Branch Chapter, the IEEE Student Branch IIT Madras, and the IEEE OES Madras Chapter.

These inaugural lectures are just the beginning. The IEEE WIE Student Affinity Group at IIT Madras is committed to organizing technical talks, workshops, mentorship programmes, and outreach activities that empower women in engineering, foster interdisciplinary collaboration, and inspire the next generation of ocean engineers.

Chapter News

Submit Chapter News to Beacon Co-Editors and OES Chapter Coordinator

Poland Chapter

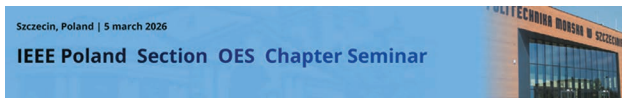
Science and Industry Together for the Maritime Economy – IEEE Poland Section Oceanic Engineering Society Chapter Seminar in Szczecin

Reported by Pawel Prajzandanc, Chapter Chair

On 5 March 2026, a seminar organized by the IEEE Poland Section Oceanic Engineering Society Chapter took place at the Centre for the Operation of Floating Objects of the Maritime University of Szczecin. The event brought together representatives of academia, maritime industry companies, and organizations supporting the development of the maritime economy. The meeting was held in a hybrid format – in addition to participants attending in person, the event was streamed on social media, enabling remote participation.



Participants of the seminar in front of the building of the Faculty of Mechatronics and Electrical Engineering at the Maritime University of Szczecin.



Logos of the organizers, honorary patrons, and partners of the seminar.

The seminar was organized by the IEEE Poland Section OES Chapter in cooperation with the Faculty of Mechatronics and Electrical Engineering of the Maritime University of Szczecin and the Szczecin Branch of the Association of Polish Electrical Engineers (SEP). The event was held under the honorary patronage of the IEEE Poland Section, the Rector of the Maritime University of Szczecin, the Marshal of the West Pomeranian Voivodeship, Polish Steamship Company, the West Pomeranian Maritime Cluster, and the Northern Chamber of Commerce.

Approximately 60 participants representing academia, industry, and institutions related to the maritime economy attended the meeting. Among them were representatives of four universities and eleven academic units, including the Maritime University of Szczecin, Koszalin University of Technology, Gdynia Maritime University, and the University of Szczecin. Representatives of companies and industry organizations were also present, including Flint Systems, Elektryka Morska, mPOWER, and Escort Technology.



Speakers during the presentation sessions of the seminar.



Technical visit to the laboratories of the Centre for the Operation of Floating Objects at the Maritime University of Szczecin.

The seminar began with an opening session presenting the main idea of the event and the activities of the organizations involved in its preparation. Prof. Ireneusz Czarnowski, representing the IEEE Poland Section Board, and Dr. Paweł Prajzandanc, Chair of the IEEE Poland Section OES Chapter, spoke about the role of IEEE in integrating the academic and industrial communities and about the activities of the Oceanic Engineering Society in Poland. This was followed by presentations from representatives of co-organizing and supporting institutions.

The seminar program included 18 presentations organized into two thematic sessions. In both sessions, speakers represented both academia and companies associated with the maritime economy. This format enabled direct comparison of scientific and industrial perspectives and facilitated discussion on potential areas of cooperation. Topics covered included sonar technologies and underwater acoustics systems, marine robotics and unmanned surface and underwater vehicles, ship power systems and university research infrastructure, as well as opportunities for collaboration between science and industry. The program featured presentations by representatives of universities, companies, and institutions associated with the maritime sector.

Informal discussions and networking between representatives of different communities were also an important part of the seminar. Participants had the opportunity to exchange experiences directly, present ongoing projects, and discuss potential directions for cooperation between universities and companies.

After the conference sessions, participants had the opportunity to learn about the research and educational infrastructure of the Maritime University of Szczecin. As part of a technical visit, the Centre for the Operation of Floating Objects was presented, where research laboratories and ship simulators were demonstrated. Participants were able to learn about solutions related to autonomous and unmanned surface vessels, underwater robots, and systems supporting ship control and navigation.

Another point of the program was a visit to the Maritime University of Szczecin Training Centre (MUSTC), a specialized training facility for the offshore and maritime sectors. Particular interest among participants was attracted by the training pool enabling storm simulation and rescue exercises involving a helicopter.

Participants also visited laboratories of the Faculty of Mechatronics and Electrical Engineering of the Maritime University of Szczecin, where, among other facilities, a ship electrical power system simulator, robotics laboratories, and research stands related to power distribution systems and high-voltage engineering were presented.

The seminar concluded with a networking lunch, providing an opportunity for further discussions and exchange of experiences between representatives of academia and industry. Participants emphasized the need to continue similar meetings that support the integration of the community and strengthen cooperation in



Training pool at the Maritime University of Szczecin Training Centre (MUSTC), used for offshore and maritime safety training simulations.

the field of maritime technologies. An evaluation survey conducted after the seminar indicated that the vast majority of participants positively assessed the event and supported the continuation of similar initiatives in the coming years.

Delhi Chapter

Marine Life Teaching Drive



Reported by Kriti Iyer, Rishika Iyer, Ishita Yadav, Aadhya Pushkale and Monika Aggarwal

Date: 2 April 2026

Time: 4pm to 6pm

Venue: Bharti School, IIT Delhi

On 2 April, 2026, Delhi chapter of OES successfully conducted a teaching drive, reaching out to 20 plus students from unprivileged backgrounds and educating them on the topic of marine life.



Joyful gathering of young minds and maine creativity.



Little hands: Big Oceans Dream.

The aim was simple, to spread awareness about the life under the sea. The students showed enthusiastic participation and expanded their knowledge on the topic.

The session included an interactive hands-on activity where the students made small models of fishes and other marine life using clay. Later, they further enhanced their models using paint, making the finished product lively and colourful.

The students gave positive feedback and appreciated the session. They mentioned that the topic was made easy to understand through engaging presentations and the activity let them express their creativity as well as their understanding of the topic.

The joy on their faces, as shown in the following figures, was truly rewarding, reminding us how education and opportunities can change lives.

Japan Chapter

The 15th Underwater Technology Forum · ZERO Reported by Harumi Sugimatsu

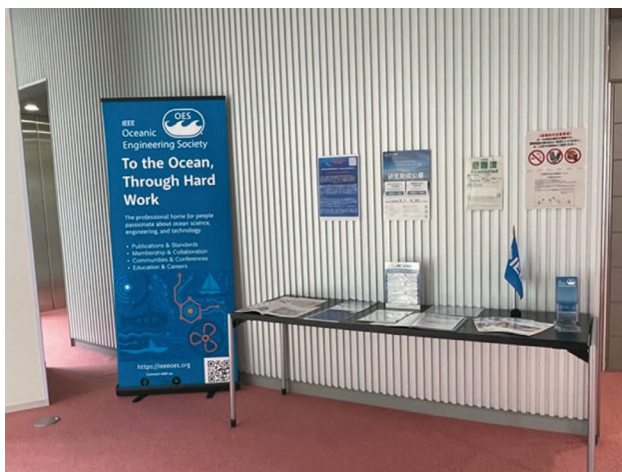
The 15th Underwater Technology Forum · ZERO (<https://seasat.iis.u-tokyo.ac.jp/UTforum/UTforumzero15/>) was held from 13:00-17:00 on 17 April, 2026, on the Institute of Industrial Science (IIS), The University of Tokyo in Meguro Research Campus, Tokyo, Japan. This forum, held twice a year to explore the interfaces between science and engi-

neering underwater, takes place in spring at the main campus and in autumn at the Atmospheric and Oceanic Research Institute (AORI), the University of Tokyo, focusing on the latest trends in marine underwater engineering. Attendance is primarily in person, but remote participation is available for those far away. This time, 216 participants attended in person and 77 online, indicating a clear return to on-site participation.

Asuka Yamaguchi of AORI, the University of Tokyo gave the opening remarks and moderated the first half of the program. The first talks were by Kentaro Nakamura of



From Wataru Tanigawa's talk.



The OES booth next to the registration desk.



From Takashi Matunobu's talk.



From Kazunori Nagano's talk.



From Toshihiro Maki's talk.

the Graduate School of Engineering, the University of Tokyo, who spoke on “A study on the formation of rare earth mud deposits around Minamitori Island and the development of techniques for efficient resource exploration,” followed by Tatsuya Kaneko of JAMSTEC, who discussed “Latest trends in marine drilling technology: challenges and prospects for automation.” Next, Shinya Yokoyama, Deputy Chief of NHK, gave a lecture on “Three-dimensional modeling of underwater caves using photogrammetry: examples and challenges,” and Wataru Tanigawa of JAMSTEC Kochi Core Research Institute spoke on “Restoration of roads, housing, and land use at Hibara Village submerged by volcanic activity in Lake Hibara, using multi-beam sounding surveys.” Notably, during investigations at Hibara Village, the discovery of a “Kin Ke Shi” — a toy eraser resembling Kinnikuman in 1980s— was analyzed as a techno-fossil indicating modern human activity, and its physical properties revealing shrinkage under sedimentary conditions were highlighted with passionate rhetoric that deeply moved the audience. The first half concluded with a talk by Takashi Matunobu of Toda Construction that leads the “Gotō City Offshore Wind Power Project,” focusing on local coexistence and strengthening supplier chains, including technical and institutional challenges and future prospects.

After a break, the second half, chaired by Toshihiro Maki of IIS, the University of Tokyo, covered five topics

on autonomous underwater vehicles (AUVs) and sensing technologies. Presentations included:

- Blair Thornton of IIS, the University of Tokyo, on field demonstrations of AUVs launched from a port, performing surveys and returning autonomously, and the future role of broad-area and detailed AUV surveys.
- Takeshi Ueno of NEC, on quantum sensing technologies and, in particular, the applications of atomic clocks to oceanography.
- Kazunori Naga of Idea, on localization techniques using only image information without acoustic devices, and development of an AUV and underwater charging station as reference points.
- Toshihiro Maki's talk on Attitude-stabilized multibeam imaging sonar and 3D positioning using YOLO, for tethered AUV tracking of floating offshore wind turbines.
- Navinda De Silva of Acquisition, Technology & Logistics Agency on “AI-based fishing net detection technology using optical sensors.”

Toshihiro Maki closed with a description of upcoming related events and closing remarks. The reception after the forum attracted over 100 attendees. The next forum will be held on Friday, **October 16**, at AORI, the University of Tokyo.

We look forward to your participation.

Bridging Inland Innovation and Ocean Frontiers in Southern China—The Establishment and First Event of the IEEE OES Hunan-Fujian-Guangdong Chapter

Jiahua Zhu, IEEE OES Hunan-Fujian-Guangdong Chapter Chair

IEEE OES Hunan-Fujian-Guangdong Chapter

Reported by Jiahua Zhu, IEEE OES Hunan-Fujian-Guangdong Chapter Chair

Forging a New Collaborative Platform

The scientific landscape of oceanic engineering in South-Central and Southeast China is entering a new phase of integration. Once focused primarily within individual academic institutions, research and application in fields like autonomous systems, underwater acoustics, and marine robotics are now being united under a common, forward-looking platform. The recent creation of the IEEE Oceanic Engineering Society (OES) Hunan-Fujian-Guangdong Chapter marks a pivotal step—bridging the formidable research strengths of inland universities with the vast potential of maritime and coastal applications.

Strategically, the chapter serves a unique region encompassing the inland research hub of Hunan Province and the coastal frontiers of Fujian and Guangdong Provinces. This distinct position fosters a dedicated focus on leveraging

inland technological innovation for maritime and underwater applications, including advanced waterway technology and environmental monitoring. The establishment of this chapter is a deliberate move to catalyze the application and transfer of cutting-edge technologies from inland research hubs to broader oceanic engineering challenges.

Central to this initiative is the National University of Defense Technology (NUDT) in Changsha, Hunan, providing strong leadership and a robust research foundation in areas crucial to OES, such as signal processing, communications, and autonomous systems. Under the chairmanship of IEEE Senior Member Jiahua Zhu, NUDT anchors the chapter's efforts to foster synergy between academia, industry, and government.

Equally vital is the contribution from Xiamen University in Fujian, and Institute of Deep-sea Science and Engineering, Chinese Academy of Sciences in Hainan, two coastal powerhouses represented by Chapter Co-Chairs Professor Haixin Sun and Professor Yang Yang. With its direct access to marine environments, Xiamen University brings essential expertise and practical perspective, ensuring the chapter's work remains grounded in real-world oceanic and coastal challenges. Further strengthening the chapter's academic network are key institutions like Zhejiang University, Tianjin University, Yanshan University, Tsinghua University, Fuzhou University and Northwest Normal University, etc. The chapter also benefits from the specialized focus of related research laboratories, such as the Southern Marine Science and Engineering Guangdong Laboratory, which contributes advanced capabilities in deep-sea and marine science. This combination of inland theoretical strength and coastal/marine applied research creates a powerful, complementary alliance.

