OES BEACON

Newsletter of the Oceanic Engineering Society

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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.

Front cover photos during OCEANS'09 Gulf Coast were taken by Stan Chamberlain, our previous OES photographer

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Uncover IEEE member benefits that are most relevant to you. Use the Global Benefits finder to select your current career phase and country/region, then select "Go." Your results page will render a list of key IEEE member benefits that can help you accelerate your career plans and help you grow as a technology professional.

Visit: https://www.ieee.org/membership/benefits/index.html

From the OES BEACON Editors

Harumi Sugimatsu and Robert Wernli

OES has had a vision to increase the number of student and young professionals (YPs) in the society. Based on the reports in this issue that vision is becoming a reality. Articles highlight the OES YP-BOOST and WIE (Women In Engineering) PROPEL Laureats and their activities. OES also provides funding to get students to the OCEANS conferences via the Student Poster Competition and other events for qualified applicants. In addition, OES now has 18 Student Branch Chapters (SBCs). This issue contains another report from the University of Zagreb SBC, which is raising the bar on chapter activities.

On a larger scale, we have a report on the OES Ambassador Program supporting the UN Decade of Ocean Science.

You will also see in the report from the OES president the latest on his view of the direction of the society. We have the latest from our VP for Professional Activities and our Executive VP provides the latest on our strategic planning in preparation for our 5-year review. We also welcome our new AdCom members, for 2024-2026, who are listed on the inside of the front cover.

The latest on the OCEANS conference planning is provided in the report by our VP for OCEANS. Next issue will report on the OCEANS 2024 Singapore conference scheduled for April and the planning on the OCEANS 2024 Halifax conference upcoming in September. OTC Asia was just held in February and OTC Houston is on the horizon this May. Both will be reported in the next issue.

Upcoming workshops and symposia are listed in the Conference Calendar and reported by our VP for Workshops and Symposia. Reports on SeaAI 23 (Israel), ENAEM 23 (Argentina), SYMPOL 23 (India) and a Winter School on Underwater Network Simulations (Italy) are included in this issue.

Our technology committees (TCs) continue to be more active as reported by our VP for Technical Activities. The CWTMA TC reports on their Marine Radar Wind and Wave Measurements for Short Term Forecasts webinar. The Journal EIC again provides a list of recently released papers that are available to our members.

Our chapters have been busy as the reports show. This issue contains the latest on the activities of the Japan chapter and their workshop on submarine cables and the Marine Robotics Competition held in Okinawa. Results of a competition held by the Victoria Chapter, the latest from the UKRI Chapter and several reports from the Hong Kong chapter are also included.

Have you done something exciting lately? Received an award or professional recognition? Be sure to contact your editors about submitting an article. And don't miss the Who's Who in OES article on one of our outstanding members in each issue. Want to participate as a technology speaker? See the Call for Distinguished Lecturer nominations in this issue.

Harumi with the latest BEACON issue.

Here's a 2006 OCEANS Singapore toast to the 2024 OCEANS Singapore conference... Cheers!

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.

From the President

Christopher Whitt, OES President

As we start 2024, it is with great pleasure and gratitude that I reflect on our accomplishments together. The past year has been filled with innovation, collaboration, and a shared commitment to advancing our field, which is only possible because of our collective efforts. First and foremost, I extend my heartfelt appreciation to each of you for your membership and contributions to OES. Your passion and commitment to furthering the Society's mission and vision has not gone unnoticed. 2023 saw two successful OCEANS Conferences, several symposiums and workshops, many chapter events, and other local activities from our students, YP, WIE, and Ocean Decade Ambassador volunteers. All these have enriched our professional journeys and collectively elevated our society's standing.

Looking ahead to 2024, I am optimistic and excited about the future. We stand at the forefront of technological advancements shaping the world. OES contributed significantly to the technical program for OTC Asia in Kuala Lumpur in February, and will contribute similarly to OTC in Houston, USA, in May. Of course, we hope to see many of our friends and colleagues at OCEANS 2024 Singapore next month and then at OCEANS 2024 Halifax in September (the call for papers is open now). Our collective expertise and innovative spirit position us to overcome challenges and contribute meaningfully to the ever-evolving landscape of oceanic engineering and its impacts on society.

In the coming year, we will focus on expanding and strengthening our technical events, supporting our local leaders, improving the Society's financial stability, and developing volunteer leaders, to name a few. I encourage each member to actively engage, share insights, and contribute to our OES conferences, publications and/or local chapter activities.

There are numerous emerging opportunities to enhance the sustainability of how humanity uses the resources of the ocean. OES sponsored sessions at the Ocean Sciences Meeting in February. We will have a panel at the UN Ocean Decade Conference in April. We plan a workshop in October in coordination with the Robotics and Automation Society in Abu Dhabi. Next year, the IEEE Technical Activities Board (TAB) will have a high-level conference to highlight clean technology solutions from across all of IEEE, and we plan for OES to be prominently represented.

This is the second and final year of my second term as President, and this year I will pass the torch on to the next President to guide the Society into the future. I express my sincere gratitude for your unwavering support and dedication to OES. Together, we have accomplished much, and together, we will continue to shape the future of our ocean. I am honoured to lead such an exceptional group of individuals and look forward to the opportunities, challenges, and triumphs that await us in the upcoming year.

Finally, thank you to all the hard-working volunteers that make OES events happen! Volunteering with OES is one of the most rewarding ways to add value to your membership and build your professional network. If you have an idea for the Society to take on, or would like to be involved but don't know where to start, please email me anytime at president@ieeeoes.org.

Society Strategic Plan

Brandy Armstrong, Executive VP, executive-vp@ieeeoes.org

Strategic Planning

Some of you may or may not know that we are approaching the Society's 5-year review this fall (2024). The strategic plan (defined here as the combination of strategic and implementation plans) is a key component of the 5-year review. The strategic plan is used to guide every area of the Society's operations. Society operations need to be reviewed annually to gage progress in relation to the goals set in the implementation piece of the Strategic Plan to ensure the Society is aligned with the Vision and Mission and ready for the next 5-year review.

In preparation for the 5-year review, the strategic planning committee was re-invigorated with volunteers in January of 2021. The committee has spent the past three-plus years working closely with the Administrative Committee (AdCom) to solicit Society input and update the Society Mission, Vision, and Values as well as the strategic plan. The graphic above details the process that was undertaken to ensure that Executive and Administrative Committee feedback (purple dots) was integral in all steps (Assess, Align and Act) of developing the strategic plan. A combination of tactics was used including

Strategic planning timeline. Purple dots represent all stages during the past two years where Administrative Committee Feedback was collected and incorporated into the Strategic Plan.The yellow dot represents the current stage in the timeline.

three email surveys, many virtual meetings and four in person brainstorming sessions.

At the upcoming in person Administrative Committee meeting, we will discuss the strategic plan and how it can be used to help guide Society operations and help the society.

As we near the 5-year review, I would like to thank the Strategic Planning Committee, which includes Christopher Whitt (President), Amy Deeb (YP BOOST) and Andreas Marouchos (AdCom) for attending the many, often weekly, meetings to discuss and incorporate feedback at all steps along the way. I would also like to thank those within the five AdCom classes that gave us specific and constructive feedback throughout the process. We would not have been able to do the updates without your help.

I also want to remind everyone that the process does not end with the 5-year review. The strategic plan is a living document that is intended to be reviewed annually and updated as needed. Anyone who is interested in being involved in the strategic planning committee is welcome to contact the Executive Vice President at executive-vp@ieeeoes.org.

VPTA Column

Shyam Madhusudhana, VP for Technical Activities

As I embark on my second year as the VP for Technical Activities, a look back at 2023 reveals a successful year of serving the Society's membership. Our Technology Committees (TCs) exhibited increased activity, with all the Chairs leading their roles with vigor. Beacon carried regular reports from the TC Chairs throughout 2023. As we aim to keep that momentum going in 2024, Weimin Huang (Chair of the CWTMA TC) has already gotten us off to a fantastic start by organizing an exciting webinar. You can read more about the event in an article authored by him in this edition of Beacon. Our Distinguished Lecturers (DLs) were quite busy as well, having delivered ten talks during the year, all across the globe. With the appointment of five new DLs for the term 2024–26, we now have a healthier roster of 15 DLs, covering a diverse mix of competences. As I shall continue to push the DLs to fulfil the objectives of IEEE OES DL programme, we aim to beat the previous year's tally of delivered talks. With over 20 events

organized in 2023, our Chapters also contributed handsomely to the year's success. This year, we shall strive to make tractable the activities of our Chapters around the globe. Maurizio Migliaccio, who started his term as the Chapters Coordinator this year, is already busy collating up-to-date records of Chapters' leadership and ironing out inconsistencies on our website.

As we stroll into 2024, our ongoing efforts on the overhauling of TCs is well on track for completion later in the year. I am also thrilled to mention that the IEEE-OES Summer School will be piloting at the upcoming Singapore OCEANS. The School will be a 2-day event held just prior to the conference and offers attendees an immersive sortie into the breaths of oceanic engineering, related technologies and applications, along with networking opportunities and interactions with industry. Many thanks to Venugopalan Pallayil, Hari Vishnu, and Bharath Kalyan (all members of the Singapore OCEANS Local Organizing Committee) for supporting various aspects of the legwork in organizing the School. You can read more about it and see the faculty roster & list of talks at https://singapore24.oceansconference.org/ieee-oes-summer-school-2024/

The call for DL nominations for the term 2025–27 is now open; you can find a separate article pertaining to that in this edition of Beacon. A virtual meeting of the Chapter Chairs is scheduled in mid-March. For the first time in years, we return to an in-person meeting of the TC Chairs (during Singapore OCEANS). Looking forward to scaling new heights in 2024!

From the VP For Professional Activities

Elizabeth L. Creed, Vice President for Professional Activities

2023 was a good year for OES membership. We ended the year with just under 1900 members, an 8% increase over 2022.

In the fourth quarter of 2023, three OES Student Branch Chapters were approved by IEEE: University of Haifa, Israel; University of Limerick, Ireland; and Southwest Petroleum University, China. Welcome aboard! We look forward to your involvement in OES activities.

The inaugural edition of the quarterly Student Newsletter (Winter 2024) was distributed to all OES student members in the middle of February. It contains links to a variety of student activities and opportunities including upcoming workshops and conferences, Student Poster Competitions, Berth of Opportunity, and Ocean Decade Initiative Projects. Comments and suggestions, as well as volunteering to assist in the generation of future Student Newsletters, should be sent to: student-chapters@ieeeoes.org

The two 2024–2025 YP (Young Professionals) BOOST Laureates were announced at the end of December. Fifteen applications were received for these two positions. After careful review by the YP Committee, led by Roberto Petroccia, Karen Renninger-Rojas and Real Gaultier, the final two were selected. Congratulations! For more information on the newest OES YP BOOST Laureates, see the article in this issue.

The YP BOOST Laureates are collaborating with their MTS counterparts on the YP/ECOP (Early Career Ocean Professionals) program for OCEANS Singapore. The program, on Wednesday, 17 April during lunch, will be a discussion on funding opportunities and grant preparation for Young Professionals. Panelists with experience in academia, industry and government funding in different regions of the world will start the program with an overview. Then the floor will be open for questions and discussion from the audience. This is a great opportunity for YPs attending OCEANS Singapore to learn the ins and outs of the funding process from people who have been successful in receiving grants from a variety of sources.

The YP Newsletter will make its debut later this year. If you are interested in volunteering to help with the Newsletter, please contact the VP for Professional Activities: vp-professional-activities@ieeeoes.org.

In early March 2024, the OES Arrears Committee will have done an outreach to all individuals who did not renew their membership for 2024. The goal of this committee is to 1) encourage people to renew their membership and 2) gather feedback from those who are not renewing on their reasons why they made that decision. The feedback will be used to guide future OES activities and member benefits.

At OCEANS 2024 Singapore, the OES will be hosting an OES member only reception on Tuesday evening, 16 April, from 7–9 pm at the Copthorne Hotel. Please join us.

From the Vice President for Workshops & Symposia

Gerardo "Gerry" Acosta, VP for W&S

It is with great satisfaction that I inform you that our OES is extremely active in organizing workshops and symposiums in various regions of our blue planet. Indeed, during the last third of last year and the first part of 2024, several events were held, as can be seen in this same issue of our Beacon.

The Conference about Artificial Intelligence and Sea—SeaAI 2023, held at the University of Haifa last June and reported by Prof. Itzik Klein, had a large audience of about 200 attendees. They had the opportunity to enjoy a lecture from Prof. Mandar Chitre. Francesco Maurelli, OES YP-BOOST, tells us about the great experience of the 6th Marine Robotics School Workshop at the CSIR National Institute of Oceanography (NIO) in Goa, India, last November. They counted on the fundamental contributions of renowned people like Prof. Pramod Maurya and Prof. Antonio Pascoal.

The 2023 International Symposium on Ocean Technology (SYMPOL 2023) was organized by the Department of Electronics of the Cochin University of Science and Technology, in Kochi, India, during last December. Several very interesting talks were given by experts during this symposium with a vast tradition in India. On the other hemisphere, many of us could enjoy the ENAEM 2023—Argentine Meeting on Marine Energies, where wave energy converters were the main focus of this workshop, during the first days of November. We provided support from the OES with travel grants to twenty-seven students and young professionals from different parts of this South American country.

We started this year with the second Winter School on Underwater Network Simulations and experimentation (UNWiS), held in Padova, Italy. As reported by Filippo Campagnaro also in this Beacon's edition, the school was theoretical and practical, with an interesting session of hands-on exercises every day where attendees could apply concepts they received from different talks.

And for the next months we plan to give support to the IEEE/OES Thirteenth Current, Waves and Turbulence Measurement (CWTM) in Wanchese, NC, USA (March 18th), SAUVC 2024—Singapore AUV Challenge (April 5th), the SusTech 2024—11th Annual IEEE Conference on Technology for Sustainability in Portland, OR, USA (April 14th), the OES China Ocean Acoustics Conference in Harbin, China (May 29th), the RAMI—Robotics for Asset Maintenance and Inspections—Marine Robots Competition 2024 in La Spezia, Italy (during July), and also in La Spezia the Ucomms conference is expected to be held by September. We will also have the 2024 IEEE OES AUV Symposium in Boston, MA, USA (September 18th), the 2024 edition of the IEEE OES BtS—Breaking the Surface, also by September, the MIW—Marine Imaging Workshop in Monterey, CA, USA (October 7th), the USYS—IEEE 10th Int'l Conference on Underwater System Technology: Theory & Applications, in Xi'an, China (October 11th), and the Metro Sea 2024—IEEE Int'l Workshop on Metrology for the Sea in Portorose, Slovenia (October 14th). As you may see, we have twelve events for 2024! We will keep updating our website with exhaustive information about this. Particularly for the 2024 IEEE OES AUV Symposium, keep in mind that the ending dates for submitting abstracts/papers are very close, in case you want to present part of your work. (https://auv2024.sites.northeastern.edu/).

If you wish to get involved in these workshops or propose new ones, please contact me at vp-workshops-symposia@ieeeoes.org. In addition, keep in mind that our OES offers the possibility of both technical and financial sponsorship. In order to consider the latter in the budget, it is necessary to submit requests for support during the first half of the calendar year. Specifically, until the first days of June for the W&S that will be held during the following year. On our website, there is a detailed guide for these presentations (https://ieeeoes.org/conferences/workshops-and-symposia/) and if you have any questions, do not hesitate to contact me.

Have a safe and pleasant navigation and always tell me how I can help you!

VP OCEANS Report

Venugopalan Pallayil, Vice President for OCEANS (VPO)

Hello OES Colleagues,

It has been a very hectic time for me and so I shall keep this report very short. We are about two months away from OCEANS 2024 Singapore when I am writing this report. Having started the preparations to host OCEANS 2020 in Singapore, it has been a long wait, and we hope to put up a good conference both on the technical front and exhibition. It is estimated that about three hundred technical papers will be presented and over 40 exhibitors will showcase their products.

There will be three main keynote speeches and three tutorials. The OES Ocean Decade Initiative committee will be organizing a special panel '*UN Ocean Decade: shifting mindsets; overcoming barriers.*' The Panel proposes to address what needs to change in our outlook and behaviour to overcome some of the barriers in addressing the UN Decade of Oceans Challenges. Yet another panel will be on 'Ocean Observing Platforms and Technologies for Ocean Decade: Perspectives and Prospects.' Under this panel the speakers, who are mostly inventors or technology developers, will discuss some of the cutting edge technologies and systems that would change the way we monitor our oceans and collect data. A third panel will address the need for building a southeast Asia ocean decade consortium to support UN Ocean Decade goals and providing solutions to its implementation in the region.