In its first year, the chapter strives to build a vibrant community, aiming to attract professionals from across



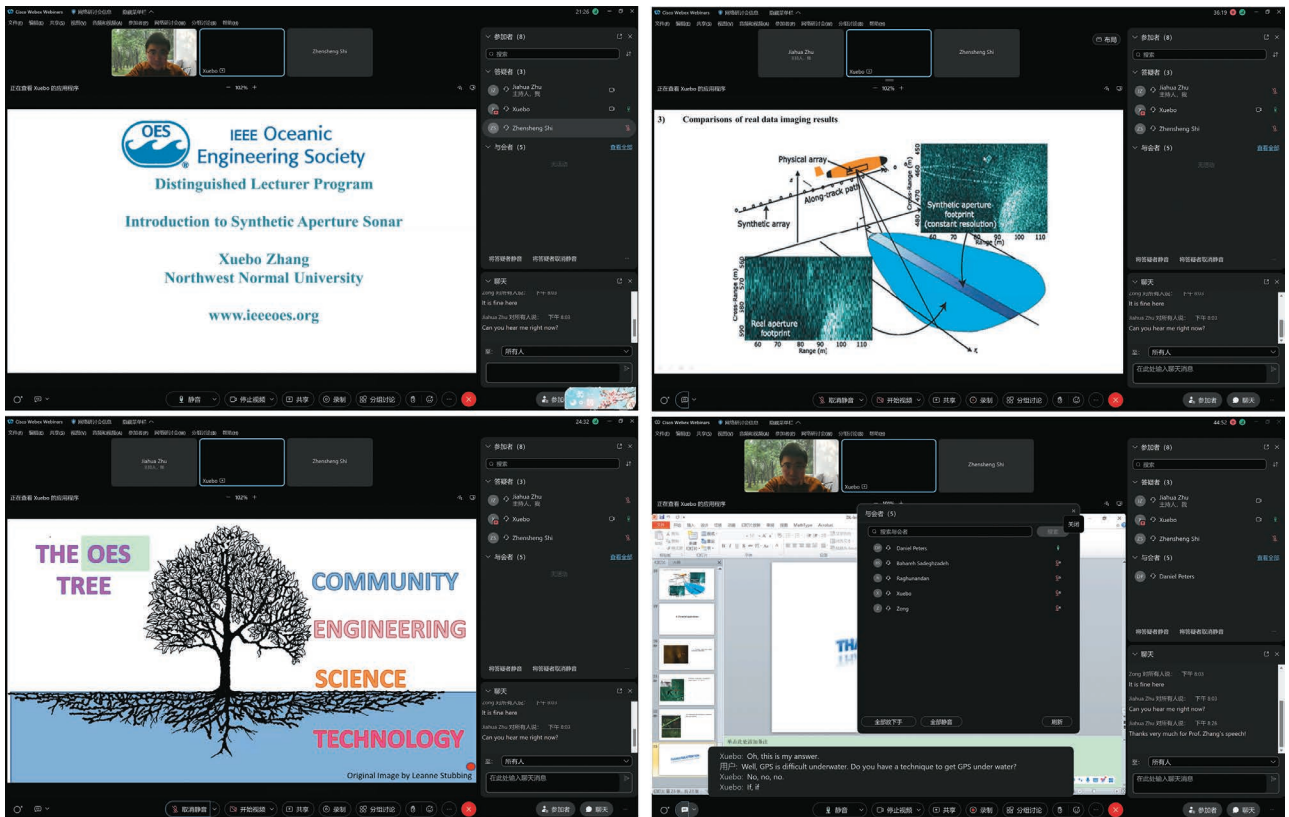
Changsha Xianning Port.



Xiamen University.



Institute of Deep-sea Science and Engineering, Chinese Academy of Sciences.



Technical Webinar presented by Dr. Xuebo Zhang.

academia, industry, and government. It plans to successfully organize multiple events and establish a collaborative research network with other OES chapters. Strong local support is already engaged, with partner institutions providing venues and resources to ensure the chapter's activities have significant impact. The establishment of this chapter signifies the active convergence of a key Chinese region—linking inland innovation with ocean frontiers—into the global community dedicated to understanding and innovating for our oceans and waterways.

Kicking Off with a High-Impact Technical Webinar

Demonstrating its commitment to immediate action and knowledge sharing, the newly formed chapter successfully held its inaugural technical webinar on April 26, 2026 (IEEE Subsea Technologies Webinar Series), in cooperation with IEEE OES Shandong Chapter and UK Chapter. The event featured Dr. Xuebo Zhang, a Hunan-Fujian-Guangdong Chapter Co-Chair, and also an IEEE OES Distinguished Lecturer and Associate Professor from Northwest Normal University, who delivered an insightful lecture titled “Introduction to Synthetic Aperture Sonar (SAS).”

In his presentation, Dr. Zhang explained how SAS achieves high-resolution imagery through the coherent

processing of successive echo data along a virtual aperture, a technique where resolution is independent of range and signal frequency. He highlighted that due to this high resolution, SAS is exceptionally suitable for critical applications such as searching for small objects, imaging shipwrecks, underwater archaeology, and pipeline inspection. Consequently, the classification and detection of objects based on SAS images can be significantly improved. The lecture provided attendees with a clear understanding of the core principles, current limitations, and the vast potential applications of this advanced underwater imaging technology. The webinar served as an excellent first step in fostering professional dialogue within the chapter's community.

Looking ahead, the IEEE OES Hunan-Fujian-Guangdong Chapter is poised to build on this momentum. Its mission is to promote academic exchange, support regional scientific development, and fulfill the career and research needs of its members. The chapter plans to organize thematic seminars on areas such as Autonomous Underwater Vehicles (AUVs), followed by practical technical training courses. It will actively encourage and organize participation in major international conferences like OCEANS to enhance the global visibility of its members' work.

Call for OES Distinguished Lecturers 2027–29 Nominations Close on July 31, 2026

Shyam Madhusudhana, VP for Technical Activities

The IEEE Oceanic Engineering Society (OES) invites nominations for OES Distinguished Lecturers. The IEEE OES Distinguished Lecturers Program provides high quality speakers to the Oceanic Engineering Community, especially, OES Chapters, Student Branch Chapters, and Student Clubs. Appointment as an OES Distinguished Lecturer is a major Society recognition.

Requirements

Distinguished Lectures are meant to appeal to a broader audience and not just technical experts. So, the talks should be prepared accordingly to attract as many members as possible from OES community. Distinguished Lecturers are expected to have

- high technical proficiency in their area;
- demonstrated ability to make technical presentations that are inspiring to audiences of both experts and general audiences;
- OES membership throughout the term of their appointment.

Technology Committee (TC) Chairs and Administrative Committee (AdCom) members are strongly encouraged to make nominations as long as there is no conflict of interest in the selection process. Nominations from Chapters as well as self-nominations are encouraged. All nominations are to be endorsed by the relevant TC. So, if you are looking for a nominator, we encourage you to contact the chair of the most relevant OES Technology Committee. A nomination email to the Vice President for Technical Activities (VPTA) should include a brief CV (1 page) of the nominee, contact details for the nominee, the nominator and endorsement by the relevant Technology Committee Chair.

The Distinguished Lecturer Committee will consider nominations and shortlist candidates, taking into account



the diversity of topics and geographic spread of the pool of Distinguished Lecturers, in addition to the criteria given above. The selected Distinguished Lecturers will subsequently be approved by the OES AdCom.

Duties

The Distinguished Lecturers will start their three-year term in January 2027. Each Lecturer should submit topics in his/her field of expertise that will be posted on the Society website. The Distinguished Lectures should be readily available to travel within their geographical area upon contact by the Chapters or appropriate organizations and are expected to add small diversions to their international travels to present lectures whenever opportunities arise. Reasonable travel expenses will be paid by the Distinguished Lecturer Program based on the availability of funds.

Closing Date

Nominations for a three-year term 2027–29 close on **31 July, 2026**.

What Makes a Variable an Essential Ocean Variable (EOV)

Christoph Waldmann, IEEE Life Senior Member, BEACON Contributing Editor

Observations are fundamental to ocean science, and several strategies have been developed to ensure that they are carried out as efficiently and effectively as possible. A key element of these strategies has been the selection of a core set of variables to be measured systematically and consistently. The primary purpose is to define a minimum, pri-

oritized set of ocean variables that enables the characterization of the global ocean system and the detection of long-term change.

This concept originates from an initiative of the **World Meteorological Organization (WMO)**. Through the **Global Climate Observing System (GCOS)**, WMO

introduced the concept of **Essential Climate Variables** (ECVs), with the term first appearing in GCOS in 2003 [1]. In practice, ECV and **Essential Ocean Variable** (EOV) datasets partly overlap. They are referred to as “essential” because they represent the minimum set of oceanic and atmospheric observations required to describe, monitor, and understand the state and variability of the ocean and climate. These observations support science, forecasting, climate assessment, ecosystem management, and a wide range of societal applications.

An ECV or EOV is a physical, chemical, or biological variable, or a group of closely related variables, that makes a critical contribution to characterizing the state of the world’s oceans and the Earth’s climate system. The current list of ECVs is specified in GCOS (2010a); all GCOS reports are available at [2].

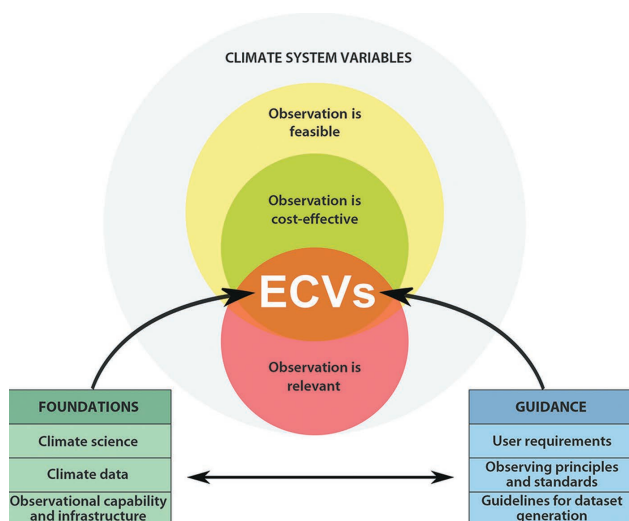


Figure 1. Schematic of the ECV concept: knowing existing climate relevant observing capabilities, climate datasets, and the level of scientific understanding of the climate system are the foundations (lower-left box) necessary for selecting the ECVs from a pool of climate system variables.

In addition, guidance is needed to make practical use of the ECVs (lower-right box): user requirements capture the data quality needs of science, services, and policy; climate specific principles guide the operation of observing systems and infrastructure; and guidelines facilitate the transparent generation of ECV data records [cited from 1].

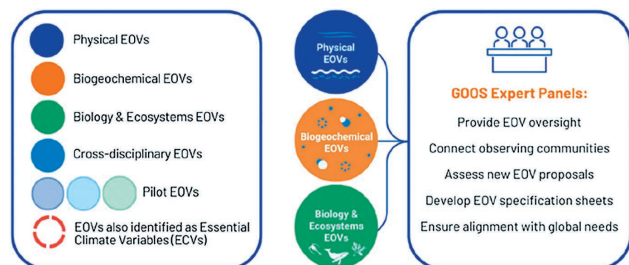


Figure 2. The figure [2] illustrates the role of the GOOS expert panels in the EOV framework.

GOOS (Global Ocean Observing System) describes EOVs as variables selected because they have high **impact** and can be observed or derived in a **globally feasible way** [3].

The essential variables “stick out” from other variables in three main ways:

| Criterion | What it means |
|--|--|
| Impact | The variable is important for understanding ocean state, climate, services, hazards, or ocean health. |
| Feasibility | It can be measured or derived reliably with existing or scientifically understood methods. |
| Readiness for sustained observing | It can support consistent, repeatable, long-term observations across regions, platforms, and institutions. |

An EOV can be understood as a backbone measurement for the ocean observing system. Variables such as temperature, salinity, currents, oxygen, nutrients, carbon, sea level, ocean color, plankton, and habitat-related parameters are essential because they provide a basis for interpreting many other ocean processes. For EOVs, GOOS provides so-called specification sheets [4], which are currently under revision.

In summary, ECVs primarily relate to the climate system, with many variables describing atmospheric processes, whereas EOVs are specifically aimed at describing ocean processes. Accordingly, the nature of the variables differs, as they address different components and dynamics of the Earth system. The main overlap between ECVs and EOVs occurs in measurements of the ocean surface.

Across scientific disciplines, it is standard practice to report not only measurement results, but also the associated uncertainties. The WMO has adopted the **Guide to the Expression of Uncertainty in Measurement** — the GUM [5] — as the reference framework for quantifying measurement uncertainty. In ocean science, however, terminology is not always used consistently. Scientists still often refer to concepts such as **systematic error, statistical error, or true measurement values**, although some of these terms are **no longer fully aligned** with the GUM framework.

With the increasing use of AI methods, including machine learning, additional terminology is entering the discussion, in particular the distinction between **aleatoric and epistemic uncertainty** and the **type A and B uncertainties** defined by GUM.