We will have all the regular social events as well as WIE and YP panels. Student mixer and OES member's night will also be organized. The details of these events will be shared with the delegates soon. There has been an overwhelming response to sign up for the technical tours and all the places have been filled up.

Another important news that I would like to share is that the governing boards of two societies have approved a proposal to host the 2026 Rest of the World (RoW) OCEANS in the city of Sanya in Hainan, China. After the Singapore-Gulf Coast virtual OCEANS 2020, this will be the second conference, but in-person, that will be managed by an international Local Organising Committee. Details to follow in the next report.

On the Ocean Steering Committee front, attempts to recruit a new Conference Manager (CM) did not materialize as the person selected after the interview declined the offer. The leadership has decided to move ahead without a CM and rely on the Professional Conference Organiser (PCO) and Joint Conference Committee (JCC) to support future conference organization and recommend ways to achieve a significant growth in the delegate numbers as well as create a strong financial base. The ad hoc budget committee is currently working on a proposal to hire and engage a PCO who can contribute beyond just the organization of a conference by providing recommendations on site selection, expanding the conference reach as well as achieving more revenue through innovative marketing efforts.

Audit of Limerick OCEANS is hindered by the limited freedom given to the sponsors to engage the auditor. The response on this from all quarters has been slow and we are yet to engage an auditor. Actions to initiate the Gulf Coast OCEANS audit process is in progress and a final report is expected in the next couple of months.

Your Feedback are important, and I urge you to send them to me at vp-oceans@ieeeoes.org.

From the Journal Editor's Desk

Karl von Ellenrieder, Journal Editor-in-Chief

Hello! This marks my first EiC report to the OES Beacon, so I'll keep it simple. I am looking forward to working with the associate editors, reviewers, authors, and readers of the journal in the coming years. If you have any suggestions for how the journal can best serve the OES, please feel free to contact me.

I would like to thank Prof. Mandar Chitre for all his expert help and guidance during this past year of transition, and for leaving the journal in such wonderful shape. Also, a big thanks to Lee Lin Ong, who has very capably served as the Editorial Assistant of the journal over the last year. She will unfortunately step down this month but has been working with her successor (to be named once everything is official) to ensure that the transfer of responsibilities will go smoothly.

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 regular issues soon. You'll find these papers online now:

- Hossein Ghannadrezaii and Jean-François Bousquet. "Demonstration of Underwater Channel State Information Acquisition in Grand Passage, Nova Scotia"
- Weiqin Liu, Shuo Chen, Ke Hu, Xiaoxuan Guo, Qibin Wang, Xueming Song, Zhengguo Liu and Ye Li. "Experimental and Numerical Investigation of the Hydroelastic Response of a Hinged Hexagon Enclosed Platform in Waves"
- Yudong Wang, Jichang Guo, Wanru He, Huan Gao, Huihui Yue, Zenan Zhang and Chongyi Li. "Is Underwater Image Enhancement All Object Detectors Need?"
- Kamal Upreti, Sangeeta Arora, Anupam Kumar Sharma, Adesh Kumar Pandey, Kamal Kant Sharma and Mohit Dayal. "Wave Height Forecasting Over Ocean of Things Based on Machine Learning Techniques: An Application for Ocean Renewable Energy Generation"
- Shuaishuai Li, Xiang Gao and Zexiao Xie. "Binocular Underwater Measurement with Multicolor Structured Light"
- Haoran Ji, Lei Wang, Cong Peng, Liang Chen, Shuhao Zhang and Qian Zhou. "High-Resolution Short Angle Weight Algorithm in Sonar Systems"
- Shaobo Li, Yi Zhang, Jianhu Zhao, Yunlong Wu, Shaofeng Bian and Guojun Zhai. "A Comprehensive Buried Shipwreck Detection Method Based on 3-D SBP Data"
- Lei Wan and Ming Zhao. "Receiver Enhancement for Differentially Encoded Underwater Acoustic OFDM Incorporating Amplitude and Phase Mismatches"
- Niaz Ahmed, Gang Qiao, Yahong Rosa Zheng and David Johannes Pommerenke. "Design and Implementation of Medium Access Control Protocol for Magneto-Inductive Wireless Sensor Networks Using Low Power Sensor Nodes"
- Hao Tian, Boyang Zhou and Yongjun Gong. "Study of a Multicoil Electromagnetic Wave Power Takeoff System With Pneumatic Velocity Upconversion Mechanism Targeting Low-Frequency Input"
- Umut Fırat and Tayfun Akgül. "Compressive Sensing of Cyclic Bispectrum"
- Xiaohui Chu, Runze Hu, Yutao Liu, Jingchao Cao and Lijun Xu. "SISC: A Feature Interaction-Based Metric for Underwater Image Quality Assessment"
- Jingwei Yin, Guangjun Zhu, Xiao Han, Longxiang Guo, Lin Li and Wei Ge. "Temporal Correlation and Message-Passing-Based Sparse Bayesian Learning Channel Estimation for Underwater Acoustic Communications"
- Ariel Vardi and Julien Bonnel. "End-to-End Geoacoustic Inversion with Neural Networks in Shallow Water Using a Single Hydrophone"
- Mohammad Towliat, Zheng Guo, Leonard J. Cimini, Xiang-Gen Xia and Aijun Song. "Joint Equalization and Self-Interference Cancellation for Underwater Acoustic In-Band Full-Duplex Communication"
- Fei Li, Xiaomao Li, Yan Peng, Bin Li and Yang Zhai. "Maximum Information Transfer and Minimum Loss Dehazing for Underwater Image Restoration"
- Chen Peng and Urbashi Mitra. "Interference-Constrained Scheduling of a Cognitive Multihop Underwater Acoustic Network"
- Wenxuan Chen, Jun Tao, Lu Ma, and Gang Qiao. "Vector-Approximate-Message-Passing-Based Channel Estimation for MIMO-OFDM Underwater Acoustic Communications"
- Linwei Li, Jianglong Zheng, Jinxing Xie, Xiaoxin Huang, Biao Jiang, Yunge Zhang, and Yifan Huang. "Experimental Study on Underwater Cylindrical Acoustic Wave Generated by High-Voltage Pulse Excited Cable."
- Qianqian Zou, Chao Zhou, Chunhui Zhu, Zhuoliang Zhang, and Junfeng Fan. Discrete. "Vortex Method-Based Fish-Like Locomotion Modeling."

Request for Nominations for OES Awards 2024

Jerry Carroll, Chair of IEEE/OES Awards Committees

Each year at the beginning of January, the Oceanic Engineering Society is proposing a call for four Awards, with **a closing date of June 30th**. A reminder call for nominations is issued mid-March. The Awards Committee requests the nominator to provide the listing of qualifications of the nominee relevant to the award criteria, and up to 5 references, by filling the Awards Nomination on-line form (https://ieeeoes.org/menu/award-forms/oes-awards-nomination-form/).

The Awards descriptions are given below.

Request for Nominations for DTAA: The Distinguished Technical Achievement Award 2024

The Distinguished Technical Achievement Award is given to honor an outstanding technical contribution to oceanic engineering in either the fundamental or applied areas. The award recognizes either a single major invention or scientific contribution or a distinguished series of contributions over a long period of time.

Request for Nominations for DSA: The Distinguished Service Award 2024

The Distinguished Service Award is given to honor an individual IEEE OES member for outstanding contributions towards furthering the objectives of the Oceanic Engineering Society.

Company/Institution Award

The award will be presented to a corporation or institution that has significantly supported the activity and goals of OES through such areas as conference participation, patronage, technical innovation and technical or administrative participation.

Emeritus Award

The award will be presented to an OES member having been particularly important for the Society and who is no longer in any position of Society governance.

For more info, please visit the OES website as below: https://ieeeoes.org/menu/award-forms/

*Jerry Carroll
*Chair of IEEE/OES Awards Committees
past-president@ieeeoes.org

New YP-BOOST Laureates 2024–2025

Karen Renninger-Rojas & Gaultier Real, New YP-BOOST Laureates,
Roberto Petroccia, OES Liaison for the YP-BOOST Program

Introduction by Roberto Petroccia, OES Liaison for the YP-BOOST Program

I am very happy and honored to introduce Karen and Gaultier, the two new IEEE OES Young Professional (YP) BOOST Program laureates for 2024-2025. They will join the OES YP-BOOST team and participate in the leadership of the society by attending the meetings, by being involved in the diverse committees, and by helping with different aspects of the OCEANS conferences. The OES YP-BOOST program aims at helping selected YPs in their career development and engagement with the leadership of the OES society and maritime scientific and technological community at large. We are very happy to have Karen and Gaultier on-board and, as you can read in what follows, they have strong ties with OES and can significantly contribute to current and novel initiatives. If you see them around in future OES events, please engage and take the chance to discuss and propose ideas. Two new YP-BOOST candidates will be selected at the end of 2024 to serve in 2025-2026 and the application process will open later in 2024.

I would like to invite all of you to visit the OES YP webpage (https://ieeeoes.org/young-professionals/), learn more about this program and apply to engage more within the OES society and give a boost to your career development and networking.

New YP-BOOST Laureates 2024-2025

Karen Renninger-Rojas

Hey there! Who would've thought a girl who once dreamed of flying high in the sky would find her true calling in the embrace of the ocean? Yet, here I am, a testament to life's unpredictability and beauty.

My journey began in the vibrant coastal town of Salinas, Ecuador, where the ocean was more than just a backdrop; it was

Figure 1. Karen-Renninger in a research cruise with NANOOS and WOAC 2023.

a central character in my life's story. My family's livelihood depended on the marine bounty, tying me to the sea in ways I only began to understand as I grew older. Seeing the ocean's majesty every day and understanding its immense importance on our planet motivated me to develop a profound love and respect for it.

At 16, fresh out of high school and brimming with ambition, I found myself at a crossroads. Eager to take to the skies as a pilot, I was too young to join the Ecuadorian Air Force. So I decided to bide my time in college, choosing a field in engineering as a placeholder for my dreams of flight. Little did I know, this decision would steer my life in a completely new direction.

During those formative years in college, I discovered a world as captivating as the skies I had longed to explore. Oceanography revealed itself to me like a map brimming with endless wonders. I was astounded by everything I learned—the dynamics of waves, intricate chemical processes, the mysteries of surf zones, and the diverse marine life. Each discovery answered the myriad 'whys' that had filled my life. Why is the ocean blue? What causes the foam at the breaking of waves? Why does a jellyfish sting feel the way it does? Turning back from this newfound love was simply out of the question.

This deep connection I have with the ocean inspired me to dedicate my life to protecting, preserving, and exploring it. The ocean is much more than a job for me; it is my passion, my peace, and my happy place. This is why I decided to continue the oceanographic engineering degree at the Escuela Superior Politécnica del Litoral—ESPOL, Ecuador. My goal was clear: to delve deeper into the ocean's mysteries and create an environmentally friendly path for human-ocean interaction to coexist harmoniously.

My academic and professional journey has been a thrilling adventure. Starting in 2016, I joined the Department of Maritime Engineering and Marine Sciences as a research assistant.

Figure 2. Presenters of RIO ACOUSTIC Symposium 2017.

I was part of the Acoustic System for Aquatic Data Collection project, where I developed and used innovative technologies. As a result of this project, I presented my first publication in 2017 at the IEEE/OES Acoustics in Underwater Geosciences Symposium (RIO Acoustics) in Rio de Janeiro marking my entry into the world of scientific contribution and discovery.

Currently, I am deepening my knowledge at Louisiana State University, pursuing a master's degree in Oceanography and Coastal Sciences. Here, I am part of the SMART Subsea Cables project, an ambitious initiative aimed at monitoring essential ocean variables to safeguard our planet against natural disasters.

My involvement with IEEE/OES has been nothing short of transformative. It was after my presentation at RIO Acoustics that I first learned about the IEEE/OES mission, which deeply resonated with me, leading me to establish the first IEEE/OES Student Chapter in Ecuador. A pivotal figure in this journey was Jean-Pierre Hermand (may he rest in peace). He was more than just a mentor; he was a source of inspiration, guiding the creation of our chapter and leading initiatives like the Ocean Technology Congress and a research expedition along the

Figure 3. OES Committee and ESPOL authorities in the Ocean Technology Congress 2018. Jean-Pierre Hermand is the third person from right to left.

Ecuadorian coast. He taught me that every idea and every action is significantly important in moving closer to creating the ocean environment that our marine ecosystem and humanity deserve.

Since joining IEEE/OES my journey has been marked by a commitment to fostering inclusive academic environments and empowering the next generation of ocean professionals.

Looking back on the path I've traveled, from aspiring pilot to devoted oceanographer, I am filled with gratitude for the unexpected turns that have led me here. The ocean, once a distant dream, is now my life's work, my passion, and my endless source of inspiration.

Thank you for allowing me to share my journey with you. In securing a place in the IEEE/OES Young Professionals "BOOST" Program, I eagerly anticipate contributing meaningfully to the community, deepening our understanding of the oceans, and making a lasting impact on marine conservation.

Figure 4. Coming back –proudly- from yet another experiment at sea.

Gaultier Real

For as long as I can remember, I was always attracted by the sea. As unoriginal as it may seem, this statement cannot be more adapted to my case. I specifically mention the sea and not the ocean, since I was brought up on the Mediterranean coast in the south east of France.

Most of my summers were spent on the beach, most of my adventures were experienced with a sea view, preferably with a sunset on the sea horizon.

I made a point never to live far away from the shore. Even though it was more a fun fact than a true expression of my free will, I spent my life living near the coast. In the south of France, in south Florida, or now on the Ligurian coast in Italy. In the end, my extreme sense of commitment solidified my strong bond with this environment.

Was that enough to justify a career choice? Probably not. There are at least two other factors that I want to share with this small window of expression.

The first one is music. One of the other passions of mine I share with the ocean is the capability to connect rational fields such as physics, and science overall, with poetry and the possibility to generate feelings beyond deterministic expectations. A natural link between these two focal points was therefore … underwater acoustics!

I started my journey towards this field when embarking for a Master's of Science program at Florida Atlantic University (FAU, USA). The campus of Dania Beach being so close to the shore (again, see the pattern here), I was not only introduced to the theoretical aspects of ocean engineering, but also to its expression through field experiments. From this point on, being able to make the most out of sensing actual things happening in the water became a priority. My PhD work, conducted at the Laboratory of Mechanics and Acoustics in Marseille (France), still carried a fair load of experimental work. In water tanks this time, with the challenge of emulating some phenomena observed in the "real" ocean.

This "real" ocean really turned into a playground further down the road, while I was working as an underwater acoustic scientist for the French Ministry of Defense (DGA Naval Systems, Toulon, France). During my seven years stay, I accumulated multiple months on various ships (military, civilian, scientific), in various environments (Med, North Atlantic, Arctic), above and even below the sea surface.

Maybe now is a good time to introduce the second factor I wanted to mention, besides music. That factor is mentorship. No one in my family of direct surroundings had any connection to science. Whether fate or karma were involved is up to each and everyone's belief, but one thing I can say is that I was lucky. Lucky that some inspiring people were put on my path. I will not state any names, in order not to embarrass them, but should they read these lines, they will recognize themselves. I was confronted with very different ways of leading people: pushing you towards your best self, helping you make progress, making sure you always go towards the relevant question, trusting your decisions, the list goes on and on.

This also inspired me to try to share the knowledge I was able to gain over the years. I started giving lectures at the University of Toulon, mentoring some students and now leading projects for a NATO research center (CMRE, Italy).

Figure 5. Last minute adjustments on the deck of an oceanographic ship.

Figure 6. Judges of the 2019 MTS/IEEE OCEANS Student Poster Competition (I am the first sited on the left).

All of this is, of course, not completely uncorrelated with the influence of IEEE OES, to say the least. A particularly important event in my background is my participation as a member of the local organization committee in MTS/IEEE OCEANS in Marseille in June 2019. Not only was that an opportunity to take a look at the backstage of such a big event for our community, it was also a formative experience to organize the student poster competition and coordinate the evaluation of the judges.

I am very proud to have been selected as one of the new YP-BOOST laureates for IEEE OES. I will take this opportunity to talk about my passions, and, at my level, try to provide some guidance and help to younger folks who may be interested in following these steps.

After all, knowledge, much like happiness, is only good when shared.

WIE PROPEL Laureates for 2024–2025

Dr. Farheen Fauziya, Research Scientist, ECTL, OES WIE Liaison

WIE-PROPEL is one of the flagship programs within the OES. This program offers career advancement, mentorship, and leadership development for aspiring female engineers. Selected candidates represent and advocate for women in engineering at OES or OES sponsored events, gaining exposure and expanding their network. Moreover, they collaborate with society administrators/leaders to help in organising WIE events, compile inclusive meeting resources, promote gender diversity as well as women's participation in ocean engineering through talks/events in their regions.