To clarify the relationship between these different concepts and promote more consistent usage, OES should consider contributing through **dedicated workshops** or by developing **practical guidelines**.

References

[1] Stephan Bojinski, Michel Verstraete, Thomas C. Peterson, Carolin Richter, Adrian Simmons, and Michael Zemp, The Concept of Essential Climate Variables in Support of

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[2] <https://gcos.wmo.int/site/global-climate-observing-system-gcos/publications>

[3] Martín Míguez B, Heslop E, Bax N, Benedetti-Cecchi L, Canonico G, Currie K, Evans K, Fischer AS, Garçon V, Hood M, Karstensen J, Lara-López A, Legler D, Muller-Karger FE, Nair Thayannur Mullachery B, Nordlund LM,

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[4] https://goosocean.org/what-we-do/framework/essential-ocean-variables/?utm_source=chatgpt.com

[5] <https://www.bipm.org/en/committees/jc/jcgm/publications>

OES Conference Calendar

Contact **BEACON** Editors, **OES VPWS** and **VPTA**

OCEANS

OCEANS 2026 Monterey

September 21–24, 2026

Monterey, USA

<https://monterey26.oceansconference.org>

OTC

OTC 2027

May 3–5, 2027

Houston, USA

<https://2027.otcnet.org>

OTC Brasil 2027

October 26–28, 2027

Rio de Janeiro, Brasil

<https://otcbrasil.org>

OES Sponsored (financial or technical)

MED' 26

June 23–26, 2026

Ancona, Italy

<https://www.med2026.org>

CAOS 2026

July 20–22, 2026

Halifax, Canada

<https://www.ieee-caos.org>

AUV 2026

September 1–3, 2026

Southampton, UK

<https://www.auv2026-southampton.com>

UComms 2026

September 1–3, 2026

La Spezia, Italy

<https://www.ucomms.net>

MetroSea 2026

October 5–7, 2026

Sibenik, Croatia

<https://metrosea.org>

USYS 2026

October 16–18, 2026

Shanghai, China

<https://www.usys26.com>

UT27

February 28–March 3, 2027

Tokyo, Japan

<http://ut27.org>

OES Patronaged

BtS2026

September/October, 2026

Croatia

More information will be updated soon.

Underwater Robot Challenge 2026

October 9–11, 2026

Pahang, Malaysia

Non-OES but OES members are involved in

None

Please contact us if you have any information about non-OES events that OES members are involved in.

OTC Asia 2026 Report

Harumi Sugimatsu, OTC Asia 2026 IEEE OES Program Sub-Committee Chair



As a member of IEEE OES program Sub-Committee, I have been involved in the OTC Asia since 2018. After two years from OTC Asia 2024, I again came back to Kuala Lumpur to attend the OTC Asia 2026. Below is an overview of

the conference, the Focus Session organized by OES, publicity at the OES booth and the exchange with the Malaysia Chapter.

Conference Summary

OTC Asia 2026 was held at the Kuala Lumpur Convention Center in Kuala Lumpur on 31 March to 2 April 2026 on the theme “Excellence in Asia - Advancing Energy Responsibly” (<https://www.otcasia.org>). The Conference host was PETRONAS.

The 2026 conference scale is getting growth in the number of attendees (25,833 delegates from 89 countries)



From opening ceremony at OTC Asia 2026.



From the exhibition at OTC Asia 2026.

in comparison with the OTC Asia 2024 (23,000 delegates and 80 countries). There were more than 200 exhibitors, 280 technical presentations in 89 conference sessions (3 Leadership Dialogues, 16 Strategic Panels, 9 Industry Panels, 11 Around the World Series Sessions, and 50 Technical Sessions). This time, Renewable & New Energy (RNE) has been added as a new theme, with 10 Strategic Panels and 11 Special Technical Sessions (included in the total of 89 sessions). In the technical sessions, 438 of the 1,335 abstracts submitted were accepted, and finally 280 presentations were given from 23 countries.

The IEEE OES Special Technical Session at RNE

Renewable & New Energy (RNE) is expected to expand as a new initiative for OTC Asia, and the IEEE OES has organized a Special Technical Session on RNE.

The OES Special Technical Session – Floating Offshore Wind Energy in Asia: Prospects and Challenges - was held on 1 April 2026. OES Japan Chapter, Korea Chapter, Taipei Chapter and Guangzhou Chapter have contributed to organize the session. Floating offshore wind energy is expected to become a major renewable energy sector globally and is currently transitioning from the development phase to the operational phase. In the Asian region, the development of floating offshore wind facilities is essential due to the deep-water depths of the target sea areas. However, several challenges must be addressed, including site selection, the development of efficient power generation systems, coexistence with existing infrastructure, environmental impact assessments, and the establishment of effective maintenance and management practices. Additionally, the profitability of floating offshore wind energy has been negatively affected by rising labour and material costs. The key focus of this session was, therefore, discussing the status and challenges of floating offshore wind energy projects in Asian region and exploring strategies for their sustainable development from multiple perspectives.

Session Co-Moderators and speakers were as below.

Session Co-Moderators:

Katsuyoshi Kawaguchi, Senior Research Fellow, JAMSTEC (Japan Agency for Marine-Earth Science and Technology)
Ye Li, Professor/ Director, Southern University of Science and Technology, China/ Australia-China Joint Center for Offshore Wind and Wave Energy Harnessing Technology

Presentation titles and speakers:

- 1) Floating Wind in Japan: Engineering Challenges and Opportunities by Takashi Matsunobu, Toda Corporation

- 2) Development of Floating Offshore Wind Turbine Technologies in Korea by Kyong-Hwan Kim, KRISO (Korea Research Institute of Ships & Ocean Engineering)
- 3) Progress, Challenges, and Perspectives on Offshore Wind Turbine Projects in Taiwan by Shiu-Wu Chau, National Taiwan University
- 4) Underwater Inspection of Floating Offshore Wind Farms Using an Autonomous Underwater Vehicle by Eiichi Kikawa, IDEA Consultants, Inc.
- 5) Opportunities and Challenges of Integrating Wave Energy into Offshore Wind by Ye Li, Professor and Director, Southern University of Science and Technology, China / Australia-China Joint Center for Offshore Wind and Wave Energy Harnessing Technology
- 6) Environmental Impact Assessment of Offshore Wind Farm Construction and Operation Using Passive



Takashi Matsunobu, Ye Li, Kyong-Hwan Kim, Shiu-Wu Chau, Eiichi Kikawa, Tomonari Akamatsu, and Katsuyoshi Kawaguchi (L to R) at the session.

Acoustic Monitoring by Tomonari Akamatsu, Waseda University

The presentations were followed by a panel discussion among speakers.



Katsuyoshi Kawaguchi moderating the session.



Audience at the session.



Ye Li presenting his talk.



Group photo. Ye Li, Takashi Matsunobu, Kyong-Hwan Kim, Harumi Sugimatsu, Shiu-Wu Chau, Eiichi Kikawa, Tomonari Akamatsu, and Katsuyoshi Kawaguchi (L to R).

OES Booth

The OES booth at the exhibition hall was well organized by Jacqueline Nichols, OES Vice President of Professional Activities (VPPA). Several AdCom and students from the Malaysia Chapter volunteered at the OES booth to promote the OES and recruit new members. You can read the Malaysia Chapter's students report in this issue too.

Here, I would like to thank all the people who supported the OES's activities for OTC Asia 2026. I would like to especially thank the Moderators and Speakers of the OES Special Technical Session, and also to the Malaysia Chapter members.

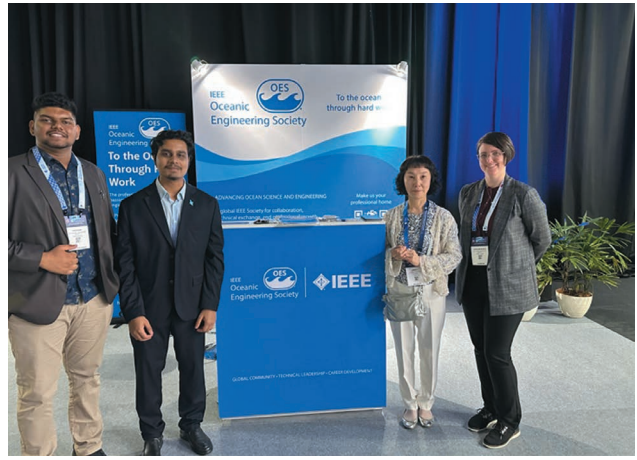
We look forward to welcoming you at OTC Asia 2028!



Welcome to OTC Asia 2028 from the OES volunteers.



Enjoying the volunteer work at OES booth. Jacqueline Nichols, Rashadul Nafis Riyad & Sree Ram (students from Malaysia Chapter) and Christian de Moustier (left photo), Sree Ram & Rashadul Nafis Riyad, Harumi Sugimatsu and Jacqueline Nichols (right photo).



IEEE TechDefense 2025

Authors Maurizio Migliaccio, IEEE OES Italy Chapter Chair, Pasquale Daponte

The IEEE TechDefense 2025, i.e. the 2025 IEEE International workshop on Technologies for Defense and Security, was the third edition of the IEEE TechDefense conference series. It was held in Roma (Fig. 1), Italy, at Casa dell'Aviatore (Fig. 2), close to the main branch of Sapienza Università di Roma and National Council of Research (CNR) and not too far from Stazione Termini in Roma, see Fig. 3.

The conference was held on 5-7 November, 2025, covering all areas concerning research in defense field. Given its wide range of topics, the conference was meant to bring together participants from academia, industry, defense, and government. It was designed to advance security interests while offering opportunities to deepen technical expertise

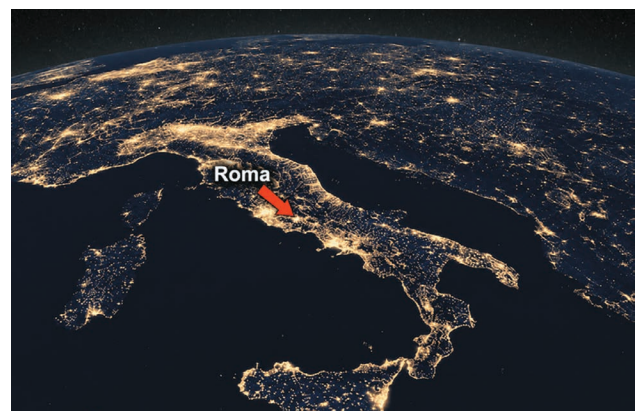


Figure 1. Roma from space (nighttime).



Figure 2. The entrance of the Casa dell'Aviatore (Aviator's House).

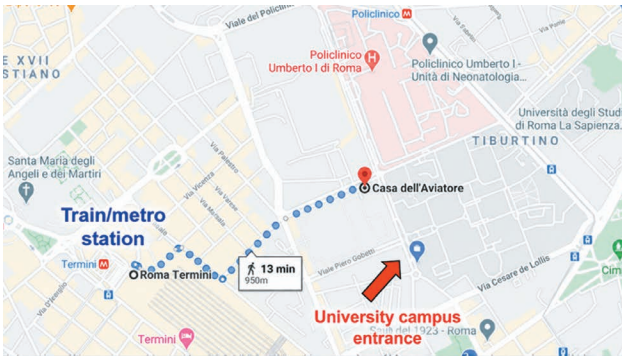


Figure 3. Map showing Stazione Termini, Università Sapienza and the Conference venue.

and build meaningful professional connections. In an era of rapid technological change, collaboration and multidisciplinary approaches are essential for addressing research challenges and driving the next wave of scientific innovation.

Among the several promoters of the conference there was the IEEE Oceanic Engineering Society. The logos of the supporting IEEE Societies and bodies are shown in Fig. 4.

PROMOTED BY



Figure 4. Logos of the IEEE Societies and bodies promoting the event.

The general Chairmen of the Conference were Pasquale Daponte, University of Sannio, Italy, Alfonso Farina, Selex-ES (retired), Rome, Italy, and Giovanni Savoldelli Pedrocchi, AFCEA - Chapter of Naples, Italy, see Fig. 5.



Figure 5. Alfonso Farina (left) and Pasquale Daponte (right).

The accepted conference papers were 112, with a number of international registered attendees summing to 126. All conference articles submitted to IEEE TechDefense 2025, that have been accepted after a peer-reviewed process, have been published on IEEE Xplore Digital Library.

The conference was organized in 22 oral sessions spanning from “Ethics, Law & Politics of Technologies for Defense” to “Security to Radar Electronic Attack and Electronic Protection” & “Cybersecurity and AI Technologies for Reliable and Efficient Maritime Systems.” A poster session was also held.

In the plenary session, 5 November, Luca Goretti of Italian Air Force held a keynote on “Advanced technologies to strengthen Italian Defense and guarantee the security of a country’s capabilities” (Fig. 6) while on 6 November, another keynote by Jeffrey Newcamp, PhD, USAF, Deputy Science & Technology Advisor, USINDOPACOM J8 was held on “Technology Innovation Through Experimentation in the IndoPacific Region” (Fig. 7). Finally, on 7 November, a keynote on “Italian Army in the Counter-Drone race” was held by Giovanni Chessari, Italian Army.