The other aspect is the attention on diversity, equity and inclusion other than gender. Beyond gender inequalities, inequality issues are also recognized by IEEE and OES; they see the need to make a community environment that accepts every member of society no matter their race or origination, sex or disabilities. In this regard, these organisations seek to promote inclusive cultures that will encourage diverse perspectives in fostering innovation through collective intelligence amidst some of today's most challenging global issues. To sum it all up, we see implementation of WIE-PROPEL as a way of acting together with the engineering community to increase diversity, equity and inclusion in the field. In a time of growing globalization, diversity must be embraced in all its diversity. Through women empowerment, gender equality and gender inclusion, the Oceanic Engineering Society is not only shaping the future of engineering but also leading the way to a more equitable and inclusive society. We must therefore join hands as we walk towards embracing this diversity and reimagining the possibilities for a brighter, more inclusive future.

Presenting the new WIE PROPEL Laureates for the 2024–2025 Term!

The incoming laureates of WIE PROPEL are Grace Mena and Luyuan Peng, who are now part of this distinguished group. As a WIE PROPEL Laureate, they will carry out a significant role in enhancing gender equality and participation in engineering, both locally and internationally.

The new WIE PROPEL Laureates for 2024–2025.

Grace Mena is the data analyst at the National Institute of Statistics (INE), Chile, and dedicated to focus on strengthening the inclusiveness that creates a diverse workforce to allow women to thrive and prosper in engineering. She was fortunate to start the first student chapter of the IEEE Oceanic Engineering Society in Ecuador. She utilized geographical information systems and database analysis for the 2020 Census in Ecuador and, getting motivated from women's roles in engineering, Grace Mena is set to accomplish a lot as a WIE PROPEL Laureate.

Luyuan Peng puts her unique expertise and experience to work in underwater robotics and machine learning, which has brought her success in her role as a Research Engineer at the Acoustics Research Laboratory (ARL) at National University of Singapore. She has shown exemplary leadership skills by being actively involved in symposiums and committees, becoming known for her advocacy of women in engineering through emerging technologies like AI/ML. Luyuan Peng, as a WIE PROPEL Laureate, will continue her commitment to advancing women in engineering and creating a positive impact in our society.

As a team, Grace Mena and Luyuan Peng symbolize the spirit of innovation, diversity, and inclusion of WIE PROPEL program. We look forward to seeing the positive change they will bring as they go on the road to leadership, mentorship, and advocacy for the women in engineering.

"Riding the Storm Brings You to Calmer Seas" Notes from WIE and OES Panels in UAE

Giulia De Masi, WIE Propel Laureate 2022–2023 and new AdCom member from 2024–2026

In Abu Dhabi (UAE), specifically at Khalifa University, within the Liaison of Women in Engineering and OES, we recently had two important panels, respectively, on Women in Engineering and Women in Robotics. In the first panel we had the participation of Angela De Vincentis (Vice President of Operations at McDermott International, Ltd) from the Industry sector and Dr. Aisha Saeed Harib (Team Leader and Researcher for the Dubai Police Department, UAE) from Government and Authorities sector.

In the second event, the invited panelists were Prof. Cecilia Laschi (Provost's Chair Professor, National University of Singapore), Prof. Kinda Khalaf (Associate Dean of Undergraduate Studies in the College of Medicine and Health Sciences, Khalifa University, Abu Dhabi, UAE) and Dr. Chinwe Ekenna (Assistant Professor, Computer Science Department at the University at Albany, State University of New York, USA). Both panels were organized by Giulia De Masi (Principal Scientist at Technology Innovation Institute, Abu Dhabi) and moderated by Sara Aldhaheri (PhD student at University College London, and Researcher at Technology Innovation Institute, Abu Dhabi).

Some important messages have been given that we can summarize as: self-value, resilience, and passion.

Firstly, let's talk about *self-value* that has been introduced by Aisha. It is particularly important that each young engineer is aware of his/her skills and potential, to effectively communicate to others his or her own profile and the contribution they can provide in the work environment. It is a set of professional technical and soft skills that build up their unique portfolio. Uniqueness is also an important key word for Angela who made this her strength. As a woman in the oil and gas field, initially she was assigned to office work, but she did not feel like this suited her. Her passion was to go on the field which was a job traditionally assigned to men. She asked to

From the right, Angela De Vincentis , Dr. Aisha Saeed Harib and Dr. Giulia De Masi.

From the left, Prof. Cecilia Laschi, Prof. Kinda Khalaf and Dr. Giulia De Masi.

Attendees of the panel with the Q&A moderator in the front, Sara Aldhaheri.

take this role and eventually she enjoyed her work succeeding in her job role building her own unique career path. This is why Angela encourages young women to follow their interests and *passions* saying that in the end "The diversity pays off." Each young engineer has to be proud of their own passions and uniqueness leading to their own path.

We got a remarkably interesting story from Chinwe who was born in Nigeria and built then an international career path. As she stated "From tiny seeds grow mighty trees" but this comes with the cost of challenges, hard work and *determination*. Kinda also said the main challenges for younger women are the scarcity of female role models in a male dominated engineering environment where some stereotypical beliefs still exist at social, educational and media level. Engineers from Africa may face even more challenges, but like Chinwe said "Riding the storm brings you to calmer seas." This is the message Chinwe delivers in the organization of activities of diversity and inclusion, to also support young African women working in STEM.

Nowadays, we see big improvements in the gender diversity participation in engineering conferences but the leadership is still largely male dominated. As Cecilia told us, to improve women participation, it is more important to have *proactive* strategies rather than *protective* strategies that may isolate more or weaken self-confidence.

UAE (United Arab Emirates) represents an example of successful empowerment for women in STEMs. The women constitute 45.9% of all engineering students in the UAE (UAE Ministry of Higher Education report, 2021) placing the country among the highest positions in the world. As Aysha pointed out, this is the legacy of His Highness Sheikh Zayed and Her Highness Sheikha Fatima that encouraged women entering the job market and gaining higher positions. This is reflected in the government initiatives and resources allocated for attracting more females in STEMs.

A forum for women in engineering and robotics will be organized during IROS 2024 in October in Abu Dhabi (https://iros2024-abudhabi.org/). Looking forward to new testimonials… Stay tuned!

Chapter News

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

Japan Chapter

The 6th Workshop on Scientific Use of Submarine Cables & Related Technology Hybrid

Reported by Harumi Sugimatsu

We had the sixth domestic workshop on SSC (Scientific Use of Submarine Cables & Related Technology) in a hybrid style on the 8th of December, 2023, at the convention hall of the Institute of Industrial Science, the University of Tokyo (https://seasat.iis.u-tokyo.ac.jp/CableWS/WS20231208/index.html). The workshop has been held annually since 2018. This time, the workshop featured one keynote lecture on the future of seafloor observation research, and seven lectures on various topics including applications of optical cable sensing technology, scientific results

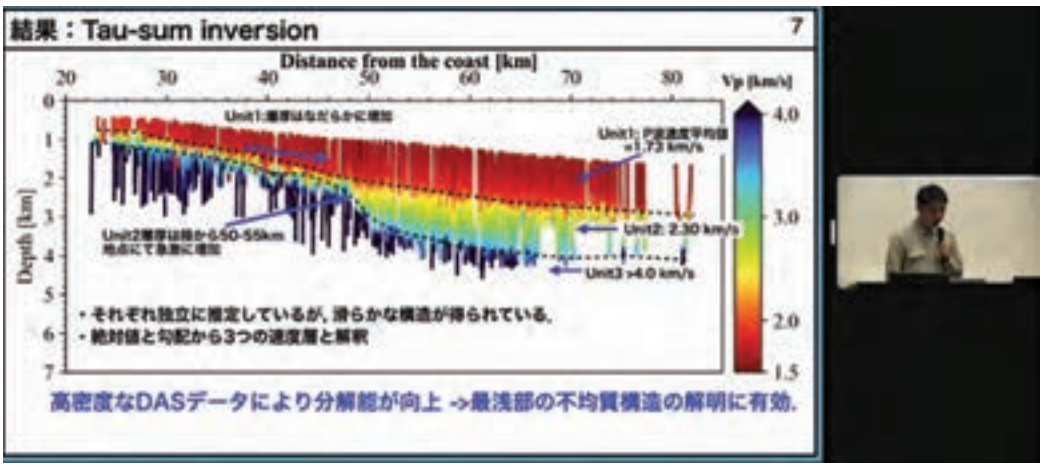
Opening address by Katsuyoshi Kawaguchi, General Chair of the workshop.

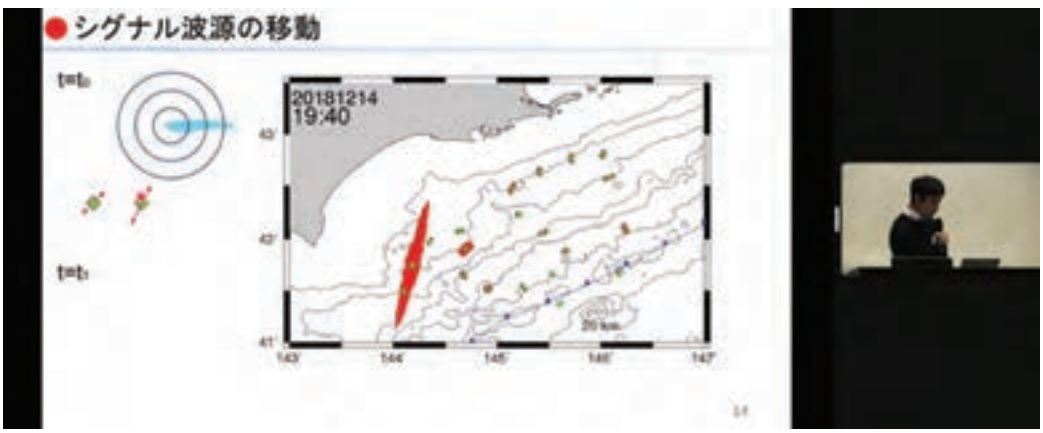
Keynote talk by Yoshiyuki Kaneda (left) and Q and A (right).

obtained from data acquired through real-time seafloor observation in long-term, and its social implementation. The 162 participants (70 on-site and 92 online) had lively discussions.

In the keynote speech on "The Future of Seafloor Observation Research," Professor Yoshiyuki Kaneda of Kagawa University spork about the importance of not only monitoring research using seafloor observation networks consisting of optical cables and various observation sensors, but also comprehensive monitoring through AUVs and underwater drones, as well as seafloor crustal monitoring including a long-term borehole monitoring system. The following seven lectures introduced the development of a long-term borehole monitoring system and its operational cases, and applications of optical cable sensing in science such as seismic observation.

After the workshop, a reception for the speakers and audience was held. Many participants expressed that they look forward to the next workshop. If you are interested, please join us at the next workshop to talk about the seafloor observation network system in your region. For more info, please contact to us (harumis@iis.u-tokyo.ac.jp).





From various lectures.

UKRI Chapter

42% Increase in UKRI Members in 2 Years

Reported by Brian Horsburgh, Secretary of UKRI Chapter

We are delighted to report a marked increase in UKRI (United Kingdon and Republic of Ireland) Chapter members, following completion of a recent review. The biggest contribution has come following the OCEANS Limerick conference in June, 2023, with 8 additional members in the Limerick area, mainly graduate student members. The Chapter now has 19 members in Ireland, contributing to the UKRI total of 68 currently.

Whilst membership is spread around the countries of UK and Ireland, there are concentrations in Limerick and Aberdeen. This reinforces the benefits of holding the OCEANS conference with subsequent membership growth.

Chapter Chair, Professor Prabhu Radhakrishna said "I am delighted to see this growth in the UKRI Chapter following the Limerick OCEANS conference, and with our expanded chapter activity programme. A preliminary bid has been tabled to bring the OCEANS conference back to Aberdeen in 2027, which we look forward to progressing."

Hong Kong Chapter

HK CTOES Joint Chapter makes a United Nations Sustainable Development Goal Commitment under SDGs 1, 2 & 14

Reported by Paul Hodgson, Hong Kong Chapter Chair

There is a saying: "Actions speak louder than words." When it comes to the mitigation of human impact on this planet there are a lot of words and there seems to be little action. The OES has embraced the United Nations Decade of the Oceans and for us, the OES, we have known the importance of the oceans since we figured out the interconnection between the weather systems of Earth and the oceans in the 1960's.

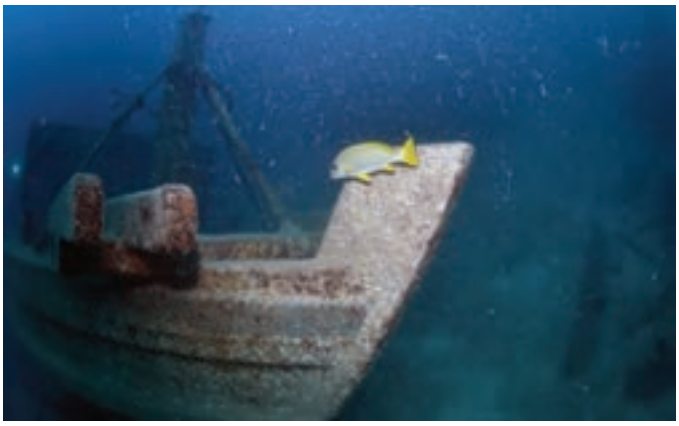
Every once in a while, an opportunity comes along that has the potential to really make a difference in setting an example and setting a precedent for others to follow. People talk a lot about the environment, protecting and preserving it. But really, the success and future sustainable existence of the human species, on the Earth, depends more on sustainability, and integration with, rather than the protection and preservation. If you think about it, the environment would probably do a lot better without us.

The HKIEEE CTOES Joint Chapter had the opportunity to join with a HK NGO, Reef Defenders to realize a sustainability project that fits very well into the UN Sustainable Development Goals (SDGs) 1, 2 and 14. The project took the form of a joint commitment to the ESCAP under UN Agenda 30. The commitment was to repurpose 10 numbers of confiscated illegal fishing boats as human made reef (HMR) in Sabah, Malaysia. This work is carried out with the cooperation of the Sabah Fisheries Department of the government there.

The concept is simple. Once illegal fishing boats are caught working in Sabah Territorial Waters, and the legal formalities were complete, they would be prepared for sinking as HMRs at suitable locations. Before this, it was normal practice to just let the boats rot and sink at an impounding anchorage. This past practice pollutes the local environment with leaking oil and is a source of marine debris that need to eventually be dealt with.

This project allows for 10 confiscated boats to be processed in a completely different way. First, the engines need to be removed and sold to cover some of the enforcement costs. Kitchen equipment and useful fishing gear (except nets) are given to the community that reported the illegal boat. This offers an incentive for them to report more illegal activity. Then the whole inner hull is washed and degreased using environmentally friendly bio-degradable solutions. Any safety floatation material is removed and the boat is modified for safe diving and to provide extra habitat for reef fish. A suitable marine area is determined and government permission applied for the installation of the HMR. The boat is then towed out to the location and sunk. This project is an extension of the work Reef Defenders has been doing in the past with the repurposing of two illegal boats in 2023.

It is a great solution to the previously unsolved issue of what to do with confiscated illegal fishing boats. Viable HMRs can be installed in designated areas as fish habitat to improve fish populations and, in



The first HMR (RHS) that went down
Then……and now.

The second HMR that went down
Then……and now.

addition, the option to set these spots as sustainable areas or marine protected no take areas are possibilities. The HMRs can also provide another option to bring divers away from corals to a new attraction instead, offering a different challenge to consumers and decreasing the risks towards coral damage. The spin off for the local communities is to provide tourist fishing in take areas and allow villagers to act as dive leaders for tourist divers wanting to visit the wrecks. So basically, a big "win" all round.

The commitment from the CTOES is to help RD raise HK$350K for the project. So far, the efforts of the CTOES and the RD have raised the money needed for the sinking of one boat with more funds committed. For more information on this project, please visit our web site: www.hkctoes.com. One of the past sponsors has produced a video: https://vimeo.com/745334809

If anyone is interested to contribute to this wonderful project, you can purchase HKD5,000 shares in each boat sinking. One boat sinking needs 6 shares.

EVOLUTION

Life Member Conference

April 14-16, 2024

Hyatt Regency, Austin, TX

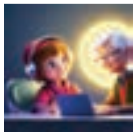
We are excited to announce the inaugural Life Member Conference, designed to strengthen the engagement of IEEE's 38,000 Life Members in shaping our collective future. Life Members represent all disciplines across the IEEE's fields of interest. We are also dedicated to giving back and sharing our expertise with the next generation.