Three round tables were also organized within the Conference. The first round table was on “Cybersecurity and AI: Strengthening Defense and Ensuring the Security of Our Country” and was organized by Alfonso



Figure 6. Luca Goretti of Italian Air Force lecturing on Nov. 5.



Figure 7. Jeffrey Newcamp, PhD, USAF, Deputy Science & Technology Advisor, USINDOPACOM J8 lecturing on Nov. 6.

Farina - Ph.D. H.C., Selex-ES, Rome, and Salvatore Ponte - University of Campania "L. Vanvitelli".

The second round Table was on "Innovation and Entrepreneurship in Defense Technologies" and was chaired by Marco Giordani, Associate Professor in Telecommunications at the University of Padova; Coordinator of the IEEE Italy Entrepreneurship Committee.

The third round table was on "New Technologies for Security and Defense: Ethical-Legal and Political Challenges in International Cooperation."

Many young people attended the conference. Authors and participants came from 21 countries including Italy, South Korea, Bulgaria, Poland, France, Germany, Finland, United Kingdom, Denmark, Colombia, Thailand, Portugal, United States, Romania, Saudi Arabia, Ukraine, China, Albania, Netherlands, Hungary and Israel.

The Best Conference Paper Award, recognizing the most outstanding paper presented at IEEE TechDefense 2025, was achieved by Alexandre Albore (ONERA, France & Université de Toulouse), Humbert Fiorino and Damien Pellier (Université de Grenoble Alpes), France, for their paper "A Beacon Based Solution for Autonomous UUVS GNSS-Denied Stealthy Navigation."

The Best Conference Paper Presented by a Young Researcher recognizes the best paper authored / co-authored and presented by a researcher younger than 35 years in age. The award was achieved by Ingrid Huso, Enrico Boffetti, Giuseppe Piro and Gennaro Boggia, (Politecnico di Bari), Italy, for the paper "Enlarging Lawful Interception Capabilities with Control-Plane Analysis for User Activity Detection."

The Best Conference Paper Presented by a Woman recognizes the best paper authored and presented by a woman. This award was achieved by Valeria Bruschi, Susanna Spinsante, Gianluca Ciattaglia and Stefania Cecchi (Università Politecnica delle Marche), Giacomo Peruzzi and Alessandro Pozzebon (University of Padua), Italy, for the paper "Acoustic Monitoring of Drone Propeller Integrity Using Symmetrized Dot Pattern."

The Best Poster Award recognizes the best paper presented as a poster. The winners of this award were Maciej

Kurenda and Konrad Wojtowicz (Military University of Technology), Krzysztof Sibilski (Air Force Institute of Technology), Poland, with the paper "Decentralized Control of Mesh Networked Multirotor UAV Group."

In the following we show some pictures of the participants, see Fig. 8-10.



Figure 8. A speaker presenting her scientific contribute Nov. 5.



Figure 9. A speaker presenting her scientific contribute Nov. 6.



Figure 10. Csilla Eva Berecz (Óbuda University, Hungary) presenting the paper "Motion-Based Individual Identification using Artificial Intelligence Challenges of Art" (Nov. 7).

IEEE TechDefense 2026 will be hosted in Turin, Italy, in November, 2026. The event will be jointly organized by University of Turin, Italian Army and AFCEA Chapter of Naples.

The fourth Winter School on Underwater Network Simulations and experimentation

Filippo Campagnaro, University of Padova, Italy, IEEE OES AdCom and Former IEEE Young Professional Boost Laureate

The fourth Winter School on Underwater Network Simulations and experimentation (UNWiS) took place in Padova (30 minutes from Venice), Italy, from the 2nd to the 6th of February, 2026, during the Venice Carnival season.

UNWiS was organized by the Department of Information Engineering at the University of Padova, together with its spin-off companies SubSeaPulse srl and Wireless and

More srl. The winter school brought together more than 30 participants from Europe, North America, and Australia, creating a lively and truly international atmosphere. The workshop explored all aspects of underwater communication networks, along with a few compelling applications in underwater robotics. This blend of perspectives energized the discussions and reinforced the collaborative spirit that characterizes the OES community.

Each day of the school was structured into two complementary sessions: morning lectures and afternoon hands-on activities. A dual-track format—a basic track for newcomers to underwater networking and an advanced track for experienced practitioners—ensured that all participants could deepen their expertise at the appropriate level.

The technical program covered the full landscape of underwater communication networks, including an in-depth overview of acoustic and optical technologies, communication protocols for multimodal networks, and methodologies for simulating and testing underwater systems using the open-source DESERT Underwater Framework and the World Ocean Simulation System developed by the SIGNET group of the University of Padova. Participants also had the chance to experiment directly with underwater protocols through practical

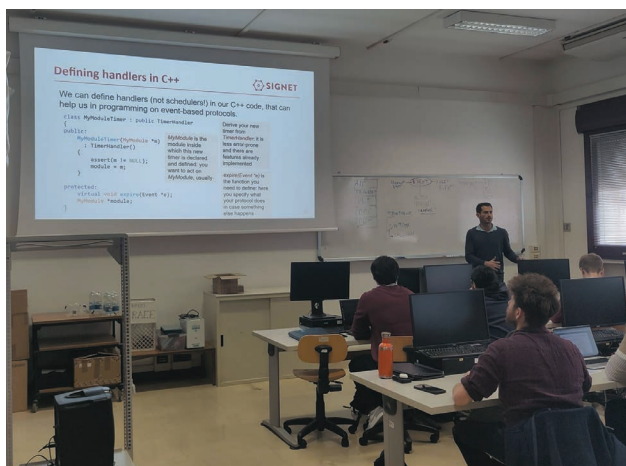


Figure 1. Lectures on the DESERT Underwater network simulation and experimentation framework.

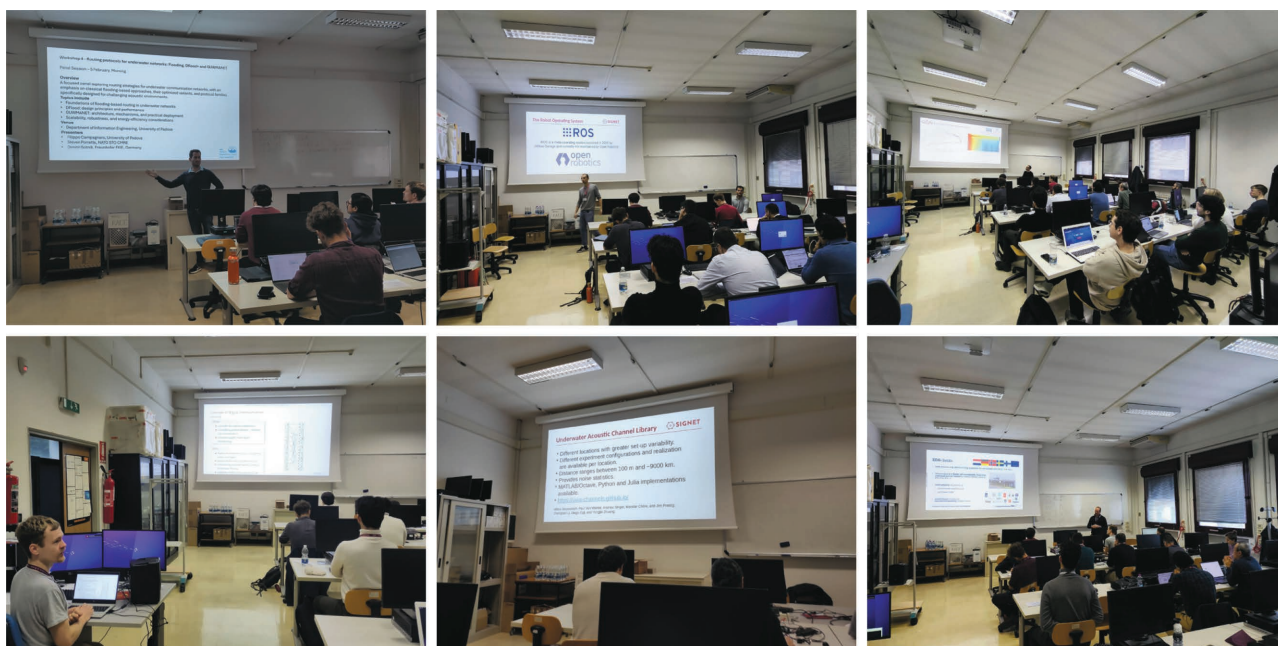


Figure 2. Technical workshops within UNWiS, supported by IEEE OES Italy Chapter and organized and moderated by Filippo Campagnaro and the SIGNET group of the University of Padova.



Figure 3. A group of UNWiS participants in front of Porta Portello (1519) in Padova, Italy.

exercises, both in simulation and in the water, using the affordable SuM research software-defined modems provided by SubSeaPulse SRL. To support the evaluation of modulation and coding schemes, the open-source Underwater Acoustic Channel Library was presented. The framework is the result of an international collaborative effort coordinated by Milica Stojanovic's team, who generously allowed the UNWiS organizers to present it during the winter school. In addition, the Robot Operating System (ROS) MiddleWare for underwater networks was presented, further strengthening the connection between the underwater communication and underwater robotics communities.

Every morning, all attendees took part in a workshop supported by the IEEE OES Italy Chapter. After introducing the Society's activities, our former YP Boost laureate (and current AdCom member) Filippo Campagnaro moderated five thematic panels—one per day—on topics of high relevance to the research community. The panels covered standardization of underwater networks, multi-modal underwater networking, modulation and coding schemes for acoustic communications, routing protocols for acoustic networks, and the ROS MiddleWare for underwater networks. Each session featured international speakers presenting open-source tools and sharing insights from

recent sea-trial activities, creating a highly engaging and practice-oriented environment.

Padova offered an ideal setting for the winter school, with its rich cultural heritage and landmarks such as the Scrovegni Chapel, the Basilica del Santo, and the historic Palazzo Bo. As a university city with more than 74,000 students out of just over 200,000 inhabitants, Padova has a distinctly youthful and academic atmosphere, further emphasized by the University's historic motto *Universa Universis Patavina Libertas*, celebrating freedom of teaching and learning. Many participants took the opportunity to explore the city's artistic treasures and enjoy its welcoming atmosphere. The local food culture also played its part: with Aperol originating from Padova and the Prosecco hills just a short distance away, the iconic Spritz quickly became the unofficial drink of the week. Each day concluded with excellent Italian cuisine from local restaurants, giving attendees a taste of authentic regional dishes. A dedicated cultural visit to the ancient Palazzo Bo—home to the University of Padova's 804-year-old academic tradition—together with a home-made wine tasting experience provided a memorable wrap-up to the school. After the event, several participants continued their journey to Venice to enjoy the Carnival, making the most of the region's unique cultural offerings.



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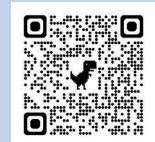


OTC Asia 2028
21-23 March, 2028
Kuala Lumpur, Malaysia

Website
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AUV 2026, Southampton, UK



1-3, September 2026

Every two years, the IEEE OES AUV Symposium brings the marine robotics community together to share ideas, exchange lessons learned and foster future research and collaboration.

Our focus is on the technologies and applications of autonomous underwater vehicles (AUVs), autonomous surface vessels (ASVs), underwater gliders, and Lagrangian floats, with most papers centered on field robotics or data collected from real-world deployments.



Contact auv2026@soton.ac.uk



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| | |
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A Blast From the Past! . . . Looking Forward to Visiting Again!

Bob Wernli – Beacon Co-Editor-in-Chief and Photographer Stan Chamberlain

In the June 2020 issue of the Beacon, due to Covid, we had a “Toast to the Future.” Well, the future is here and we are looking forward to meeting everyone again at upcoming OCEANS conferences in Anchorage, Aberdeen and San Diego.



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Who's who in the IEEE OES

Karl von Ellenrieder, Editor-in-Chief, IEEE Journal of Oceanic Engineering

The Editor-in-Chief of the Beacon recently asked me to provide this article, explaining that it should introduce my “private life” and hobbies, but not include anything about my OES activities. The thing is that for most of my adult life I have been writing scientific/technical articles in which one must be detached from the content of an article so that its presentation can be considered objective and unbiased, and so I was unsure of what exactly to say here. Looking to my wife for reassurance, I explained that I have been asked to write an article about myself. She responded, “what’s the problem, it’s your favorite topic.”

So here goes, I performed my undergraduate studies at MIT, where I enrolled in Aeronautics & Astronautics (Avionics specialization) because I was interested in underwater robotics, of course. At the time, there was a laboratory established by Prof. Dave Akin called the Space Systems Lab, in which robotic technologies were being developed with an eye towards applications related to the International Space Station (teleoperation, remote manipulation, navigation, positioning, motion planning, and control). The main idea was to use neutral buoyancy to approximate weightlessness in space. As one of the lab’s SCUBA divers, I helped to set up underwater instrumentation and to preposition the underwater robots between experiments. The robots were about the size and mass of a small car and were designed at a time when most of the miniature sensors and instrumentation we now take for granted didn’t exist. The students and researchers in the lab were very clever at devising simple solutions to complex problems. For example, a normal SCUBA regulator and pony bottle were installed on the large computer enclosure inside each AUV equalizing the pressure inside with that outside, eliminating the need for a crush-proof housing and precision machined seals. The housing was mounted on a weight-stabilized gimbal so that the regulator was always upright and would not free flow. The pitch and roll of each robot were determined using a set of pendula and the yaw and position with a home-made LBL system. Unfortunately, around the same time I was graduating in 1991, the lab moved to the University of Maryland (UMD), where it is still going strong. For graduate school, I was admitted to Stanford and torn between following the lab to UMD or going “out west.” As several of my closest friends were moving to California, I decided to pursue my graduate studies at Stanford, also in Aeronautics & Astronautics. At the MS level I focused on control theory but for my PhD switched to the area of experimentally studying vortex shock wave interaction, with applications related to helicopter noise (Figure 1).

After completing my PhD in 1998 I worked with Prof. Julio Soria at Monash University, in Melbourne, Australia, where I returned to my background in robotics and control

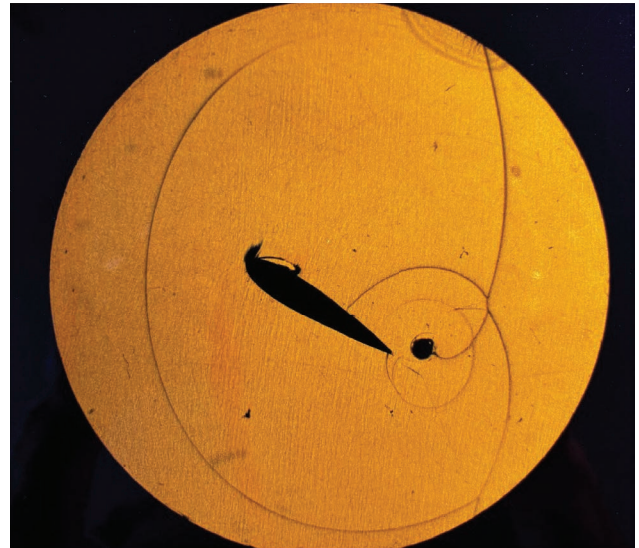


Figure 1. A two-color (yellow-blue) Schlieren image of the reflected shock wave structure and vortex generated when a shock wave passes from left to right over a small airfoil inclined at an angle of attack of 30°. From the author's PhD thesis.

to design experimental test systems for particle image velocimetry (PIV). It was a stimulating place to work. There was significant freedom to come up with new ideas and to then experimentally try them with limited friction between ideation, design, construction, and implementation.

For example, we built a system to perform holographic PIV with a robotic translation stage that would “fly” a digital camera through reconstructed holograms to determine the three-dimensional velocity field in a flow. We also developed: a lens-less digital holographic PIV system; a system that synchronized the motion of a high-speed spinning mirror with laser-based image capture on large format film for performing high resolution PIV; and a robotic platform to visualize the flow field around a swimming fin.

At the beginning of 2003, I started a professorship in the Ocean Engineering Program at Florida Atlantic University (FAU). While my research touched upon a broad range of topics including biomimetic propulsion, hydrokinetic energy generation, surface piercing propellers, marine magnetics, and AUV design, my main contributions involve the development of USVs, in particular dynamic modeling and control. We developed many different systems, including a semi-autonomous wing-sail-propelled vessel, an uncrewed amphibious small water plane area twin hull (SWATH), and various systems using the Marine Advanced Research (now produced as Ocean Power Technologies) wave adaptive modular vessels (WAM-V) as a base platform for

applications ranging from COLREGs-compliant planners, AUV launch & recovery, waterjet testing, and automated bridge inspection (Figure 2-Figure 3).

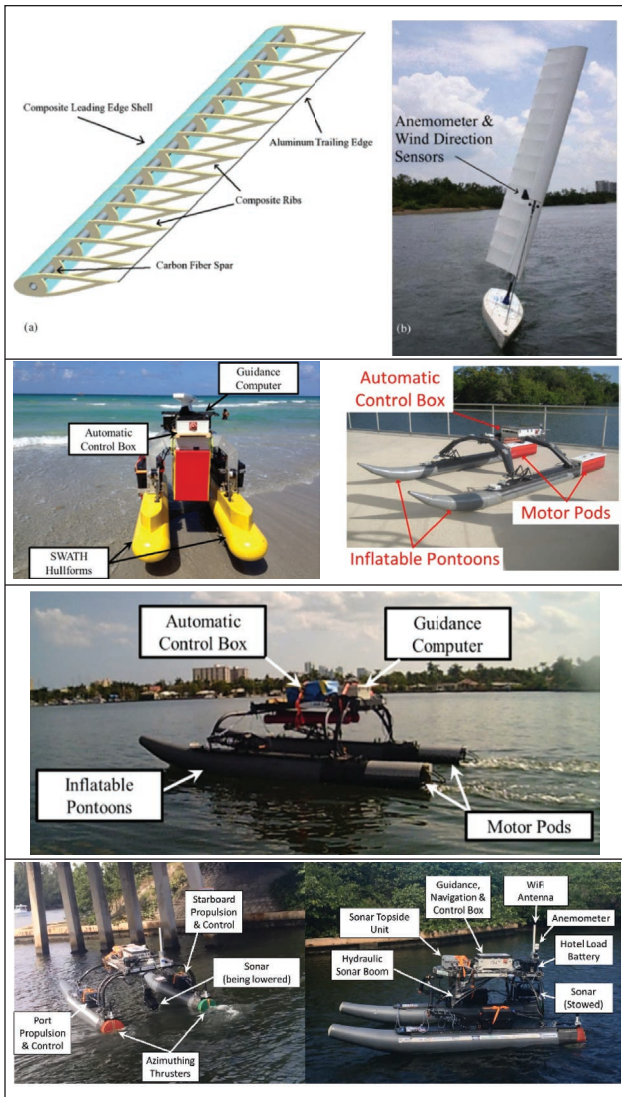


Figure 2. Row 1: Wing sail propelled USV. Row 2 left: An amphibious SWATH-based USV for surf zone traversal. Row 2 right: A WAM-V USV12 configured for waterjet testing. Row 3: a WAM-V USV14 for AUV launch & recovery controller tests. Row 4: A WAM-V USV16 configured with an ARIS real-time imaging sonar for above-below waterline bridge inspection.



Figure 3. Left: The author watching to see if manual intervention is needed during an automated bridge inspection operation. Right: The author, PhD students, and technicians at a bridge inspection site.

Some of the most personally rewarding and memorable moments of my career involved working with the students at FAU as the instructor of the Ocean Systems Engineering Control and Design course, in which groups of nine to ten students designed, built and field-tested numerous complex systems, ranging from ocean renewable energy systems to ocean instrumentation to marine robots. For most students, the possibility of making and implementing something of their own ideation seemed to awaken a passion, an energy, and a drive I have seen in none of the many other courses I have taught, and I am very happy to have been a part of that experience for the students. While at FAU, I was also the faculty advisor for the Roboat, SNAME, and OES student clubs. Despite what seemed to be a perpetual lack of funding and a comparatively small number of team members, the FAU Roboat team often outperformed much larger, more well-funded teams that had more sophisticated instrumentation, by adopting simple, clever, and necessarily inexpensive solutions, when possible. One of our main friendly competitors, who we often traded advice and strategies with during the competitions, was Villanova University. In 2012-2013, the FAU and Villanova Roboat teams partnered and presented a proposal to participate in the first Maritime RobotX Challenge, which was held in Singapore in 2014. Based on the proposal, the team was one of only three teams from the US selected to participate. The students took the lead and designed a fully actuated vehicle with azimuthing propellers and a complex control allocation scheme. Unfortunately, the team had a series of mechanical problems related to the reliability of one of the commercial actuators used for the azimuthal propellers, but despite the serious setback, the system they designed permitted the vessel to continue operating even though one of the two actuators was broken. While the team didn't reach the finals, they were awarded "Best Design" for their innovative approach. Given that the effort was truly student driven, I am extremely proud of what they accomplished (Figure 4).



Figure 4. The 2014 FAU-Villanova Maritime RobotX Competition Team.



Figure 5. The author and his wife at the Rifugio Firenzeli/Regensburgerhütte, Utia de Ncisles, Dolomiti mountains.

In 2016 I transferred to the Libera Università di Bolzano in Northern Italy, where I continue to work on field robotics. Some of my recent work in Oceanic Engineering involves the design of nonlinear controllers for USVs and the development of state observers for underwater localization.

Here, in the mountains of Bolzano, I have been extremely fortunate to find a SCUBA diving club and sailing group much more active than I have seen anywhere else. In my spare time, I recently completed the Italian certification for diving to 30 m (ARA 2), the certification for nighttime diving, and the Italian “patente nautica senza limiti per barca a vela e a motore” (license for sail- and motor-powered navigation beyond 12 nautical miles of the coastline). When I am not working, and not in the water, I can be found trying my best to keep up with my wife, who loves hiking in the mountains.

Welcome New and Reinstated Members

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Sebastian Pelayo
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Md Tariq Wazed Akash
Marzanul Momenine

Brazil

Ivanovich Lache

Canada

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Zhihui Duan
Rongrong Guo
Huang Haibin
Youzhuang Hou
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Jie Huang
Yonggang Ji
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Haoze Luo

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Jingyu Qian
Huimin Qiu
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Yi Tan
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Yulin Wang
Jiaqing Wang
Yuanhui Wang
Yang Weng
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Aadithya Vinod Balath
Aatmaj Bhayani Bhayani
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Samyak Kumar Bokinala
Snehashish Choudhary
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Viswamabharan Painumgal
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Harish Kumar S
Surya S
Antara Sarkar
Yashraj Sharma
Anu Sugathan
Jayakrishnan Balath Suresh

Indonesia
Feby Syarief Al A'raaf
Indra Jaya

Ireland
Ahmet Faruk Semerci

Israel
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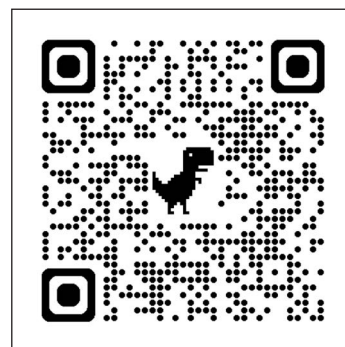
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Second Edition of the Vision-Based Autonomous Underwater Vehicle (AUV) Challenge, IEEE Oceanic Engineering Society Ocean Decade Initiative (ODI)

Vallabh Deogaonkar, IEEE OES SBC IIT Madras, Chennai, India

“What does it take to build a robot that can navigate the underwater world by itself?”

That is the question AqUaVision answers for everyone.

February 22, 2026. Sunday. Approximately 4:30 pm.

The last five minutes remain. The pool water is still, but the air around it is charged with anticipation. An autonomous underwater vehicle (AUV) slowly makes its dive into the water, its camera searching for clues in the hazy pool water. Ahead lies a deceptively simple challenge: a sequence of alternating red and green gates, arranged in a slalom pattern. But underwater, nothing is simple. Light scatters, colors distort, and even the slightest drift can throw the AUV completely off its course. At the edge of the arena, Team Nira from Indian Institute of Information Technology, Design and Manufacturing (IIITDM) Kancheepuram watches intently. Months of design, coding, testing, and iteration now come down to this final run. As the AUV approaches the first gate, there's a moment of silence, then it corrects its heading, aligns, and passes cleanly through the gate. A cheer erupts. It's not just the team celebrating; everyone around the pool feels it. With each successful maneuver, the tension turns into excitement, and the robot's journey becomes a shared experience of engineering coming to life.

This is the Spirit of AqUaVision

More than a competition, AqUaVision is an effort to spark curiosity and build capability in one of the most

challenging frontiers of engineering, which is autonomous underwater systems. At a time when much of our oceans remains unexplored and poorly understood, the need for scalable, intelligent methods of observation has never been greater. This vision closely aligns with the goals of the **United Nations Decade of Ocean Science for Sustainable Development (UN Ocean Decade)**, which calls for transformative solutions to better understand and protect our oceans. From monitoring coral ecosystems to studying marine life and assessing the impact of human activity, vision remains one of the powerful tools for understanding the underwater world. Yet, deploying humans for large-scale exploration is both difficult and expensive.

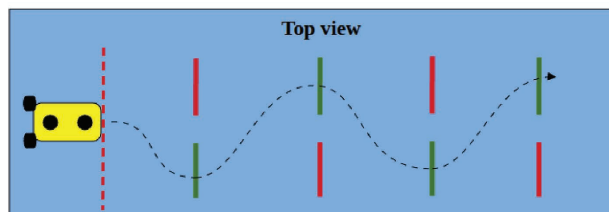


Figure 2. A conceptual image of the slalom challenge where autonomous underwater vehicles must interpret visual cues and navigate alternating colored gates, simulating real-world decision-making in uncertain underwater environments.