The conference has three tracks:

1. Emerging Technologies – that impact seniors
   - ❖ Technologies of the Future and the Next Chapter
   - ❖ Aging Society and Technology Progress
   - ❖ Renewable Energy and Sustainability

2. Applications – technologies used by aging populations
   - ❖ Financial and Investment Strategies
   - ❖ Smart Systems, Infrastructure, Equipment and Living

3. Contributions – members sharing resources with future leaders
   - ❖ Mentors and Influencers in the Modern Society
   - ❖ Professional Development, Sharing and STEM Education



Our growing list of speakers include Rodney Brooks (iRobot), John McDonald (GE), Whurley (Strangeworks), Manuela Veloso (JP Morgan), Bernie Sander (AMD), Julie Shah (MIT) (and more!). Speaker commitments are ongoing and over the summer and fall, we'll have a large list of exciting and engaging speakers, keynotes and topics to share.

Join other Life Members, Senior Members, influencers, innovators, technical professionals, and members of the STEM community in Austin for this inaugural event. Registration will be limited, so be sure to secure your spot early.

Stay tuned for further details about the conference at https://life.ieee.org/news-events/ieee-life-member-conference and our social media channels.

Call for OES Distinguished Lecturers 2025–27 Nominations close on 31 July, 2024

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 both expert 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 2025. Each Lecturer should submit topics in his/her field of expertise that will be posted on the Society website. The Distinguished Lecturers 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 2025–27 close on **31 July, 2024**.

IEEE OES—Talk on Marine Radar Wind and Wave Measurements for Short Term Forecasts

Weimin Huang, Chair of CWTMA Technology Committee

On 8 February, the Current, Wave and Turbulence Measurement and Applications (CWTMA) Technology Committee (TC) organized a webinar that was open to all the OES members.

At the beginning of the webinar, the TC chair introduced the scope and interests of CWTMA TC concisely and encouraged more people to join the CWTMA TC community.

Next, an invited technical talk on "Marine Radar Wind and Wave Measurements for Short Term Forecasts" (see Fig. 1) was given by Dr. Jochen Horstmann, the Head of the Department of Radar Hydrography at the Helmholtz-Zentrum Hereon (Germany).

In Dr. Horstmann's presentation, both non-coherent and coherent X-band marine radars are covered. Firstly, he gave an overview

of marine radar's applications in wave parameters as well as wave breaking, individual wave and internal wave measurement, wind field mapping, and bathymetry estimation (see Fig. 2).

Then, Dr. Horstmann introduced the development of new methodologies for ocean surface wind retrieval (see Fig. 3) and wind gust forecast (see Fig. 4) along with validation results.

Following that, how coherent X-band marine radar data can be used for individual wave measurement (see Fig. 5) and short term (30 to 60 s) wave field prediction (see Fig. 6) was described in detail.

Figure 1. Screenshot of webinar information.

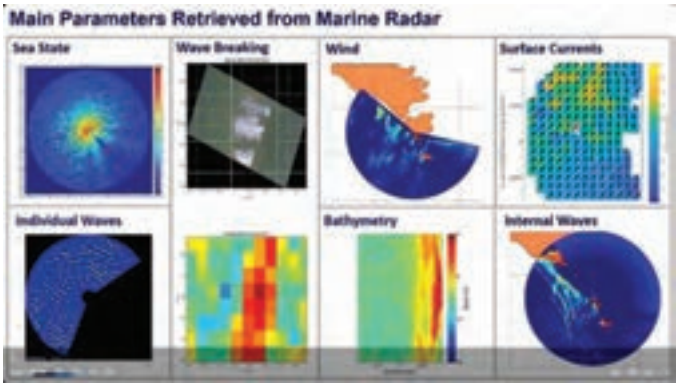


Figure 2. Examples of marine radar applications.

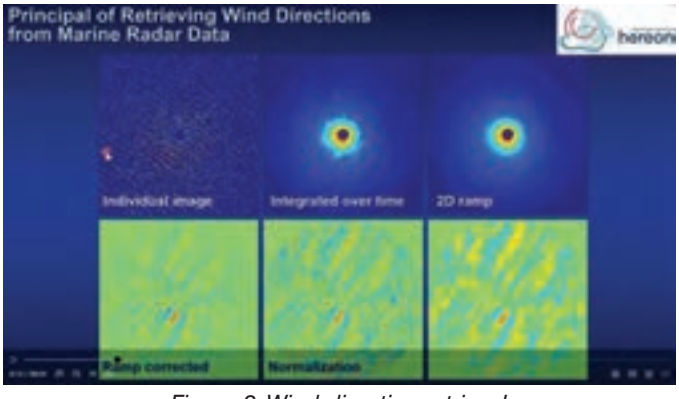


Figure 3. Wind direction retrieval.

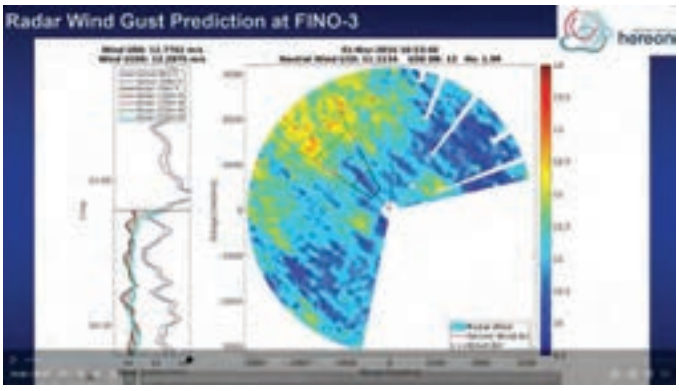


Figure 4. Wind gust prediction.

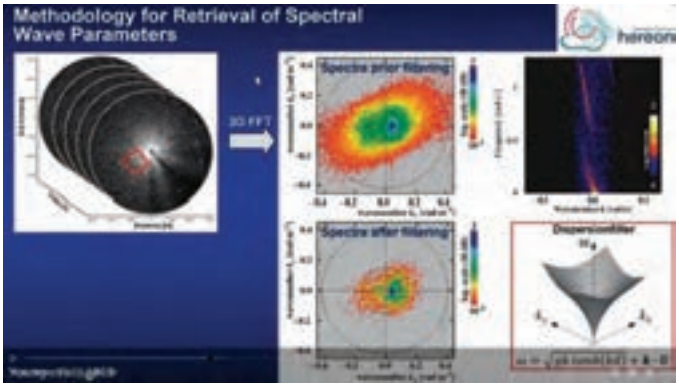


Figure 5. Wave parameters estimation.

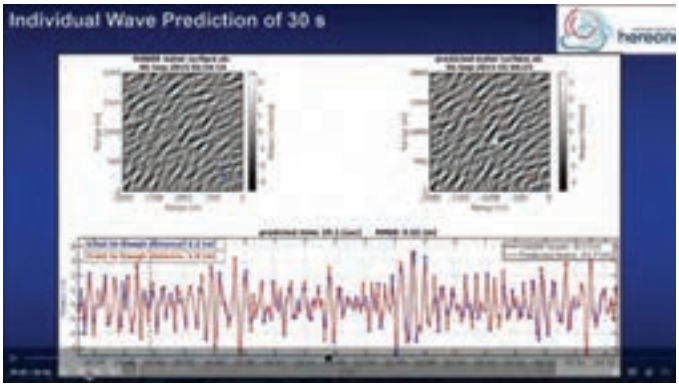


Figure 6. Wave prediction.

All these research outputs are useful for improving the predictive control of offshore wind farms as well as aviation operations out at sea.

Finally, Dr. Horstmann outlined some ongoing tasks in this field. The 40-minute long presentation was well received with 20-minute heated and friendly discussion among about 20 attendees from different countries.

Note: All the figures are screenshots from Dr. Jochen Horstmann's presentation.

The OES Ambassador Programme for the UN Decade of Ocean Science for Sustainable Development

Mal Heron, OES Ambassador Programme Coordinator

In 2023 OES established an Ocean Decade Initiative and a part of that initiative was to set up an Ambassador Programme by calling for proposals from OES members. The call was wide with very little prescription apart from promoting the Decade, which encouraged individuals to be creative and ambitious. A modest allocation of funds was available, again with no prescription apart from the use of common sense and responsible restraint.

Six ambassadors were appointed with mentors from OES, four relating to Ocean Literacy and two focussing on Ocean Technologies (see the following table). The six ambassadors come from Colombia, China, Malaysia and Australia and are listed below with their mentors and project titles. I was delighted to be appointed as the Coordinator of the OES Ambassador Programme.

Ambassador	Mentor	Project Title
Yang Yang	Mandar Chitre Karl von Ellenreideer	Technology Challenges in the Ocean Decade
Mal Heron	Atmanand	OES Technologies in the Ocean Decade
Jhon Bermudez	Jay Pearlman	Ocean Decade Issues in Colombia and Caribbean
Rosmiwati Mohd-Mokhtar	Brandy Armstrong	Who's Who in the Decade of Ocean Science
Jixin Liu	Sandy Williams	Decade of Ocean Science in Qingdao
Yufei Jin	Lian Lian	Decade of Ocean Science in Shanghai

The programme has been active for about six months in 2023 and will continue into 2024. During the next year (or so) the Ambassadors will provide articles to Beacon about their programmes. The first one is in this issue, so read on…

Decade of Ocean Science in Qingdao

Author Jixin Liu, OES Ambassador for Ocean Decade of Science

This ambassador programme aims to promote the UN Decade of Ocean Science for Sustainable Development among students and staff in the Shandong Province, China, area. Campus promotion was the first activity to be carried out. Banners and posters were placed in several locations on campus since July 2023. The locations are mainly in the college and academic buildings, canteens, dormitories, elevators and entrances. The vision of the Ocean Decade was conveyed to the students through beautiful pictures and brief text. The vision is "the science we need for the ocean we want." The mission is "transformative ocean science solutions for sustainable development, connecting people and our ocean." Approximately 3,000 students and faculty have viewed the banners or posters. This activity inspired teachers and students to participate in the Ocean Decade.

The next phase of the ambassador programme was to organize campus presentations in August, 2023, with student representatives from Ocean University of China, China Jiliang University, and Shandong University of Science and Technology. The presentations took a combination of online and offline, with more than 300 students attending. We focused on the origins and development of the Ocean Decade. The vision and mission of the Ocean Decade were highlighted. The challenges and framework for action for the Ocean Decade were analyzed for the group. We rented the venue and related equipment and provided food and beverages at the venue. Promotional souvenirs and small gifts were provided for the students who participated.

Jixin Liu is finalising his PhD degree at the Ocean University of China in Qingdao. He is a graduate student member of IEEE. His proposal to the Ocean Decade Initiative Committee had a plan to promote the Ocean Decade in universities of Shandong province.

Behind these activities, a photo competition with the Ocean Decade theme was organized from July to August, focusing on the ocean environment, ocean equipment and other aspects. The

Poster in the foyer in the Ocean University of China.

Students at a Decade of Science presentation.

Dr. Fei Yu participated in the Ocean Decade campaign.

Beacon and evening sunsets in Sanya. Photographed by Changle Jiang.

Students conducted marine surveys in the South China Sea. From left to right: Lingzhi Zhang, Jixin Liu, Shuyi Wu, Yuanke Du with the Sailfish AUV. Photographed by Bo He.

Tropical fish and undersea environment in Sanya. Photographed by Xiaoqing Xu.

photo competition attracted more than 80 students and collected nearly 100 entries. After the jury's selection, ten entries were awarded the following: One first prize, three second prizes and six third prizes. Three of the prize-winning photos are shown above. The most popular photo is in the centre, with the second and third on the left and right, respectively. The fourth activity in this programme was to organize a group of students to participate in the 2023 East Asia Marine Cooperation Platform Qingdao Forum to inspire them to devote themselves to research and the Ocean Decade. The Forum invited Erik Solheim, former Under-Secretary-General of the United Nations and Executive Director of UNEP, to deliver a keynote speech, "Joint Effort in Ocean Decade to Strengthen International Cooperation." He called on young international scientists to actively participate in the implementation plan of the UN Decade of Marine Science for Sustainable Development (2021–2030).

Students participated in the 2023 East Asia Marine Cooperation Platform Qingdao Forum. From left to right: Jixin Liu, Quanlin Qiu, Haipeng Cui, Shuaikang Yang, Qianxi Zhang, Lu Liu, Darui Yang, Wenlong Shao, Zengshuai Yang.

OES Conference Calendar

Contact BEACON Editors, OES VPWS and VPTA

OCEANS

OCEANS 2024 Singapore
April 14–18, 2024
Singapore
https://singapore24.oceansconference.org

OCEANS 2024 Halifax
September 23–26, 2024
Halifax, Canada
https://halifax24.oceansconference.org

OTC

OTC 2024
May 6–9, 2024
Houston, USA
https://2024.otcnet.org

OES Sponsored

CWTM 2024
March 18–20, 2024
Greenville, USA
http://www.cwtm2024.org

IEEE OES SUMMER SCHOOL
April 13–14, 2024
https://singapore24.oceansconference.org/ieee-oes-summer-school-2024/

SAUVC 2024
April 5–8, 2024
Singapore
https://sauvc.org

SusTech 2024
April 14–17, 2024
Portland, USA
https://ieee-sustech.org

COA 2024
May 29–31, 2024
Wuhan, China
http://www.iccsnt.org/COA2024/index.asp

RAMI 2024
During July, 2024
La Spezia, Italy
* More info will soon be updated.

AUV2024
September 18-20, 2024
Boston, USA
https://auv2024.sites.northeastern.edu

BTS 2024
September, 2024
* More info will soon be updated.

MIW 2024
October 7–10, 2024
Monterey, USA
https://miw2024.org

2024 USYS
October 11–13, 2024
Xi'an, China
* More info will soon be updated.

Metro Sea 2024
October 14–16,
Portorose, Slovenia
https://metrosea.org

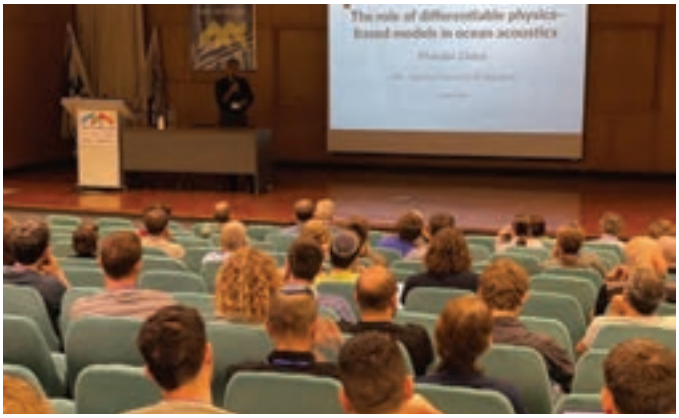
Non-OES

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

SeaAI 2023

Itzik Klein, University of Haifa

The SeaAI 2023 (Artificial Intelligence and Sea) conference was held at the University of Haifa, Israel, on 20 June 2023 with over 200 attendees in person. The conference included parallel sessions, poster sessions, and an exhibition. The lectures focused on artificial intelligence applications at sea. They featured lectures from young and senior scientists and engineers on AI theory, applications of AI in marine technologies and sciences, challenges of AI applications, and a focused session on AI-based underwater navigation. The conference showcased OES members and activity: organized and chaired by Prof. Itzik Klein (University of Haifa), an invited plenary talk by Prof. Mandar Chitre (National University of Singapore), and lectures from the newly established OES Israel Student Branch.



The presentation by Prof. Mandar Chitre.

ENAEM 2023—a workshop in South America for Renewable Marine Energies

Gerardo Acosta, New OES Vice President for W&S from 2024–2025

In November of last year, precisely from the 6th to the 8th, the Argentine Meeting of Marine Energy (ENAEM) was held at the Cultural Center of Science in Palermo's picturesque neighborhood in Buenos Aires, Argentina. ENAEM 2023 (https://www.enaemcoer2023.ar/) was a highly relevant event organized by the Argentine Marine Energy Network (REMA) in collaboration with the Center for Ocean Energy Research (COER) of Maynooth University in Ireland, the MOREnergy Lab, Politecnico di Torino of Italy, and the IEEE Oceanic Engineering Society (OES), with its local chapter of the Argentine Section. OES provided funds for registration, mobility and accommodation scholarships for twenty-seven (27) students and young professionals from different parts of the country.

An exceptional space was generated for addressing and discussing the challenges and advances in the field of renewable marine energies. The meeting was structured into six sessions of talks and presentations by national and international experts. The fundamental challenges in the design of wave, tidal and floating wind energy conversion devices, and the technology necessary for the installation and maintenance of this infrastructure, were presented. The topics addressed included hydrodynamic control, experimental modelling, energy resource estimation, laboratory tests and tests in channels, tanks and wave pools, and aquatic robotics.

ENAEM 2023 opening ceremony.

View of the audience in the comfortable Centro Cultural de la Ciencia, Buenos Aires, Argentina.

ENAEM 2023 attendees.

Prof. Gerardo Acosta – OES VP Workshops and Symposia elect for 2024–2025 giving one of the talks.

A highlight of the event was the discussion on the challenges inherent in testing these technologies in the open ocean. The crucial importance of promoting access to degree and doctoral courses in the field of marine energy was highlighted, as well as the formation of strategic alliances between the scientific, private and government sectors.

The event also included a block dedicated to companies' participation, including Crux-Marine, La Ola Group, Recyclamer Pampa, QM Equipment, IMPSA, INVAP and Y-TEC. Each company had the opportunity to highlight its technological and productive capabilities to contribute to developing marine energies, particularly in Argentina and South America.

ENAEM COER 2023 not only served as a platform for exchanging knowledge and experiences, but also consolidated the commitment of various stakeholders and key actors in promoting and developing marine renewable energies in this corner of the planet. This meeting is positioned as a milestone in the search for sustainable and advanced solutions in the field of energy, marking the path towards a future of cleaner and more efficient use of the oceans. Our IEEE OES was an essential pillar in carrying out this event.

2023 International Symposium on Ocean Technology (SYMPOL 2023)

Supriya M.H., Chairperson, SYMPOL 2023
Arun A. Balakrishnan, Coordinator, SYMPOL 2023

Introduction

The 2023 International Symposium on Ocean Technology (SYMPOL 2023), addressing the Global Oceans, Systems and Technologies, organized by the Department of Electronics of the Cochin University of Science and Technology, Kochi, with the technical co-sponsorship of IEEE-OES, was held during 13–15 December 2023. SYMPOL is being organized as a biennial program and the first symposium of the series was held in the Cochin University of Science and Technology, during 18-20 December 1991 to highlight the formal opening of the Center for Ocean Electronics established in the Department of Electronics as a joint venture of the University Grants Commission and Ministry of Human Resource Development, Government of India.

Dr. Manu Korulla, inaugurates SYMPOL 2023 by lighting the lamp. Vice Chancellor Dr. P. G. Sankaran, Dr. Supriya M. H., Dr. Ananya Sen Gupta, Dr. Deepti Das Krishna and Mr. Arun A. Balakrishnan are also seen.

Inaugural Function

The three-day symposium was inaugurated on 13 December 2023 by Dr. Manu Korulla, Outstanding Scientist and Director, Directorate of Management Services (DMS) as well as Directorate of Civil Works & Estates (DCW&E) at the Auditorium, Department of Electronics, CUSAT Main Campus in a function presided over by Dr. P G. Sankaran, Vice-Chancellor,

Release of Proceedings of SYMPOL 2023 by Dr. Ananya Sen Gupta, Professor, University of Iowa, USA.

Cochin University of Science and Technology. Dr. Deepti Das Krishna, Head of the Department, welcomed the gathering. Dr. Supriya M. H., Chairperson, SYMPOL 2023, provided an overview of the previous SYMPOL conferences and Arun A. Balakrishnan, Coordinator, SYMPOL 2023, proposed the vote of thanks.

Technical Program

The technical program of SYMPOL 2023 commenced with keynote addresses on "Sea Systems and Innovative Underwater Technology Transformations" by Dr. Manu Korulla and "Interpreting Geometric Concepts into Underwater Acoustic Feature Representations: Case Studies and Challenges" by Dr. Ananya Sen Gupta, Professor, University of Iowa, USA. The keynote addresses were followed by an invited talk on "Thermal Performance Characteristics of Electronic Components: A Computational Fluid Dynamics based Approach" by Dr. Favas T. K., Department of Ship Technology, Cochin University of Science & Technology. Dr. Gopu R. Potty, Professor, Department of

Keynote address by Dr. Manu Korulla (top) and Dr. Ananya Sen Gupta (bottom).

Invited talk by Dr. Gopu R. Potty, Professor, Department of Ocean Engineering, University of Rhode Island, USA.

Invited talk by Dr. Favas T. K., Department of Ship Technology, Cochin University of Science & Technology.

Invited talk by Mr. Jineesh George, Group Head, Transducers Group, Naval Physical and Oceanographic Laboratory, Kochi.

Invited talk by Dr. D. D. Ebenezer, Adjunct Faculty, Department of Ship Technology, Cochin University of Science & Technology.

Delegate receiving presentation certificate from the session chairs.

Talk on Advanced Communication Technologies by Shri. S. Gopalan, DDG (Compliance), DoT, Ernakulam.

Ocean Engineering, University of Rhode Island, USA, delivered a talk on "Listening to the heartbeat of oceans of the world: latest trends." Mr. Jineesh George, Group Head, Transducers Group, Naval Physical and Oceanographic Laboratory, Kochi, delivered a talk on "Piezoelectric Transducers for Underwater Acoustics Applications." Another invited talk was delivered by Dr. D. D. Ebenezer, Adjunct Faculty, Department of Ship Technology, Cochin University of Science & Technology on "Propeller Radiated Noise."

Out of the 25 manuscripts submitted for evaluation, 16 papers were accepted for oral presentation and all 16 of them were eventually presented. These presentations were organized in the following technical sessions covering a broad-spectrum of topics of interest to the SYMPOL community.

- Ocean Acoustics
- Artificial Intelligence for Ocean Exploration
- Signal Processing
- Navigation, Communication, Instrumentation & Localization

While the research sessions of SYMPOL spanned two days, the third day was dedicated to a workshop entitled "Advanced Communication Technologies," conducted by Department of Telecommunications, India.

Announcement

The eighteenth biennial Symposium on Ocean Technology (SYMPOL 2025) is scheduled to be held in the Department of Electronics of the Cochin University of Science and Technology, Kochi, during 10–12 December 2025.

The Second Winter School on Underwater Network Simulations and Experimentation

Filippo Campagnaro, University of Padova, Italy, and IEEE OES Young Professional boost laureate

The second Winter School on Underwater Network Simulations and experimentation (UNWiS) is now over. The school took place in Padova (Italy) from the 29th of January to the 2nd of February, 2024, and was organized by the Department of Information Engineering of the University of Padova and its startup company Wireless and More srl. It has been a very successful event, where about 30 students and professionals coming from all over the world exchanged ideas and opinions not only on underwater communication networks, but also on maritime technology and oceanic engineering, making UNWiS an occasion for very fruitful discussions.

Every day of the school was divided into two parts: frontal lessons in the morning, and hands-on exercises after lunch. A basic track for PhD students and professionals that approached the field of underwater networks for the first time, and an advanced track for fellow experts, allowed all the attendees to profitably improve their knowledge on this subject. The technical topics included a detailed review of underwater communication technologies, communication protocol for underwater multimodal acoustic and optical networks, and methodology on how to simulate and test underwater networks with the open-source DESERT Underwater Framework. Moreover, the attendees had the opportunity to test and evaluate underwater protocols with hands-on examples both simulating and testing the network with real acoustic modems provided by Evologics GmbH.

On February 1st, all attendees were engaged in a discussion organized by IEEE OES, where our YP boost laureate Filippo Campagnaro and our WIE propel laureate Sara Falleni presented the Young Professional boost and the Women in

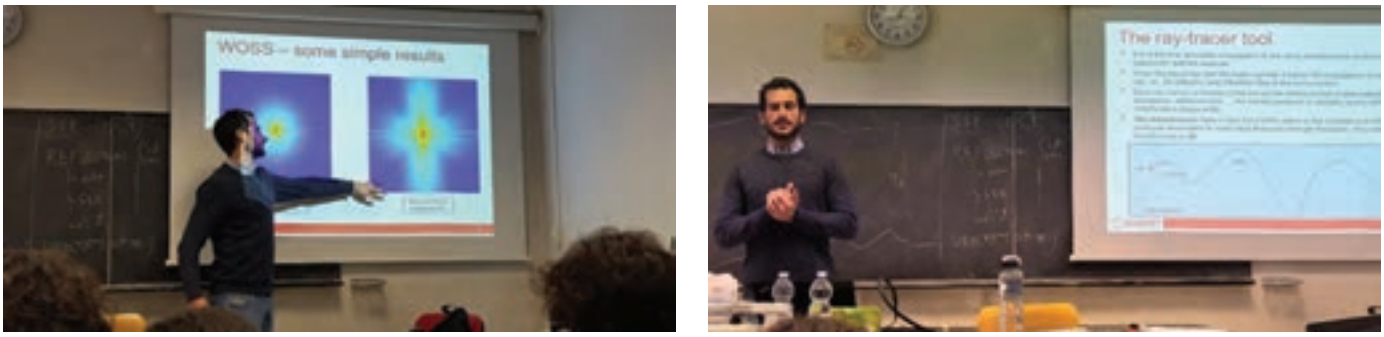


Figure 1. Lectures on ray tracing held by Filippo Campagnaro, University of Padova, Italy.

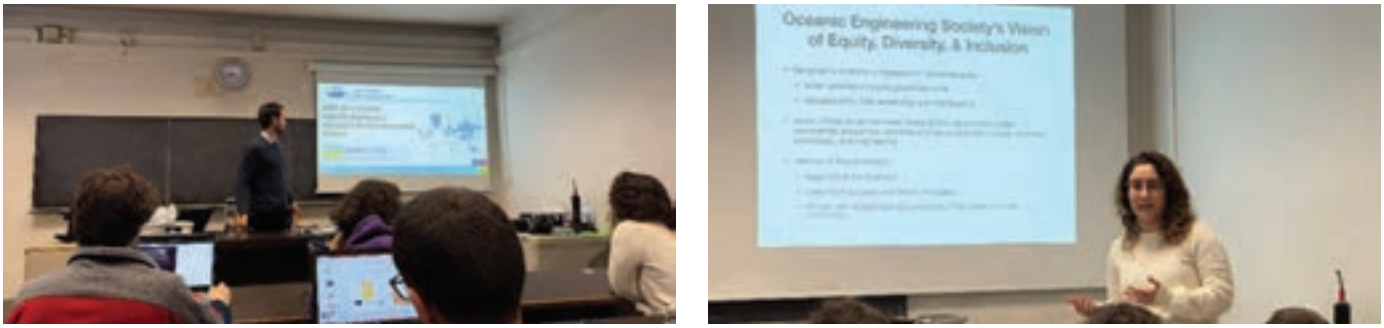


Figure 2. IEEE OES Young Professional boost and Women in Engineering propeller programs presented by our OES YP Boost WiE propeller 2023–2024 laureates.

Figure 3. Panel discussions that highlighted which are the possible career jobs for people making a PhD in underwater communication.

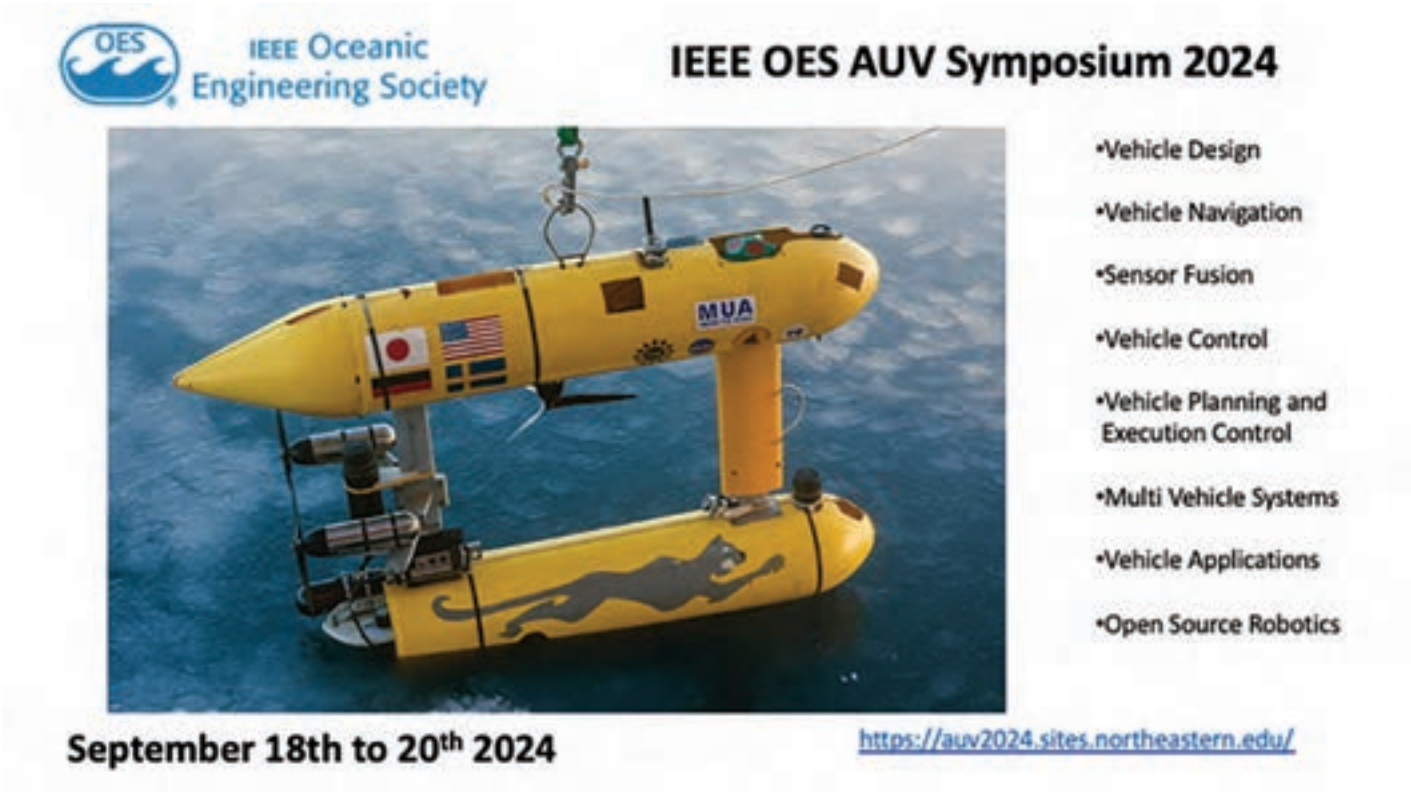
Engineering propel programs, and the OES initiatives. Interesting discussions on what the academy can do to get more people interested in oceanic engineering activities, and on how to get more women engaged in engineering, were held. They highlighted the need of organizing laboratories and dissemination events at primary school, to stimulate the curiosity of children with small experiments and hands on exercises. This will hopefully fill this traditional cultural gap that often sees women far apart from STEM activities.

In the same events, panelists with expertise in different fields explained how underwater communication is essential for many different applications, and which are the possible career jobs for people making a PhD in underwater communication. First, Dr. Davide De Battisti from the hydrobiological station Umberto D'Ancona highlighted how marine biologists and ecologists need automated systems to assess water quality and study climate change in a more profitable way. Second, Prof. Damiano Varagnolo (NTNU Norway and University of Padova, Italy) remarked that automated robotics operations for smart ports can be performed only if the underwater communication links between the robotics agents are stable; that is something really challenging to be achieved. Finally, the TV Davide Cosimo (CSSN, Italian Navy) presented the Italian Underwater National Hub, and of how underwater networks can be used for rescue operations and for coastal surveillance. The take home message from the panelists is using a vertical approach to work on marine science and oceanic engineering aspects might not be very fruitful, as the complex environment we need to face intrinsically implies a multidisciplinary approach, where unity makes strength.

Finally, every day all the participants of the winter school could enjoy some good Italian food, including wine, pasta, and pizza from local restaurants. A cultural visit to the great Sala dei Giganti and the ancient Palazzo Bo of the University of

Figure 4. Group picture of the winter school attendees in front of the Department of Information Engineering of the University of Padova, Italy.

Padova (that with its 802 years is one of the oldest universities of the World) wrapped up the event, and many attendees then had the occasion to autonomously go to Venice (located 30 minutes from Padova) to enjoy the Carnival.



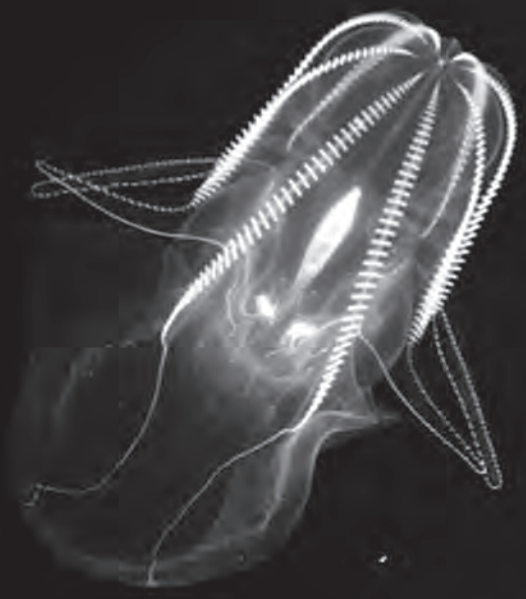
IEEE OES is a Collaborating Organization for this SPE event.