Figure 1. Moments before deployment teams make final adjustments as anticipation builds around the arena, capturing the intensity and excitement of real-time autonomous operation.

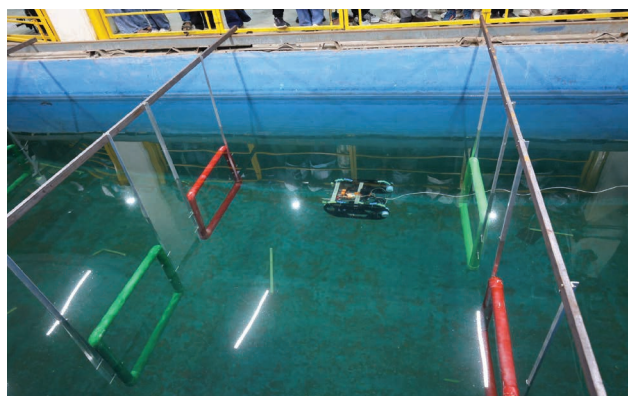


Figure 3. An AUV in motion during the final round, maneuvering through colored gates using onboard vision and control systems where precision, perception, and autonomy come together underwater.

Why AqUaVision ?

Autonomous robots offer a promising alternative for exploring the depths of our oceans, but they come with their own set of challenges. Navigating without reliable GPS, interpreting visual data in low visibility, and maintaining precise control in a dynamic environment are problems that push the limits of engineering. AqUaVision, as shown in the next figure, is designed to bring these challenges into the hands of young engineers, encouraging them to experiment, innovate, and build solutions that contribute to this larger global mission of sustainable ocean exploration.



India's engagement with autonomous underwater systems is steadily growing, but the ecosystem remains at a formative stage especially when it comes to perception-driven autonomy. AqUaVision was conceived to address this very need. By focusing on vision-based autonomy, the competition introduces young engineers to one of the most complex and impactful aspects of underwater robotics. The challenge also emphasises the need for innovative technologies to improve observations of marine ecosystems and better understand human impact on our oceans. AqUaVision positions itself at this intersection where technological curiosity meets global necessity, encouraging students to build systems that can one day contribute to real-world ocean monitoring, research, and sustainability efforts.

AqUaVision 2.0 Challenge

At the core of AqUaVision lies a structured set of tasks designed to evaluate an AUV's ability to operate reliably in underwater environments, progressing from fundamental system validation to complex perception-driven autonomy. All AUVs were designed under strict constraints on size, buoyancy, safety systems, and full autonomy during operation. Participants built their fully functional AUVs following a detailed set of requirements, which mandated safety and operational robustness.

Wet Testing Qualification Round

The competition begins with a Wet Test, where the vehicle must submerge to a controlled depth of 50–100 cm and

maintain stability. This stage verifies buoyancy design, depth sensing, and vertical control, ensuring that the AUV is operationally ready for subsequent tasks.

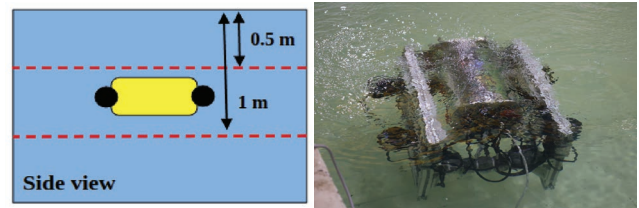


Figure 4. Qualification task concept image (left) and Team SRM AUV performing their submergence test (right).

Task 1: Path Tracking

The Path Tracking task requires the AUV to traverse a straight 3-meter course while maintaining a stable heading. This tests the integration of navigation sensors such as IMUs and the effectiveness of control algorithms in minimizing drift and maintaining directional accuracy.

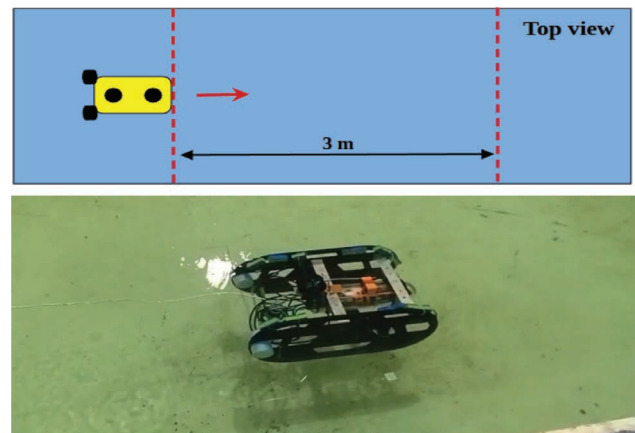


Figure 5. Path tracking task concept image (top) and Team Nira (IIITDM) performing their path tracking test (bottom).

Task 2: Gate Detection

Gate Detection task introduces visual perception. The AUV must detect and identify colored gates (red or green) using onboard cameras and navigate through the selected target. This evaluates real-time image processing, decision-making, and trajectory correction under constrained visibility.

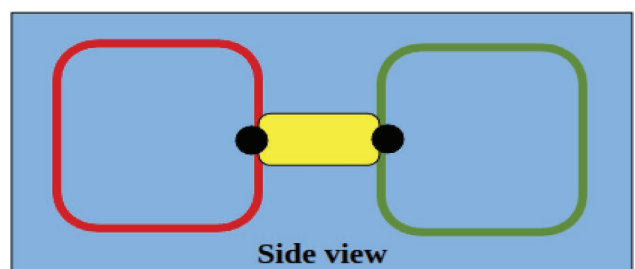


Figure 6. Gate Detection task concept image.

Task 3: Pop the Balloon

Pop the Balloon extends the challenge beyond perception into interaction, requiring the AUV to detect, approach, and physically engage with a target. Together, these tasks comprehensively assess an AUV's capability to perceive, navigate, and act autonomously in a controlled underwater setting.

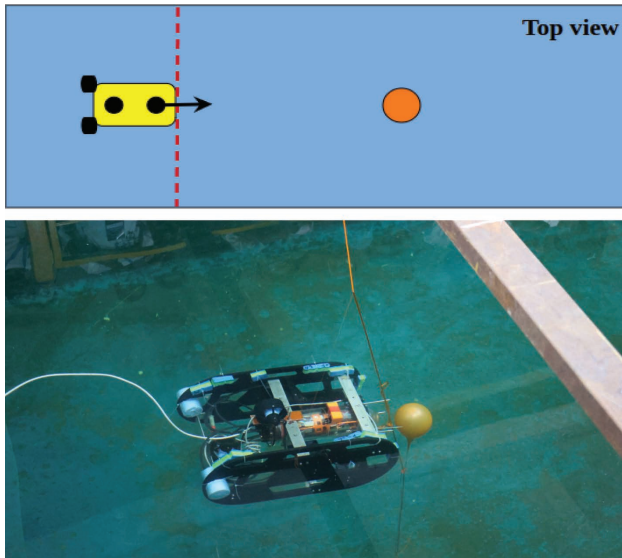


Figure 7. Pop the balloon task concept image (top) and Team Nira (IIITDM) AUV performing the task (bottom).

Task 4: Slalom Race

The final and most demanding task, the Slalom Race, requires the AUV to manoeuvre through a sequence of alternating gates in a zigzag pattern. Here, precise control, rapid response, and smooth trajectory planning become critical, as the vehicle must balance agility with stability.



Figure 8. Team Mural Lab (Plaksha University) deploying their AUV and attempting the Gate detection and Slalom race task.

Poster Presentation

This year, the second edition of AqUaVision featured a poster presentation round, in which each team presented various aspects of the mechanical, electrical and algorithmic design of their AUVs. Each poster was presented in

detail by the participants, and jury members gave each team valuable feedback.

This round provided insight into the engineering decisions behind each AUV beyond the on-field performance.

The competition concluded with Team Nira from IIITDM Kancheepuram securing first place, followed by Team Samira from IIITDM Kancheepuram as the runner-up. Both teams demonstrated strong integration of perception, control, and system design across all tasks. In recognition



Figure 9. Teams presenting their posters to visitors and jury members. Team names and their universities are as follows
 (1) Team Titans (Bannari Amman Institute of Technology, TN)
 (2) Mural Lab (Plaksha University)
 (3) Team Samira (IIITDM Kancheepuram)
 (4) Team VAUV (VIT Vellore)
 (5) Team Nira (IIITDM Kancheepuram)
 (6) SRM AUV (SRM Institute of Technology)
 (7) Team Chinmaya (Chinmaya Vishwavidyapeeth).

of their performance, the winning teams were awarded high-precision **Movella Xsens IMU sensors**, generously sponsored by **Aqtronics Technologies Pvt. Ltd.**

These industry-grade sensors will further support the teams in advancing their research and development in autonomous systems.

Impact of AqUaVision

The significance of AqUaVision extends well beyond the competition arena. By introducing students to real-world challenges in underwater autonomy, it helps bridge the gap between academic learning and real engineering needs. The competition contributes to building a broader ecosystem around ocean engineering, encouraging institutions and students to engage with this relatively underexplored field, as shown in the below figures.

As awareness grows, so does the potential for **innovation, collaboration, and entrepreneurship**. As AqUaVision continues to evolve, it carries with it a vision that extends far beyond a single competition. Each edition builds on the last, incorporating new challenges, deeper **engagement with industry**, and a **growing community** of participants and mentors. What began as an initiative to introduce students to vision-based underwater robotics is steadily transforming into a platform for sustained learning, innovation, and collaboration. AqUaVision is not just about build-



Figure 10. AqUaVision 2.0 participating teams testing their AUVs before the start of the event in the shallow water basin facility at Department of Ocean Engineering, IIT Madras.



Figure 11. AqUaVision 2.0 participants, IEEE Student Branch faculty advisors and organizing team along with chief guest Prof. Prathap Haridoss (Dean of Academic Courses, IIT Madras) and Prof. Abdus Samad (Head of Department, Ocean Engineering, IIT Madras).

ing robots; it is about shaping the future of ocean exploration, one idea, one team, and one breakthrough at a time.

The growth of AqUaVision is also reflected in the expanding student community behind it. This year saw a significant increase in student involvement, with many new members taking up **IEEE OES memberships** and actively contributing to the organisation of the competition. This growing team not only ensured the smooth execution of AqUaVision 2.0, but has also laid a strong foundation for future editions. With increased participation, stronger technical depth, and continued enthusiasm, the organising team is already working towards AqUaVision 3.0, aiming to further scale the competition and its impact. AqUaVision 3.0 is being planned to be conducted on 27 February, 2027.

Acknowledgments

The success of AqUaVision 2.0 was greatly supported by the expertise and guidance of an esteemed jury panel comprising **Prof. M. A. Atmanand, Dr. Abhilash Somayajula, Ms. Nidhi Varshney, and Mr. Arun Kumar**. Their diverse experience spanning academia, research, and industry ensured a fair and rigorous evaluation process. Beyond scoring, the jury actively engaged with participants, providing valuable technical feedback and insights that enriched the overall learning experience for all teams.

AqUaVision 2.0 was made possible through the generous support of its sponsors and institutional partners. The organising team extends its sincere gratitude to the **IEEE OES Madras Chapter, ABCD Centre, National Technology Centre for Ports, Waterways and Coasts (NTCPWC), Seaconvoy Systems Engineering Pvt. Ltd., Department of Ocean Engineering, IIT Madras, and Mavlab** for their continued support towards fostering innovation in ocean engineering. Special thanks are also due to **Aqtronics Technologies Pvt. Ltd.** for sponsoring the competition prizes and enabling deeper industry engagement for participating teams.

Experience the excitement of Aquavision 2.0 documented on the gitbook link ->



Global Symposium on “Innovations & Technologies in Underwater Communication: Bridging Research and Industry”

Puja Dube, Chairperson of the IEEE OES SBC at IIT Delhi and Symposium Organizer

A global symposium titled “**Innovations & Technologies in Underwater Communication: Bridging Research and Industry**” was coordinated and organized by **Puja Dube, and conducted** over two days, 17-18 November 2025, under the guidance of **Prof. Monika Aggarwal**, Faculty Advisor of the IEEE OES SBC, IIT Delhi and Chairperson of the IEEE OES Delhi Chapter. Approximately 40 participants joined virtually, while 38 participants attended in person.

Planning and Preparation

The journey of organizing this symposium began in **June 2025** with the vision of creating a global platform where researchers, academicians, and students could discuss emerging technologies and challenges in underwater communication and acoustic signal processing. The planning phase involved identifying leading experts in underwater acoustics, communication, and networking from both India and abroad. Our team actively reached out to renowned researchers, inviting them to share their expertise and insights. Coordinating with international speakers across multiple time zones, preparing the technical schedule, and managing logistics required months of continuous effort and collaboration.

To support the organization of this event, we submitted a proposal to the **IEEE OES**. We sincerely thank the OES for recognizing the importance of the symposium and providing financial support that helped make this event possible. The symposium was organized by the **IEEE OES SBC, IIT Delhi**, in collaboration with the **IEEE OES Delhi Chapter**.