SINGAPORE AUV
CHALLENGE
5-8 APRIL 2024
82 teams registered
70 videos submitted
43 teams selected
Who will make it to the top?
Bonus round at TCOMS Ocean
Basin facility with new tasks!
OES
IEEE Oceanic
Engineering Society
www.sauvc.org
2021
2030

IEEE Oceanic Engineering Society

MBARI

5th Marine Imaging Workshop (#MIW24)



Monterey, CA
Oct 7-10, 2024
miw2024.org

Image: MBARI's Bioinspiration Lab

A Blast from the Past! . . . Singapore is on the Horizon

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

It has been a while since we enjoyed the activities and socials at the OCEANS 2006 Asia Pacific—Singapore conference. Great weather, good, drink, friends and technology interactions. And, we're heading back again this April for the OCEANS 2024 Singapore conference. Here's a Blast from the 2006 Singapore conference.

Dancing Singapore Dragons at Banquet.

Liz Creed, Diane DiMassa and Jim Barbera.

Tamaki Ura, Harumi Sugimatsu and Milica Stojanovic.

Bob Wernli and Mal Heron.

Administrative Committee Dinner.

Administrative Committee at Night Safari.

Diane DiMassa, Bob Wernli, Joelle Garello, Rene Garello and Sandy Williams.

Milica Stojanovic, Ken Takagi, Dan Sternlicht, Jerry Carroll, Diane DiMassa.

IEEE Oceanic Engineering Society

SUMMER SCHOOL

An initiative poised to enrich the academic and professional journey of graduate students and early-career professionals in the realm of oceanic engineering

When: April 13-14, 2024 (Just before OCEANS 2024 Singapore)

Where: Grand Copthorne Waterfront Hotel, Singapore

REGISTRATION IS OPEN

https://singapore24.oceansconference.org/ieee-oes-summer-school-2024/


SEPT
23–26
2024
OCEANS
CONFERENCE & EXPOSITION
2024
HALIFAX, CANADA
ALIGNING DIVERSE COMMUNITIES FOR TOMORROW'S OCEANS
The future of oceans is diversity.
The future of oceans is collaboration.
The future of oceans is you.
IEEE Oceanic Engineering Society
OES
MTS marine technology society
FIND OUT MORE AT
halifax24.oceansconference.org

Who's who in the IEEE OES

Suleman Mazhar, Harbin Engineering University and Chair TC-Underwater Acoustics

I joined IEEE-OES in 2007 when I participated in my first OCEANS conference in Vancouver, Canada. At that time, I did not have much idea about OES. OCEANS conference was all that I knew about OES-membership at that time and I was really impressed by OES, after discovering so many "*Oceans species*" all at one place! However, as I progressed through my PhD studies, I noticed that my PhD supervisor (Ura sensei) will usually (*rather regularly*) be away from his office twice a year; and that had to do with AdCom meetings (at OCEANS again!). That same year, one of our lab members won student poster competition and I came to know about student activities of IEEE-OES.

Figure 1. Participating in public outreach and promoting the cause of conservation of finless porpoises and Yangtze river in China.

After finishing PhD in 2009, I took a minor diversion from my PhD theme (*of dolphin and whales*) and lost my life to monkeys and bats as I moved to Georgetown University (Washington D.C., USA) for a postdoc in auditory neuroscience. However, soon I resumed marine mammal studies and ecological monitoring again as I returned to Pakistan to join a faculty position at GIK Institute and availed a funding from WWF (*Worldwide fund for Nature*) to study acoustic repertoire of Indus river dolphin in the wild. Indus dolphin conservation work was quite interesting and I spent 1-2 months annually getting tanned during boat surveys in the Indus River. In parallel, as I was working at CSE department, I started mentoring undergraduate students for low-cost AUV development for environmental monitoring. One of such works translated into a conference paper in OCEANS Kobe 2018.

During this time, most of my funded research focused on ICTD (Information & Communication Technologies for Development) and consequently I was not so active in OES. However, in 2017/18, I got HEC (Higher Education Commission Pakistan) and DAAD (Germany) grants for Indus dolphin monitoring and underwater structural health monitoring. Work done during these projects eventually led me to more actively and regularly participate in the OES events. Since then, I have been a part of various activities and committees of IEEE-OES.

Currently, I am working as a professor in Information and Communication Engineering at Harbin Engineering University and my research focus is deep learning and signal processing applications for environmental monitoring, with particular

Figure 2. Participating in Ocean Noise 2023 in Sanya, discussing challenges posed by anthropogenic noise to the endangered cetaceans.

Figure 3. Visiting an experimental setup and research cruise in Sanya.

focus on underwater acoustics, marine mammal conservation and pollution monitoring. In my current position, I am always looking for good students, postdoc fellows and faculty members to join our team at HEU!

I am also actively engaged in cetacean conservation in China and Pakistan and am a member of research and public outreach bodies focused on conservation of endangered species in both countries. As a researcher and an engineer, I am of the opinion that technology can assist in addressing many challenges faced by humanity today, however, we must keep in mind that it is the intent and direction of applying this technology which is important! Role of technology is usually to amplify the good/bad effect and, therefore, we must not lose focus on the actual goal while applying the technology!

I am also technical program committee chair for *China Ocean Acoustics* conference, which is co-sponsored by IEEE-OES since 2016. The conference has become not only a flagship academic event but it has also encouraged and mentored young scientists for ICT based innovations in the field of water and marine climate. We shall be holding 3rd edition of this event this year and I welcome you all to join us!

One of the perks of working in academia in general and cetacean conservation in particular is extensive traveling around the world. I have been lucky that I have not only visited many countries but have also spent a good amount of time in many unique

Figure 4. Participating in tea making ceremony during a social program of a conference in Kyoto.

Figure 5. Busy in my favorite pastime: working on my GPU-machine!.

cultures and countries such as Japan, USA, China, Germany and South Asia. I have thoroughly enjoyed these cultures and a glimpse of such an experience is shared in Figure 4. During my free time, I love working on my GPU-machine ☺!

Request for OES AdCom Nominations

Nominees for the Term 2025 January 1–2027 December 31

Jerry Carroll, Chair of IEEE OES Nominations and Appointments Committee, past-president@ieeeoes.org

OES AdCom Meeting 2023 January.

The IEEE OCEANIC ENGINEERING SOCIETY is governed by an Administrative Committee of 18 members. Six are elected each year to serve three-year terms. Members are limited to two consecutive terms, although they may be reelected after a lapse of one year. This will be the thirty-eighth election to be held to determine the membership of our Administrative Committee (AdCom).

This year, the Nominations and Appointments Committee is chaired by the Past President. The committee is charged with proposing a slate of nominees each year. For this election, twelve members of the OES will be nominated to fill six positions on the AdCom for the three-year term: 2025 January 1–2027 December 31.

Qualifications for Administrative Committee membership are membership in the IEEE and OES, and a willingness to serve the oceanic engineering profession. The Society wishes to have the Administrative Committee characteristics to reflect characteristics of the IEEE membership. I ask that each of you identify and nominate qualified candidates for the Administrative Committee. Self-nomination is encouraged.

The nomination Packet should include a Letter of Nomination accompanied by a one-page biographical sketch of the proposed candidate with picture and one-page statement from the proposed candidate giving:

- Their views of the opportunities and challenges facing the Society
- Steps to be taken to advance the IEEE Oceanic Engineering Society, including Ideas for potential initiatives and projects
- How they plan to contribute to standing and ad hoc committees
- Volunteering experience both within and outside OES

Elected Ad Com members should expect:

- To represent the OES membership by attending board meetings, reviewing and accepting reports, and making decisions on Society policy and financial matters
- To participate in administrative activities required to run the society (tasks will be assigned, including participation in standing, and/or ad hoc committees)
- To spend two or more hours per week on average on communications (email, phone, virtual meetings) which may not be evenly distributed throughout the year
- To attend four to six teleconferences, and travel to at least one and up to two in person AdCom meeting per year. In-person meetings are typically two days in duration before or after the OCEANS conferences.

The election will be conducted in accordance with our Bylaws. Follow this link to read the Bylaws:

https://ieeeoes.org/about-us/bylaws-of-the-ieee-oceanic-engineering-society/).

The Bylaws specify that general nominations close on **March 1**, and nominations by petition close by **April 15**, 2024.

Please submit nominations to the undersigned starting 2024 January 1. Please do not delay your efforts in finding and nominating qualified candidates. Send your nominations to:

*Jerry Carroll
*Chair of IEEE OES Nominations and Appointments Committee
past-president@ieeeoes.org

AdCom Commitment

- Attend AdCom meetings and decide on Society matters
- Participate in work to run the Society
- 2+ hours per week on average
- 4-6 Teleconferences, 1-2 in-person meetings

Welcome New and Reinstated Members

From 14 November 2023 through 11 February 2024
Total: 154(Incl 80 Student)

Australia
Alexandre Cardaillac
Gregory J Durnan
Matthew James Small

Brazil
Michel Leichsnering Mendes

Canada
Ronald Kessel
Ogochukwu Francis Okpala
Xin Qiao
Bradley Scott
Monirosharieh Vameghestahbanati
Jason Williams

Chile
Victor D Pino

China
Yilin Cai
Shilong Chen
Shiting Chen
Wen Chen
Xunbin Deng
Zhengqiu Fu
Chonglin He
Shaohua Hong
Feng Hong
Guojia Hou
Baoxiang Huang
Enyu Li
Miao Li
Yibin Li
Zhao Ding Li
Yijie Lv
Qiwang La Mu
An Nan
Yijun Shen
Tang Sijie
Ruiping Song
Yan Song
Weifeng Sun
Zhicheng Tan
JunRu Wang
Rui Wang
Sheng Wu
Zhuo Xiaoxiao
Junxian Yang
Wentao Yang
Kun Ye
Yuming Zeng
Qi Zhang
Peng Zhao
Jiahua Zhu

Costa Rica
Karen Dayana Tovar Parra

France
Herve Tanguy

Germany
Pranav Kedia

India
Subathra A
Narendhiran Balakrishnan
Vallabh Vinod Deogaonkar
Sarang Chandrashekhar Dhongdi
Sakthi Ganesh E
Sree Nandhini E
Sree Nandhini Joseph George
Kumar Prabhakar Gudur
Dilipkumar Jayaraj
Manikandan K
Rushikesh Dipak Kamble
Narendran Kumar
Favour Chimobi Ogbenna
Soumyashree Pani
Gauravi Pore
Sandhya Prajapati
Siva Raman
Lincy Jancy S
Sangeetha S
Salman Shah
Shiraz Shahabudeen
Kanika Singh
Rajesh Siva
Anu Sugathan
Kalyan Chakravarthi TVS
Lakshmi Narasimhan Theagarajan
Vijaya Lakshmi Thiagarajan
Sriram V
Venkata Bhargav Varada

Indonesia
Gamantyo Hendrantoro

Ireland
Isela Ibrahimovic

Israel
Shlomo Bouhadana
Guy Damari
Dan Solodar

Italy
Filiberto Bilotti
Alessia Biondi
Davide Eccher
Adele Magi
Alessio Monti
Davide Ramaccia
Gaultier Real
Aziz Ur Rehman

Japan
Chedlia Ben Naila
Alexander Carballo
Shuhei Nishida
Yasuhiro Okamura

Kenya
Furaha Maseke Marwa
Andrew Karanja Njiyo

Lithuania
Gediminas Uskovas

Mexico
Emilio Vargas Toledo

Netherlands
Simon J Watson

Nigeria
Maxwell Uchenna Agomuo

Norway
Antonio Vasilijevic

Peru
Diego Gabriel Amau
Jaxel Jhordan Barrio de Mendoza
Diego Ronald Broncano
Andres Luis Cifuentes
Mariela Lida Huaman
Oscar Manuel Hurtado Talavera
Walter Josue Josue
Alisson Mayttee Palomino
Dana Alessa Rojas Vasquez
Nikolai Vinces

Russian Federation
Igor B Shirokov

Saudi Arabia
Jiajie Xu

Sweden
Aldo Teran Espinoza

Taiwan
Sheng-Wei Huang

Tunisia
Abir abid
Trabelsi Imen
Ghassen Ltaif
Chatti Nour
Lazreg Senda

United Arab Emirates
Murat Uysal

United Kingdom
Jonathan E Bishop
Nazila Fough
Raymond Lam
Joseph F Winter
Yuriy V Zakharov

USA
Kyle Abrahamsen
Hosam Abu Zeid
Victor M Alas
Joel G Altman
Joseph F Costa
Bianca Crosby
Joshua Cuellar
Lubna Dajani
Michael A Enright
A Ferraro
Donna L Hodgson
Mengxue Hou
Katherine H Kim
Sara Gabriella Lail
Ralph W Lamp
Hamed Nademi
Nguyen X Nguyen
Olayinka Mustapha Oshikoya
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The Ocean Challenge Event

Nicholas Hall-Patch, Victoria Chapter Secretary-Treasurer

Over the years, Victoria, British Columbia, Canada, has become a center for marine science and technology, with increasing employment opportunities for engineering graduates.

A collaboration involving the University of Victoria Department of Electrical and Computer Engineering, Ocean Startup Project, COAST, Coast Capital Innovation Centre, along with the Victoria Chapter of the IEEE Oceanic Engineering Society, resulted in the UVic Ocean Challenge, with the most recent event taking place on 7 December 2023 at the University of Victoria.

The UVic Ocean Challenge is a competition among undergraduate engineering students at the University of Victoria to develop useful prototypes in order to help solve problems

Some of the sponsors' posters.

within the oceanic world in technology, business, and the environment. The Challenge not only includes the academic resources and technical tools of the University, but also mentoring from the industrial sector to provide latest insights into marine technology.

It involves not just prototype development by the students, but also fosters entrepreneurial skills, and develops networking amongst students, academics, ocean engineering professionals, as well as potential employers in the marine sector.

The Victoria Chapter of the Oceanic Engineering Society has sponsored awards for winners of various categories in the UVic Ocean Challenge, and is pleased to introduce some of the winning projects to the pages of The Beacon.

Real-Time Water Quality Monitoring System: University of Victoria Ocean Challenge Project

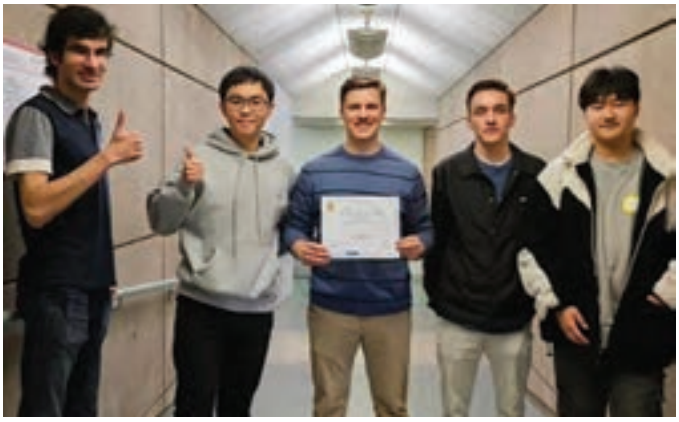
Project by: Daniel Kiwilsza, Evan Lee, Mohammadreza Movahedian, Simon Pollak, and William Wu
Supervisor: Prof. Hong-Chuan Yang
Authors: Daniel Kiwilsza, Evan Lee, Mohammad Movahedian, William Wu, Simon Pollak

In a world where environmental challenges are escalating, a team of students from the University of Victoria's Electrical and Computer Engineering departments—comprising Daniel Kiwilsza, Evan Lee, Mohammadreza Movahedian, Simon Pollak, and William Wu—has made waves with a groundbreaking project. The real-time ocean water quality monitoring system won the top spot at the Ocean Challenge 2023 held by the University of Victoria on December 1st, 2023.

Traditionally, assessing water quality involved manual sampling, laborious lab analysis, and frustrating delays in emergencies. The Internet of Things (IoT) facilitated the team's deployment of sensors, microcontrollers, and wireless modules for real-time monitoring. This innovative leap allowed for swift and efficient water quality data collection, even in remote locations.

Design Features

Equipped with four sophisticated sensors dedicated to measuring a spectrum of physical and chemical parameters—temperature, pH, turbidity, and total dissolved solids—our real-time water quality monitoring system ensures a comprehensive understanding of the ocean's current state. These sensors work seamlessly together to give users a holistic view of water quality in real-time.