Registrations and Outreach

Registrations for the symposium opened in the **first week of October 2025**. Posters and announcements were circulated widely through academic mailing lists and social media platforms to reach students and researchers interested in underwater communication technologies. The response was very encouraging. We received **65 registrations from different institutes and research laboratories across India**. The event was conducted in **hybrid mode**, enabling international experts and participants to join virtually while national speakers attended in person. All registered participants were awarded **Certificates of Attendance**.

We invited all national experts to attend the symposium in person to promote deeper interaction with students and researchers. To facilitate their participation, travel expenses, including flight or train tickets, were reimbursed, and **Accommodation** was arranged at the **IIT Delhi Guest House** for all invited speakers.



Memorable moments with participants.

Pre-Event Interaction

All invited speakers from India arrived at IIT Delhi on **17 November 2025**. They visited the **Underwater Communication Laboratory** and interacted closely with research scholars and students working in the domain of underwater acoustics and communication. This informal yet highly valuable interaction created an opportunity for students to present their research ideas, discuss challenges, and receive direct feedback from leading experts—setting a strong academic tone even before the main event.

Event Day Experience

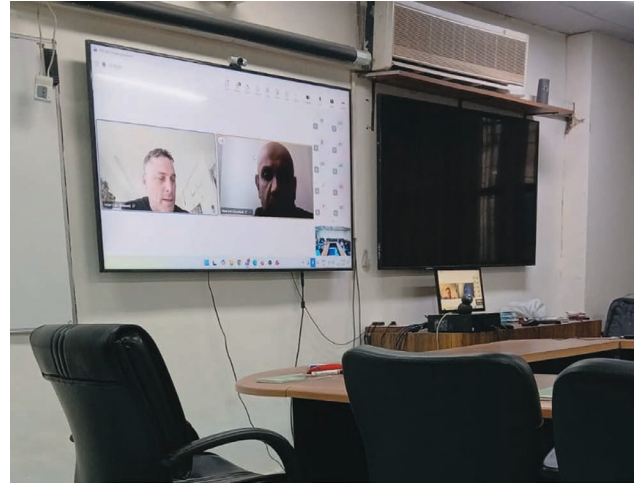
The symposium took place on **18 November 2025** and began with registration and badge collection at **9:30 AM**. The inauguration ceremony began with the traditional **lighting of the lamp** by **Prof. Rajendar Bahl**, Emeritus Professor at the Centre for Applied Research in Electronics (CARE), IIT Delhi. Prof. Bahl is a renowned researcher in underwater and air acoustics and has led several nationally significant projects in acoustic sensing and underwater monitoring. This was followed by the **welcome address** by **Prof. Monika Aggarwal**, who highlighted the importance of interdisciplinary collaboration between communication engineering, signal processing, and ocean engineering to address complex challenges in underwater environments.

Keynote Sessions and Technical Insights

We were honored to host several distinguished national and international experts. Their talks covered a wide spectrum



Session by Prof. Ananya Sen Gupta.



Lecture by Prof. Roe Diamant.

of topics related to underwater acoustics, signal processing, networking, and communication technologies.

One of the keynote talks was delivered by **Prof. Ananya Sen Gupta from the University of Iowa, USA**, who spent a significant part of her research career at the **Woods Hole Oceanographic Institution (WHOI)**. Her talk titled *“Braid Manifold Representation in Underwater Acoustics – Challenges and Opportunities”* introduced participants to advanced mathematical modeling approaches for understanding complex underwater acoustic propagation phenomena. She explained how braid manifold theory can be applied to analyze multipath propagation and acoustic signal behavior in ocean environments, providing students with a new perspective on modeling underwater acoustic channels.

Another keynote speaker was **Dr. Sarang Dhongdi from BITS Pilani, K. K. Birla Goa Campus**, who has been actively involved in several funded projects from SERB, MoES, MoE-SPARC, and DST NM-CPS in the area of aerial and underwater networking. His talk titled *“Protocol Stack Development for Underwater Mobile Networks”* addressed the challenges associated with developing reliable communication protocols for underwater environments. He discussed the limitations imposed by long propagation delays and low bandwidth in acoustic communication channels and highlighted innovative approaches for designing efficient networking architectures for underwater sensor systems.

The symposium also featured a keynote lecture by **Prof. Roe Diamant from the University of Haifa, Israel**, a leading researcher in underwater communication and sonar signal processing. Prior to joining academia, he worked at **Rafael Advanced Defense Systems**, where he contributed to the development of underwater modem technologies. His talk titled *“Marine Fauna Exploration Using Underwater Acoustics”* demonstrated how acoustic signal processing techniques can be used for monitoring and studying marine life. Participants learned how acoustic sensing technologies can detect and analyze marine animal sounds, providing valuable tools for marine ecosystem monitoring and conservation.



Talk by Prof. Sandeep Joshi.

Another important keynote session was delivered by **Dr. Sandeep Joshi from BITS Pilani**, who spoke on *“Redefining Channel Estimation in Underwater Acoustic Communication Systems with Deep Neural Network.”* In his presentation, he discussed how deep learning models can significantly improve channel estimation performance in highly dynamic underwater acoustic channels. His talk introduced students to the integration of machine learning techniques with classical signal processing algorithms to enhance communication reliability.

The symposium also included a keynote lecture by **Dr. Ankur Bansal from IIT Jammu**, whose talk titled *“Design, Analysis, and Optimization of Hybrid Underwater Optical Wireless Communication (UOWC) – RF Network”* focused on hybrid communication architectures that combine optical and RF technologies. He explained how such hybrid systems can enhance communication speed and reliability, particularly in environments where acoustic communication alone may not be sufficient.

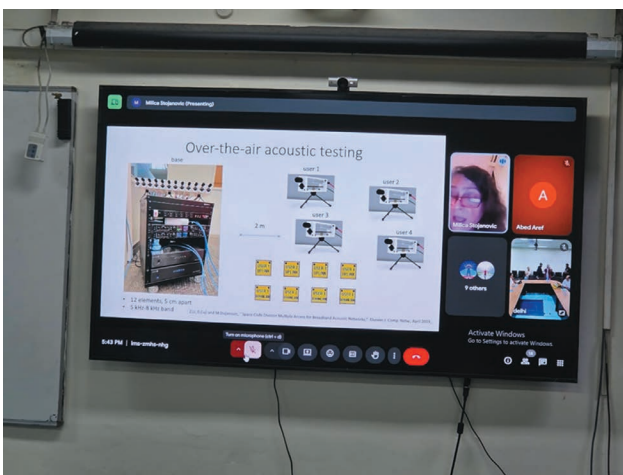
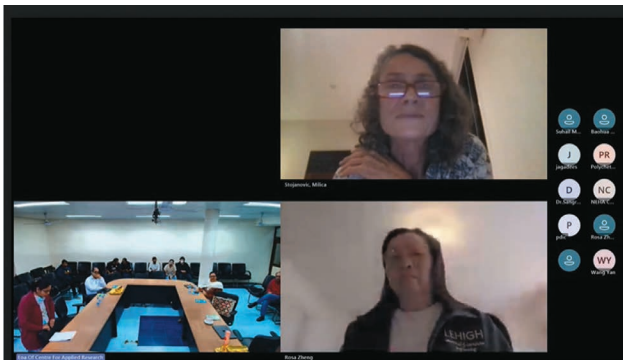
Another keynote address was delivered by **Prof. Arun Kumar from IIT Delhi**, a highly respected researcher in digital signal processing, underwater acoustics, and multi-sensor data fusion. With more than **170 research publications and multiple patents**, he has contributed significantly to the development of underwater acoustic sensing technologies. His talk titled *“An Overview of Acoustic Vector Sensors for Underwater Applications”* introduced



Keynote by Prof. Arun Kumar.

participants to the working principles of acoustic vector sensors and explained how these sensors improve direction-of-arrival estimation and source localization in underwater acoustic systems.

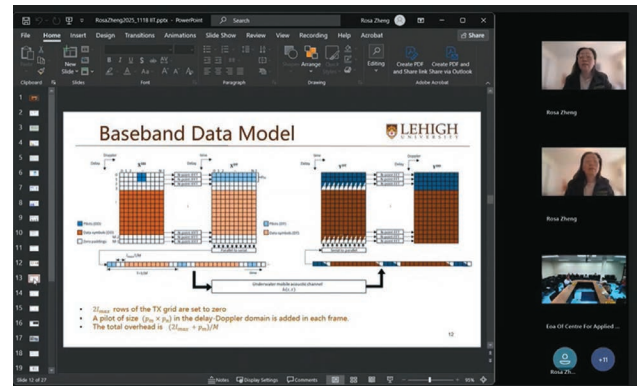
The symposium also included an insightful lecture by **Dr. Badri N. Subudhi from IIT Jammu**, whose talk titled “*Deep Underwater Surveillance using Deep Learning Architecture*” highlighted the application of modern deep learning frameworks for underwater monitoring systems. He discussed the potential of artificial intelligence in underwater surveillance, object detection, and security applications.



Session by Prof. Milica Stojanovic.

One of the most anticipated sessions of the symposium was the keynote talk by **Prof. Milica Stojanovic from Northeastern University, USA**, a pioneer in the field of

underwater acoustic communications. She is also a **Guest Investigator at the Woods Hole Oceanographic Institution**. Her lecture titled “*Underwater Acoustic Communications: Signal Processing Basics*” provided a comprehensive explanation of the fundamental signal processing techniques used in underwater communication systems. She explained the challenges posed by multipath propagation, Doppler effects, and limited bandwidth, and demonstrated how advanced signal processing algorithms can address these challenges.



Lecture by Prof. Rosa Zheng.

The final keynote lecture was delivered by **Prof. Rosa Zheng from Lehigh University, USA**, a distinguished researcher and recipient of the **NSF CAREER Award**. She has founded **Sea-Gal Technologies Inc.** in 2023 to develop innovative underwater communication technologies. Her talk provided valuable insights into emerging research directions in underwater communication networks and highlighted the importance of interdisciplinary collaboration in advancing ocean technology.

Learning and Impact

Each talk provided valuable insights into different aspects of underwater communication systems. Although each talk was scheduled for approximately 40 minutes, the sessions naturally extended due to highly engaging discussions and interactive question-answer rounds. Students and researchers actively engaged with the speakers, asking questions related to acoustic propagation modeling, communication protocol design, machine learning applications, and marine monitoring



Honoring Prof. Ankur Bansal.



With gratitude Prof. Sandeep Joshi.



Honoring Prof. Sarang.



With gratitude to Prof. Badri.

technologies. These discussions created an intellectually stimulating environment where participants could directly interact with internationally recognized experts and gain deeper insights into real-world research challenges.

To ensure a comfortable and engaging experience for all attendees, lunch and high tea were thoughtfully arranged for all participants and invited guests, providing additional opportunities for informal networking and discussions. As a token of appreciation, all invited keynote speakers were presented with a small gesture of gratitude, acknowledging their valuable time, contributions, and support in making the symposium a success.

Overall, the symposium enabled participants to learn from leading researchers, understand real-world challenges, explore interdisciplinary applications, and gain inspiration for future research directions. The event successfully fostered a strong learning ecosystem and encouraged deeper academic curiosity among students.

Conclusion and Acknowledgment

The **Global Symposium on Innovations & Technologies in Underwater Communication: Bridging Research and Industry** successfully brought together leading experts, researchers, and students to discuss emerging research directions in underwater communication technologies.

We extend our heartfelt gratitude to **Prof. Monika Aggarwal** for her guidance and mentorship throughout the planning and execution of the symposium. Organizing this global symposium was an enriching experience for the entire team and me. It strengthened our coordination skills, expanded our academic network, and reinforced the importance of collaborative research in advancing underwater communication technologies. We look forward to organizing more such events that connect students, researchers, and global experts in the future.

OTC Asia Experiences

Student Members of the OES Malaysia Chapter

At OTC Asia 2026 student members of the OES Malaysia Chapter volunteered to support OES promotions. Following are reports on their experiences at the conference.

OTC Asia Experiences

By Sree Raam

From 31 March until 2 April 2026, I had the opportunity to serve as a student volunteer and stand personnel at the IEEE Oceanic Engineering Society (IEEE OES) booth during Offshore Technology Conference (OTC Asia 2026) held at the Kuala Lumpur Convention Centre, Malaysia. The conference gathered professionals, researchers, engineers, and technology leaders from around the world to discuss the latest developments and innovations in the offshore and energy industry.



Student volunteer Sree Raam together with Christian de Moustier and Jacqueline Nichols supporting the IEEE OES booth during OTC Asia 2026.

I would like to express my sincere appreciation to Assoc. Prof. Ir. Dr. Zool Hilmi for giving me the opportunity and trust to represent the OES Malaysia Chapter at such a prestigious international conference. Together with Riyadh, we supported the IEEE OES booth by engaging with visitors, introducing IEEE OES initiatives, and sharing information about the society's activities and professional community.