Project team members.

Real-Time Water Quality Monitoring System.

The system operates as a digital messenger, transmitting data from these sensors in real-time to a dedicated web server platform using Wi-Fi. This platform acts as the command center, presenting the data in an easily understandable format on a user-friendly dashboard. Users gain access to a wealth of information, enabling informed decisions about the water being measured. Historical data is also readily available, allowing for comprehensive analysis and trend identification.

Designed for simplicity, the system adopts a buoy-based approach for deployment. This innovative feature ensures straightforward and hassle-free installation, making it an ideal solution for various ocean monitoring scenarios.

Performance Evaluation

Undergoing rigorous testing against three distinct water samples, the system underwent a comparative analysis with highly accurate lab equipment, generously provided by UVic's chemistry department. The results revealed comparable accuracy, although the system demonstrated room for improvement in responsiveness. Despite this, the system's performance surpasses traditional manual methods, showcasing its effectiveness in monitoring water quality.

The team would like to thank Dr. Hong-Chuan Yang and Ali Dehghanian for their guidance and Dr. Juergen Ehlting for his assistance in sensor performance verification. The team also acknowledges Ocean Startup Project for financial support. For those interested in a visual overview of the project, check out the website: https://les01004.wixsite.com/evanlee.

AquaSync Analytics: Pioneering Water Quality Monitoring Through IoT

Project by: John Hubler, Connor Wiebe
Supervisor: Dr. Navneet Kaur Popli
Author: Rudra Pratap Singh

In an era where environmental sustainability becomes increasingly crucial, the AquaSync Analytics project emerges as a

beacon of innovation in water quality monitoring. Developed by John Hubler and Connor Wiebe under the guidance of Dr. Navneet Kaur Popli and Rudra Pratap Singh, this prototype system represents a significant advancement in leveraging Internet of Things (IoT) technology for environmental science.

Innovative Design and Implementation

At the core of AquaSync Analytics lies a meticulously designed network of sensors capable of accurately measuring temperature, pH, and conductivity, interfaced with an Arduino UNO. This setup allows for real-time, precise monitoring of water quality parameters, essential for environmental research and management.

Data Processing and Visualization

Data collected by the AquaSync system undergoes processing through an ETL (Extract, Transform, Load) pipeline, ensuring its readiness for analysis and application. A standout feature of the project is its web application, developed using Python for backend operations and ReactJs for the frontend. This application, as visualized here, provides a user-friendly interface for visualizing water quality data, making it accessible to researchers, environmental managers, and the public.

Adherence to Standards and Safety

The development of AquaSync Analytics was guided by a strong commitment to safety, privacy, and compliance with industry standards. This focus on reliability and security not only enhances the system's operational integrity but also ensures its sustainability and environmental compatibility.

Implications for Environmental Monitoring

AquaSync Analytics introduces a new paradigm in environmental monitoring, offering a scalable and efficient solution for tracking water quality. Its ability to provide detailed, real-time insights into aquatic environments has profound implications for ecological research, conservation efforts, and policymaking.

Future Prospects and Expansion

Looking forward, the AquaSync Analytics project holds the potential to revolutionize water quality management across various ecosystems. Its scalable design and flexible architecture allow for adaptation and implementation in diverse environmental contexts, promising a broader impact on global conservation efforts.

AquaSync Analytics User Interface Demo.

In conclusion, the AquaSync Analytics prototype stands out as a testament to the power of IoT technology in advancing environmental sustainability. By combining innovative sensor technology with advanced data processing and visualization tools, this project sets a new standard in water quality monitoring, underscoring the importance of technology in safeguarding our planet's water resources.

Harnessing IoT for Marine Conservation: The KelpNet Prototype

Project by: Brett Dionello, Logan Winter
Supervisor: Dr. Navneet Kaur Popli
Author: Rudra Pratap Singh

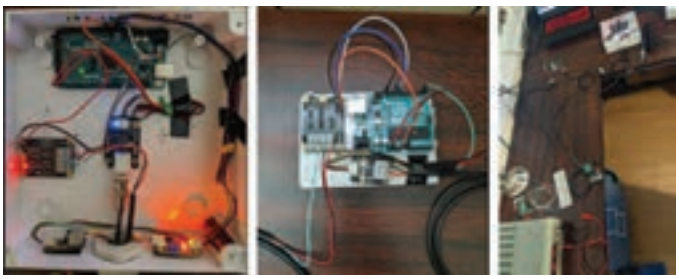
In the dynamic landscape of environmental technology, the "IoT Seaweed Farm Water Quality Monitoring" project, developed by Brett Dionello and Logan Winter under the guidance of Dr. Navneet Kaur Popli and Rudra Pratap Singh, represents a pioneering prototype showcased at the University of Victoria's UVic Ocean Challenge 2023. Named KelpNet, this prototype is a testament to the potential of Internet of Things (IoT) technology in transforming environmental monitoring. As a proof of concept, KelpNet focuses on real-time monitoring of crucial water quality parameters within seaweed farms, utilizing Arduino microcontrollers and Raspberry Pi computers for data collection and analysis. This innovative approach not only highlights the project's potential impact on sustainable agriculture but also underscores the importance of continued development and testing to realize a fully operational system capable of supporting marine ecosystems globally.

Technological Innovation at Its Core

KelpNet integrates sophisticated Arduino microcontrollers and Raspberry Pi computers to monitor water quality in seaweed farms in real-time. Employing Modbus protocol and MQTT for seamless data transmission to an AWS Timestream database, this prototype promises accuracy and reliability in environmental monitoring.

A Commitment to Sustainability

The developers' strict adherence to industry standards ensures that KelpNet is not just innovative but also sustainable and environmentally friendly. This commitment extends to ensuring operational integrity and data security, underlining the project's dedication to tackling marine conservation challenges head-on.



KelpNet prototype.

Impacting Marine Ecosystem Management

KelpNet offers invaluable insights into water quality, enabling seaweed farm operators to make informed decisions that bolster both sustainability and productivity. This prototype paves the way for technology-driven environmental conservation, highlighting a proactive approach to global sustainable agricultural practices.

Future Prospects and Expansion

KelpNet's scalable design hints at a transformative potential for marine conservation and seaweed farming. Its adaptability promises wide-ranging applications, offering a new blueprint for ecological monitoring and conservation strategies. As a prototype, KelpNet is a glimpse into the possibilities that lie at the intersection of technology and marine ecosystem sustainability.

In conclusion, the KelpNet project is a beacon of innovation in the quest for environmental sustainability. As a prototype, it encapsulates the potential of IoT technology in advancing marine conservation efforts, marking a pivotal moment in the journey towards a more sustainable and environmentally conscious future.

Seaker Marine Asset Tracking

Project by: Bradley Scott, Joey Boyer
Supervisor: Dr. Navneet Kaur Popli
Author: Rudra Pratap Singh

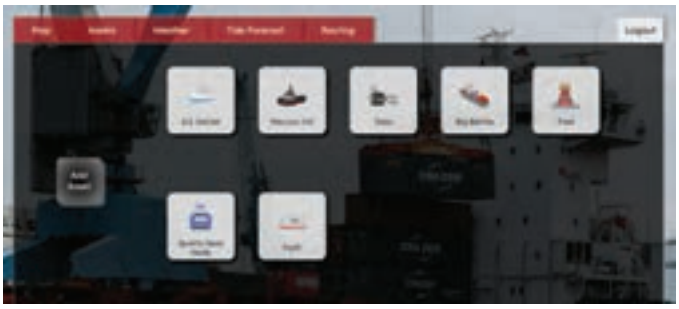
Introduction

In an era marked by rapid technological advancement and growing environmental consciousness, the Seaker Marine Asset Tracking system emerges as a beacon of innovation. A prototype developed by a talented team from the University of Victoria, comprising Bradley Scott and Joey Boyer, under the guidance of Dr. Navneet Kaur Popli and Rudra Pratap Singh for the ECE 356 course and UVic Ocean Challenge 2023, this project represents a significant leap forward in the field of marine asset tracking.

The Genesis of Seaker

The inception of the prototype Seaker project was driven by the urgent need for improved marine asset management, particularly in response to the increasing challenges of maritime navigation, logistics, and environmental preservation. Recognizing the potential of Internet of Things (IoT) technology to revolutionize this domain, the team set out to create a system that could offer real-time, accurate tracking of marine assets.

Website of the Seaker Marine Asset Tracking.



A user-friendly dashboard.

Technological Backbone

At the core of the Seaker system is a sophisticated integration of a Vue.js frontend application with the Amazon Web Services (AWS) Timestream database, enabled by a microcontroller. This setup not only facilitates seamless data uplinking but also enriches the user experience with dynamic updates on asset locations, weather forecasts, and tide data through a user-friendly dashboard. The employment of MQTT protocols for efficient message transfer and the implementation of SSL certificates for data security exemplify the project's commitment to leveraging cutting-edge technology to ensure data reliability and system integrity.

Challenges and Innovations

Throughout its development, the Seaker project encountered and overcame various challenges, from ensuring the durability of hardware components in harsh marine environments to maintaining the security of sensitive data. Innovations such as the use of robust encryption methods and the integration of environmental data sources into the tracking system played a crucial role in addressing these challenges.

Impact and Future Prospects

The Seaker Marine Asset Tracking system not only enhances the efficiency and safety of maritime operations but also offers a powerful tool for environmental monitoring and conservation efforts. By providing detailed, real-time information on marine conditions, the system enables more informed decision-making and strategic planning for preserving marine ecosystems.

Conclusion

The success of the Seaker project at the UVic Ocean Challenge is a testament to the power of collaborative innovation and technological ingenuity in addressing contemporary challenges. As the system continues to evolve, it holds the promise of setting new standards in marine asset tracking, opening up new possibilities for safeguarding our oceans and ensuring the sustainability of marine operations.

IEEE OES University of Zagreb SBC—Charting New Horizons Through Innovation and Collaboration

Igor Kvasić, Vladimir Slošić, Luka Mandić, Juraj Obradović, Matko Batoš, Kristijan Krčmar, Matej Fabijanić

In the past six months, the **IEEE OES University of Zagreb Student Branch Chapter** (SBC) has organized and participated in a series of events aimed at deeper understanding and appreciation of marine robotics within our community, particularly among young individuals. These events, which included workshops, lectures, competitions and demonstrations, sought to bridge the gap between theory and practical application in the field of marine robotics.

Among the many milestones achieved during this period, one standout moment was our remarkable success in the prestigious **MBZIRC** robotics challenge. This achievement not only exemplified our chapter's commitment to excellence, but also showcased the dedication and talent of our members in pushing the boundaries of innovation in robotics.

2023 was filled with interesting events from science fairs, expert visits and lectures,and culminating with **Breaking the Surface 2023**, our flagship event dedicated to advancing marine robotics and facilitating collaboration among experts and enthusiasts.

IEEE OES University of Zagreb SBC team together with OES Treasurer William Kirkwood and Vice-President for Workshops and Symposia Fausto Ferreira.

Breaking the Surface Workshop 2023

After 14 consecutive editions in Croatia, the international workshop of marine robotics and its applications, "Breaking the Surface" (BtS), was held for the first time outside Croatia, on the coast of Montenegro. The location shift proved to be a resounding success, marking a visit of over 200 experts and visitors from various marine disciplines congregated in the picturesque scenery of the Kotor bay in Montenegro. This interdisciplinary field workshop, focused on maritime robotics and applications, attracted professionals spanning maritime robotics, marine biology, maritime archaeology, maritime security, and marine geology from 23 countries worldwide. Over the course of seven days, participants were treated to an agenda featuring 15 plenary lectures, 8 tutorials, and 6 hands-on demos across 3 parallel program tracks.

Each morning, attendees could enjoy engaging plenary talks from expert speakers, intertwined by coffee breaks fostering new networking opportunities. The afternoons were filled with hands-on tutorials, always amusing practical demos and insightful company presentations from marine industry leaders. Since BtS is well known for its social events, evenings were reserved for an array of activities, including the chapter's signature IEEE

All participants of the BTS Workshop 2023; Beautiful Kotor Bay in the background where multiple demos were conducted for the participants of the workshop.

OES party, which kicked off the week, International Night, Pub Quiz, Karaoke Night and of course a closing ceremony to acknowledge the most deserving for yet another successful edition of BtS followed by the gala dinner. Saturday, usually reserved for the traditional field trip, saw participants embarking on a panoramic boat cruise around the beautiful Boka Bay, complemented with stops to the Lady of the Rocks island and historic city of Kotor.

Challenges and Competitions at BtS

As proud co-organizers of this official IEEE OES event, the IEEE OES UniZg Student Branch Chapter as usual facilitated the involvement of our student members and volunteers, enhancing the overall experience with diverse activities and opportunities for engagement. As the event introduced in the previous year's, the **Acoustic Localization Challenge**, proved to be an interesting addition for participants, especially students, we decided to keep it in the programme. The competition requires participants to employ the best strategy in identifying the most accurate position estimate of a submerged acoustic pinger. This year, participants in the localization challenge were asked to locate a submerged miniature transponder using 2-way acoustic ranging. The groups were given an acoustic modem to interrogate the transponder, a GPS receiver, and access to a fast vessel to operate their localization methodology. The teams analyzed the collected range data on the boat and offline to estimate the position, and presented their methods and results on the final day of the workshop. The teams competed on three aspects: (1) a race to locate the transponder most quickly, (2) the most accurate final position after post-processing, and (3) the most innovative localization strategy. Experts accompanied the participating groups during their preparation, data collection, and analysis, and hydrophones were used to provide real-time visualization of the acoustic traffic in the water.

A new addition to this year's edition was the **3-Minute Thesis** (3MT) competition, a challenge where participants learned how to extract the most important information from a complex topic such as their PhD's and present it in the most interesting manner to a broad audience in under 3 minutes. The 3MT was an initiative aimed at improving students' research presentation skills in an elevator pitch style. Each student had 3 minutes to present his/her thesis using a single presentation slide. The

Hackathon participants listening to the introductory presentation.

Different activities during the BTS 2023; Demonstration site, presentation from our speakers and participants having fun in different activities.

event included a tutorial on pitch making, where participants learned how to open their pitch, structure it, and deliver data effectively. The second workshop included hands-on experience in pitch making with expert feedback. Participants had the opportunity to refine their pitches with guidance from experts. On the last day of the workshop a distinguished referee team from academia and industry, as well as the audience, evaluated the three best pitches with great rewards.

The second addition was a **hackathon** focused on solving problems relevant to blue economy areas, in this case developing algorithms for detection and identification of phytoplankton in ocean samples.

From insightful lectures to hands-on demonstrations, student competitions and vibrant social gatherings, BtS 2023 exemplified the power of interdisciplinary collaboration and networking, setting the stage for future achievements in maritime robotics and beyond.

Special Awards from IEEE Croatia Section and University of Zagreb Senate

On November 15, 2023, our former SBC president **Anja Babić** was awarded the **IEEE Croatia Section Student Volunteer Award**. The award was given out at the IEEE Croatia Section annual gala dinner and award ceremony held at Hotel International in Zagreb. Anja started volunteering within IEEE as a member back in 2014. Since then, she has been actively participating in international IEEE conferences by presenting papers, and in 2019 she participated in the judging jury of the OCEANS 2019 student poster competition. Seeing the lack of existence of a local community in the field of ocean sciences, in 2019 she played one of the key roles in founding and establishing our OES UniZg SBC. From its foundation until March 2023, Anja Babić served as the president of the branch. She distinguished herself by her contribution to the branch and the community through a series of valuable activities. The number of members of the branch grew from year to year, and 24 expert lectures and workshops were organized over the course of four years. In addition to numerous volunteer duties, work in classes and research projects, this year she successfully defended her doctoral dissertation entitled "A hyper-heuristic approach to achieving long-term autonomy in a heterogeneous swarm of marine

Anja Babić with the IEEE Croatia Section Student Voluntee Award.

robots" under the mentorship of prof. Ph.D. Nikola Mišković. Her student journey ends there, and thus her active involvement in the leadership of the student section, but her contribution remains invaluable.

On the occasion of the celebration of University Day in Zagreb, in the ceremonial hall of the Regional Center for the Development of Entrepreneurial Competences for Southeast European Countries—SEECEL, 08.11.2023. a solemn session of the Senate was held as part of the University Week. During the session, special awards were also given to students and professors who contributed to the University during the past academic year or during many years of work. A **Special Student award** was given to our member and webmaster **Matej Fabijanić**, a graduate student in Software Engineering and Information Systems, for his international success in scientific and professional work as part of Laboratory for Underwater Systems and Technology in the scope of the HEKTOR project, and for having published papers at the international peer-reviewed conference OCEANS 2022 Hampton Roads and in Q1 MDPI JMSE 2023 Journal of Marine Science and Engineering.