Throughout the event, many students and industry professionals visited our booth to learn more about IEEE OES. We explained the role of IEEE OES as a global professional society under IEEE that focuses on oceanic and offshore engineering fields. We also shared information regarding IEEE OES memberships, international conferences, technical activities, networking opportunities, student engagement programmes, and professional develop-



Sree Raam introducing IEEE OES activities and membership opportunities to visitors and students during OTC Asia 2026.

ment platforms available for students and engineers worldwide. Many

visitors showed strong interest in joining IEEE OES after learning about the opportunities and global exposure provided by the society.

One of the most valuable experiences during the conference was the opportunity to work closely with members of the global IEEE OES community. Jacqueline Nichols from the Canada Chapter, played a major role in supervising and guiding us throughout the event as Vice President of Professional Activities of IEEE OES. Through her professionalism, leadership, and guidance, I learned a great deal about technical communication, professional engagement, event coordination, and representing IEEE OES in an international environment. Her support throughout the conference made the experience even more meaningful and educational.

I also had the privilege of interacting with Christian de Moustier, Past President of IEEE OES, and Harumi Sugimatsu from Japan Chapter who serves as OTC Asia 2026



Jacqueline Nichols, from the Canada Chapter interacting with visitors during engagement activities at the IEEE OES booth.

Programme Subcommittee Chair. Through conversations with them, I gained valuable insight into the importance of international collaboration, engineering leadership, and the future direction of oceanic engineering and offshore technologies. Listening to their experiences and perspectives gave me a broader understanding of how engineering communities work together globally to support innovation and technological advancement.

Apart from supporting the booth, I also had the opportunity to network with professionals and visitors from Malaysia, China, Japan, India, Canada, the Middle East, and other Southeast Asian countries. Throughout the conference,



Christian de Moustier together with IEEE OES student volunteer engaging with conference visitors at the IEEE OES booth.

I exchanged name cards, discussed current industry developments, and learned more about engineering career pathways within the offshore sector.

During the event, I also met several professionals from the offshore industry, including Farid Hassan from Deep-Ocean, Dave McGinlay from First Marine Solutions, Steve Wills from Herculean Climate Solutions, and Philip Nilsen from Skadi Offshore. Through these interactions, I gained valuable exposure to offshore engineering operations, robotics applications, AI-driven offshore technologies, sustainability initiatives, and future developments within the industry.

Initially, I believed the offshore industry mainly focused on traditional oil and gas operations. However, after attending various technical showcases and visiting different booths during OTC Asia 2026, I realized the industry is rapidly evolving through the integration of Artificial Intelligence (AI), robotics, autonomous systems, digital technologies, and smart offshore solutions. Many companies highlighted how advanced technologies are being used to improve offshore safety, operational efficiency, monitoring systems, and sustainability efforts.

The conference also showed how the offshore industry increasingly requires talents from multidisciplinary engineering backgrounds such as Electrical and Electronic Engineering, Mechanical Engineering, Robotics, Artificial Intelligence, Computer Science, and Software Engineering. This exposure broadened my understanding of how engineering and technology continue to shape the future of the offshore and marine industry.

Overall, OTC Asia 2026 was an incredibly meaningful and inspiring experience that expanded my technical knowledge, professional exposure, and understanding of the global engineering industry. Beyond learning about offshore technologies, the experience also strengthened my communication, networking, and professional engagement skills through interactions with international IEEE OES members and global industry professionals. It was truly a valuable opportunity to learn, contribute, and grow within an international engineering environment.

A Front-Row Seat to Ocean Engineering: Volunteering with IEEE OES at OTC Asia 2026

By Rashadul Nafis Riyad, Universiti Teknologi Malaysia (UTM), Malaysia | IEEE OES Malaysia Chapter



I am Rashadul Nafis Riyad, an undergraduate student in Software Engineering at Universiti Teknologi Malaysia (UTM), with a keen interest in artificial intelligence and its applications in engineering. As a volunteer under the IEEE OES Malaysia Chapter, I had the privilege of representing IEEE OES at OTC Asia 2026 in Kuala Lumpur.

The Offshore Technology Conference Asia (OTC Asia) 2026 was held from 31 March to 2 April 2026 at the Kuala Lumpur Convention Centre (KLCC), Malaysia, organised by PETRONAS under the theme “Excellence in Asia: Advancing Energy Responsibly.” It was within this remarkable setting that I had the privilege of serving as a volunteer stand personnel at the IEEE Oceanic Engineering Society (OES) exhibition booth. This opportunity came through the IEEE OES Malaysia Chapter, and I am sincerely grateful to Assoc. Prof. Ir. Dr. Zool Hilmi Ismail, Chair of the IEEE OES Malaysia Chapter, for giving me this incredible and exciting opportunity. His encouragement and support made it possible for me to step into an international professional environment that I will not soon forget.

As stand personnel representing the IEEE OES exhibition booth, my primary responsibility was to engage with conference visitors and communicate the value, mission, and opportunities offered by the IEEE Oceanic Engineering Society. This involved welcoming attendees who approached the booth, introducing them to what IEEE OES is, explaining its global relevance, and highlighting the wide range of opportunities it provides — from technical publications, workshops, and conferences to student activities, Young Professionals (YP) programmes, and Women in Engineering (WIE) initiatives. Beyond direct visitor engagement, the role also included assisting with booth management, distributing unique and thoughtfully curated materials and freebies to interested visitors, and helping to maintain an inviting and organised booth environment throughout the three-day event. Each of these responsibilities, though seemingly operational, contributed meaningfully to the broader mission of raising awareness about IEEE OES among a global professional audience.

The technical environment at OTC Asia 2026 was truly remarkable. Throughout the three days, the exhibition area featured a wide range of emerging technologies and innovations, including offshore autonomous systems, subsea robotics, decarbonisation solutions, digital monitoring platforms and ocean energy technologies. Being at the IEEE OES booth was an incredible opportunity to have a front-row perspective of the cross-over between academic research and industrial application in the ocean engineering field. Observing and learning about these technologies in a live conference environment was a genuinely eye-opening experience. The diversity of innovation demonstrated, all driven by a shared commitment to exploring and sustainably managing our ocean resources, reinforced the critical role that organisations such as IEEE OES play in advancing the field. Every conversation at the booth served as a reminder of how far-reaching and impactful ocean engineering truly is, not only for industry but for humanity and the environment at large.

Perhaps one of the best aspects of this volunteer experience was the opportunity to meet people from such a wide variety of industries and countries. Visitors who stopped by the IEEE OES booth included engineers, oil and gas

industry executives, renewable and marine energy researchers, academics, and young professionals looking to explore the beginning of their career. Each conversation offered a unique perspective and a valuable knowledge-sharing moment. Presenting IEEE OES to people who were unfamiliar with the Society was particularly fulfilling. Describing its mission, its global network, its publication platforms, and the specific pathways it offers for students, innovators, young professionals, and passionate engineers sparked genuine interest among many visitors. These interactions were not just information sharing, but meaningful connections between a volunteer representative and the broader international ocean engineering community. The networking experience went far beyond just talking to people at the booth. Many of the conversations that started on the exhibition floor naturally led to deeper discussions about ocean technology, career opportunities, and how professional societies like IEEE OES play an important role in connecting people across the field. These were honestly some of the most valuable moments of the entire three days—the kind of conversations you do not expect to have but end up learning the most from.

A big part of what made this experience so enjoyable was the people I got to work with. Jacqueline, Vice President for Professional Activities, was an incredible team lead throughout the three days. She kept everything running smoothly — from making sure the booth was well set up to engaging visitors with freebies that genuinely got people



Watching Christian's work.

curious and interested. Her warm and approachable attitude gave me the confidence to approach visitors and start conversations, which honestly was not something I expected to do so comfortably. Christian, OES Past President, was someone I learned a lot from just by watching him work. The way he talked to visitors, adapted to different people, and naturally drew them into conversations about IEEE OES was impressive. It was like a live masterclass in communication and marketing, and I picked up more from those moments than I could have from any workshop or lecture. I would also like to extend my sincere appreciation to Harumi, OTC Asia 2026 Programme Subcommittee Chair, who was a wonderful colleague throughout the event. Her positive energy and team spirit made the whole experience feel less like work and more like a shared adventure. I would also like to thank

Sree Ram for his support in managing the booth and engaging with visitors throughout the event. Working with all four of them made the three days fly by, and I left the event feeling genuinely grateful for the people I had the chance to work alongside.

Volunteering at OTC Asia 2026 taught me things that go beyond what a classroom can offer. Explaining IEEE OES to visitors from different industries and career backgrounds helped me become a better communicator—learning to keep things clear, relevant, and engaging depending on who I was talking to. The booth experience also gave me a practical introduction to event marketing. Seeing how small things—like the way materials were distributed or how conversations were started—could draw people in and spark genuine interest was something I had never thought about before, and it was a valuable lesson to take away.

On a broader level, this experience showed me just how much can be gained from simply showing up and being involved. Standing at that booth, surrounded by some of the most experienced professionals in the ocean energy



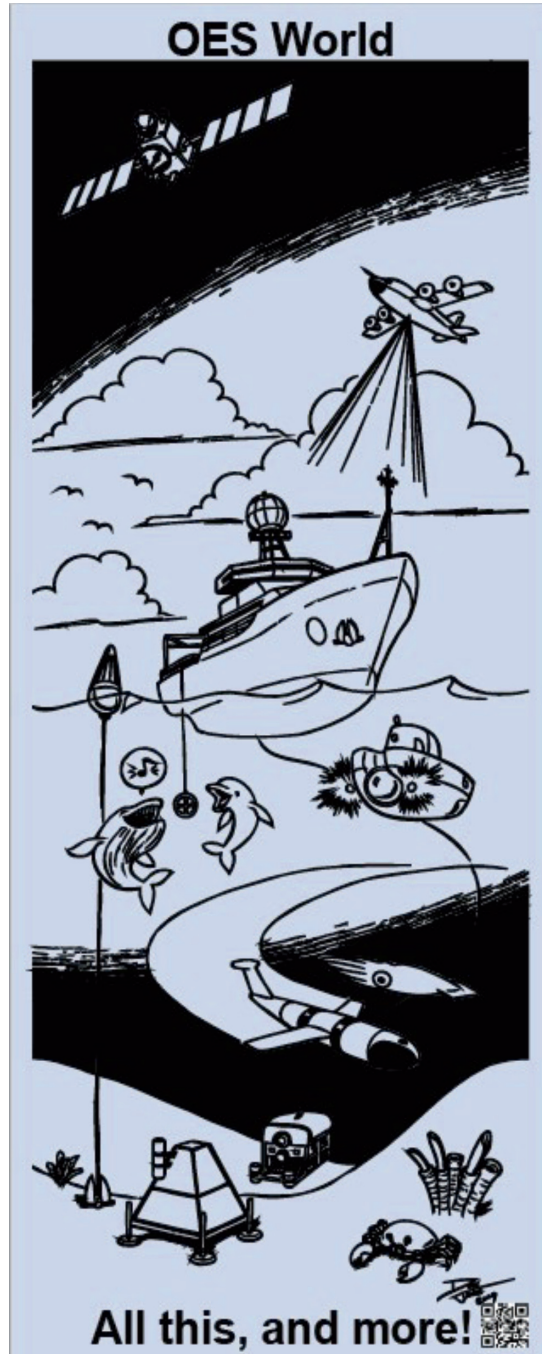
Group photo with members of the global IEEE OES community including Christian de Moustier, Harumi Sugimatsu, Jacqueline Nichols, and Rashadul Nafis Riyad & Sree Raam (Students from Malaysia Chapter) during OTC Asia 2026.

industry, was both humbling and motivating. It has made me more committed to staying active within the IEEE OES community and contributing wherever I can.

Volunteering with IEEE OES at OTC Asia 2026 was honestly more than I expected. In just three days, I gained technical exposure, made meaningful connections, and grew as a communicator — all while deepening my understanding of what IEEE OES stands for and the impact it has globally. I extend my heartfelt gratitude once again to Assoc. Prof. Ir. Dr. Zool Hilmi Ismail and the IEEE OES Malaysia Chapter for making this opportunity possible, and to Jacqueline, Christian, Harumi and Sree Ram for their unwavering support, mentorship, and guidance throughout the event. I look forward to contributing further to IEEE OES activities in Malaysia and beyond, and I encourage fellow students and young professionals to actively seek out such volunteer opportunities — they are, without doubt, among the most rewarding experiences our professional community has to offer.



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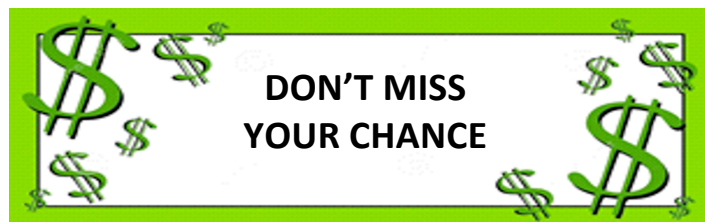
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