OES UniZg SBC member Matej Fabijanic.

Presentation of Marine Technologies at the University of Zagreb Fair 2023

OES UniZg SBC members Matej Fabijanić, Matko Batoš, Marko Barišić, Kristijan Krčmar, and Mak Gračić, together with associates, presented not only our research laboratory and equipment but also the whole Faculty of Electrical Engineering and Computing (FER) at this year's edition of the University of Zagreb Fair from November 9th to 11th. They showcased their student demo about the remote control of the Blueye Pro ROV from the Fair to our lab pool that had an obstacle course to test the piloting skills of the interested Fair visitors.

Visitors had the opportunity to see and try out other selected student demos and talk with students attending FER to get useful information. Interest in FER was not only shown by high-school graduates, but there were various ages of children and adults who were interested in what FER offers. We hope that we have helped all interested visitors in the difficult decision that awaits them at the end of this school year, and next year we are waiting for you with new interesting demos.

IEEE OES team at the University of Zagreb Fair with the University Rector.

OES UniZg Members Won the USV Obstacle Detection Challenge

We are proud to announce that two members of OES UniZg SBC won the **USV Obstacle Detection Challenge** track organized by the University of Tübingen and the University of Ljubljana, Faculty of Computer and Information Science. The challenge was to detect various objects on the surface of water and correctly classify them into various categories.

Matej Fabijanić and **Magdalena Šimunec**, the authors of the winning method, will be featured as co-authors in the

Result of the competition, detection of the various objects on the surface of the water.

challenge results paper. The results of the method will also be featured in the Maritime Computer Vision (MaCVi) workshop at the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2024 held in Waikoloa, Hawaii.

Expert Visits and Invited Lectures at the University of Zagreb

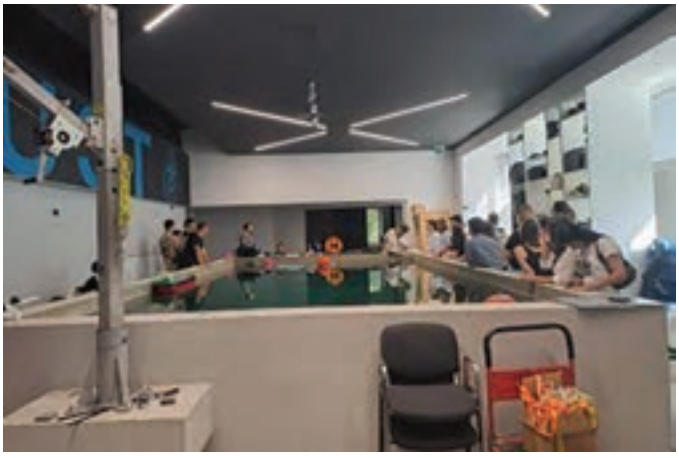
The IEEE OES University of Zagreb Student Branch Chapter, in collaboration with the Laboratory for Underwater Systems and Technologies, organized many inspiring lectures at the University of Zagreb. Dr. Antonio Vasiljević came to give a talk on the topic "How research infrastructure projects can boost research and education activities and expand the project portfolio." Dr. Antonio Vasilijević is a research project manager and the leader of the Applied Underwater Robotics Laboratory at the Norwegian University of Science and Technology. He is responsible for the Lab operation, full lifecycle of research projects, and building strong links with the industry.

In November Dr. Ivan Stenius, Associate Professor at the KTH Royal Institute of Technology in Sweden, arrived to give a lecture titled "From Subsea to Space: Integrated Research in Maritime and Space Robotics." Dr. Stenius specializes in hydroelasticity and fluid-structure interactions for high-speed craft. Presently, Dr. Stenius's expertise encompasses multidisciplinary development of innovative maritime solutions, merging hydrodynamics, electric propulsion, robotics, and the dynamics of underactuated systems to create agile underwater robots, and advanced hydrofoiling concepts. In recent years, he's been instrumental in advancing research in underwater technology and maritime robotics at KTH and currently serves as the PI for the Swedish Maritime Robotics Centre (SMaRC).

During November and December, the workshop "Tools for efficient academic research" was being held at the University of Zagreb by Professor Roee Diamant from University of Haifa. Participants, mostly Ph.D. students and researchers, could learn many good practices for efficient academic research, writing papers and many of the challenges that researchers face along the way. The workshop consisted of 5 lectures in which Professor Diamant presented his knowledge in the form of structured tools that he gathered through his impressive career as a researcher. As the Professor has reviewed and written hundreds of conference and journal papers, many students and external participants found it extremely useful and participated in the lectures.

Multiple School Visits Organized at the Laboratory for Underwater Systems and Technologies

High school and university students from Sarajevo visited the University of Zagreb Faculty of Electrical Engineering and Computing (UNIZG-FER) in September, 2023, as part of "school to science and academic community" initiative. As part of the visit, about twenty students, along with their supervisors, had the opportunity to visit two robotics laboratories—the Laboratory for Underwater Systems and Technologies (LABUST), where they had the chance to see a pool for conducting projects in marine robotics and learn more about ongoing projects, and the Laboratory for Robotics and Intelligent Systems Control (LARICS), where they learned more about aerial robotics and robotic manipulators. The visitors also participated in a workshop on assembling and programming LEGO -Spike Essentials educational sets. All participants left FER with wonderful impressions.



High school and university students from Sarajevo together with our students on the LABUST pool area.

Students from Matija Gubec primary school learning about marine technology and driving an ROV.

Our Team has Won the Mohamed Bin Zayed International Robotics Competition

The team, composed of many of our chapter members and other students of the Faculty of Electrical Engineering and Computing, has won the first prize at the prestigious international robotics competition—**MBZIRC (Mohamed Bin Zayed International Robotics Challenge)**. The challenge is held every two years in Abu Dhabi, and this edition started with a whitepaper phase in early 2022, followed by a simulation phase and culmination with a demonstration phase finale. This year's competition aimed at creating a fully autonomous unmanned boat capable of retrieving objects from another vessel in collaboration with aerial drones.

"We are all very proud of this success! When we learned about this competition, and that it was the first experiment of its kind involving collaboration between unmanned aerial vehicles and unmanned surface vehicles for complex navigation and manipulation tasks in a maritime environment, we knew we had the right team to respond successfully to such a challenge. The preparation took almost two years, but it showed us what we are capable of, and such competitions and recognitions validate that everything we develop has practical applications. Considering that part of the team from the Laboratory for Robotics and Intelligent Control Systems (LARICS) managed the unmanned aerial vehicle, we have now proven—the sky is the limit!" emphasized the vice dean for research and innovation at FER, Prof. Dr. Stjepan Bogdan.

"In the Laboratory for Underwater Systems and Technologies, we are engaged in applied research and the development of unmanned vehicles (underwater and surface) and innovations in marine technologies. What attracted us to this competition was the desire to demonstrate how much progress we have made in our research, and the purpose of this competition was to show how everything we have researched functions in a real environment. But we don't stop there. We have big plans for Croatia related to research in the field of maritime robotics. Currently, we are competing for research funds to establish a Center of Excellence in the field of maritime robotics and technologies at FER—we have already received support from the Ministry of Science and Education, and we hope for support in the second phase, which, if successful, will firmly place Croatia on the world map of excellence in robotics," highlighted Prof. Dr. Nikola Mišković, OES UniZG SBC advisor.

Drone picking up the object after USV has autonomously docked to the target vessel.

"We are proud of our team's results, which are the outcome of many years of quality work on international projects. Our students and researchers face strong competition and work on challenging and current topics. These projects provide them with excellent working conditions and a quality life in Croatia. This result increases the visibility and impact of FER on the international level, confirming that we are doing great things for the world in Croatia," said the dean of Faculty of Electrical Engineering and Computing in Zagreb, Prof. Dr. Vedran Bilas.

Many of our chapter members participated in this competition, starting from our advisors, Prof. Dr. Sc. Nikola Mišković, Doc. Dr. Sc. Đula Nađ, and Doc. Dr. Sc. Fausto Ferreira, who provided valuable mentorship during the competition. Our chapter members, Luka Mandić, Ivan Lončar, Natko Kraševac, Matko Batoš, Kristijan Krčmar, Martin Oreč, and Juraj Obradović, were actively involved in the development of algorithms for the Unmanned Surface Vehicle (USV), while Marijana Peti was part of the team in charge of the Unmanned Aerial Vehicles (UAV). The USV played a crucial role in searching for the target vessel, autonomously navigating to it, and performing autonomous docking to the target vessel and retrieving cargo from the target ship.

The UniZg team in Abu Dhabi during the MB competition finals.

Marine Robotics School Workshop

Francesco Maurelli, OES YP-BOOST 2023–2024

Intensive technical schools are a great way for students and researchers to dive deeper into their subject of interest, being fully focused, networking with peers, learning from experts in the field. That is why the CSIR National Institute of Oceanography (NIO) in Goa, India, hosted the 6th edition of a Marine Robotics School (MRS) in November 2023, with the participation of students, researchers, and practitioners from a wide spectrum of institutions and commercial companies. IEEE Oceanic Engineering Society decided to support selected students from OES student branches in India, in order to give the opportunity to more people to participate in this important event. This also served to increase OES visibility in India, a country that is significantly investing in marine technology and engineering. The motors of the school were Pramod Maurya (NIO) and Antonio Pascoal (IST), who did a truly incredible job. The school program had over 30 speakers from renowned institutions worldwide who truly inspired the participants. Field demonstrations were pivotal to understand NIO assets and capabilities and for companies to showcase their products. Below is the feedback from the student who participated in the workshop with the support of OES.

NIO testing facility in Goa, during field activities at MRS.

Pramod Maurya (NIO) and Antonio Pascoal (IST) opening MRS (right), and the celebration cake for Antonio's birthday (left).

Priya Pandey, Indian Institute of Technology, Delhi

Participating in the Marine Robotics School Workshop was an enriching and captivating experience that provided me with profound insights into the diverse array of robots and technologies employed in marine exploration.

Upon entering the workshop venue, I immediately sensed the atmosphere brimming with anticipation and enthusiasm. The walls adorned with posters showcasing various marine robots, ranging from autonomous underwater vehicles (AUVs) to remotely operated vehicles (ROVs), set the stage for an immersive learning experience.

The workshop commenced with engaging presentations by seasoned experts in the field, who generously shared their expertise and experiences. Through their informative talks and hands-on demonstrations, I gained a comprehensive understanding of the roles and functionalities of different types of marine robots.

One of the workshop's most memorable aspects was the opportunity to interact closely with the marine robots on display. From sleek and agile AUVs designed for precise underwater navigation to robust ROVs equipped with advanced sensors and manipulators, each robot showcased the remarkable advancements in marine technology.

The MRS panel at NIO entrance, showing IEEE OES support.

Throughout the workshop sessions, I was particularly fascinated by the myriad applications of marine robotics across various industries, including marine science, offshore exploration, and underwater archaeology. Witnessing firsthand how these robots contribute to ocean exploration and research deepened my appreciation for their importance in understanding marine ecosystems.

Furthermore, the workshop fostered a conducive environment for networking and collaboration. Engaging in discussions and exchanging ideas with fellow participants and experts allowed me to broaden my perspective and forge meaningful connections within the marine robotics community.

As the workshop drew to a close, I departed with a renewed sense of inspiration and curiosity. The experience had not only equipped me with valuable knowledge but also instilled a profound appreciation for the complexities of marine technology. Armed with newfound insights, I felt eager to embark on further explorations and delve deeper into the captivating world of marine robotics.

Okinawa Marine Robot Competition 2023 Report

Yuta Matsuoka, Shun Fukushima, Keisuke Nishimuta, Yuto Nakazuru and Xu Ha, Kyushu Technological University

Introduction

The Okinawa Marine Robot Competition 2023 [1] was held on November 18th and 19th, and Kyushu Institute of Technology participated as a team called "Kyushu Institute of Technology Underwater Robotics."

Since this tournament is held at a fishing port, it is necessary to control the robots by taking into account the effects of tides and ebbs and flows, and the tournament places more emphasis on operation in actual waters than tournaments held in pools.

Therefore, Kyushu Technological University Underwater Robotics participated in the competition believing that, through this competition, they would be able to gain knowledge and experience regarding AUV operation in actual sea areas.

Rules

There are two competitions: normal task and intelligence/measurement challenge. In a normal task, the robot travels back and forth through a course (Fig. 2, Fig. 3) that consisted of a start/end area (SG area), a diving and surfacing area, a diving area, and a sea navigation area. This is done twice in the preliminary rounds, and the teams are ranked based on the average of the points earned in the first and second rounds shown on Table 1, and the top two teams compete in the finals. Please note that in the AUB category, you will not be able to participate in the finals unless you complete tasks number 2 or 4.

In the intelligence/measurement challenge, the developed acoustic positioning technology was used to find a pinger located 30m away from the starting area, hover within a 2m radius, and then return to the starting position and surface. During this mission, the vehicle must remain submerged at all times, and commercially available navigation (IMU, DVL, acoustic positioning system) is prohibited to use.

Fig.1 Kyutech Underwater Robotics and KYUBIC.

KYUBIC

We entered this competition with KYUBIC (Figure 4), a hovering AUV, which we developed and improved in 2020. The origin of the name is kyutech and cubic. KYUBIC is equipped

Fig. 2 Competition venues.

Fig. 3 Competition venue diagram.

Table 1. Tasks and scores

No.	task	point
1	Sea navigation from SG area to submersible surfacing area	15
2	Submarine navigation (diving time measurement)	25
3	Surfacing within the maritime navigation area	20
4	Submarine navigation (diving time measurement)	25
5	Sea navigation from diving surface area to SG area	15

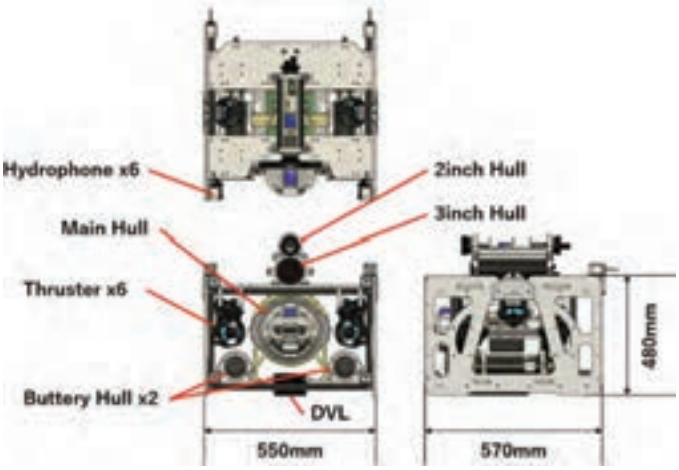


Fig. 4 General arrangement of AUV KYUBIC.

with a high-precision IMU and DVL and is capable of accurate self-position estimation. Additionally, KYUBIC can also handle advanced missions with two cameras and a unique acoustic positioning module.

KYUBIC mainly consists of 5 hulls, 6 thrusters, 6 hydrophones, and a DVL. Inside the main hull, there is a PC that controls KYUBIC, an IMU, two cameras, etc. [2].

KYUBIC supports various programs by transmitting data using ROS network.

The development environment is available for Control, image processing, communication with sensors.

The communication interface program is developed as a separate Simulink model and communicated via the ROS network.

Therefore, data can be exchanged with other programs using various programming languages, and highly scalable systems can be developed in a short period of time.

Hydrophone

The developed acoustic positioning device consists of six hydrophones, an AD converter housed in a pressure-resistant container, and a Raspberry Pi. The connections of each device are shown in Fig. 5. The analog signal obtained by the MEMS microphone passes through a bandpass filter and is input to the AD converter, and the converted digital signal is sent to the Raspberry Pi via USB2.0. On the Raspberry Pi, the location of the pinger relative to the robot is calculated from the difference in the timing when each hydrophone receives the pinger sound. The information is sent to KYUBIC's control hull via Ethernet and used to control the robot.

Hydrophones are amplifiers that can amplify up to about 50 times. Compatible with TLV316 and wide band from 100Hz to 80kHz.

Board is equipped with MEMS microphone SPU0410LR5H-QB. It was developed based on Structure of the developed hydrophone.

The structure is shown in Fig. 6. Overall, it is a small pressure vessel.

The sensor part is made of pressure-resident waterproof resin Jel-lafin, which ensures waterproofness and noise reduction. Efforts have been made to receive waves. Also, the amplifier allows access to variable resistor to set amplification factor to ensure this, an O-ring is used between the aluminum housings. It has a structure that can be disassembled.

Additionally, the shield of the communication cable between the AD converter and AD controller is grounded on the inverter side. Therefore, the structure makes it difficult for noise to enter during analog signal transmission.

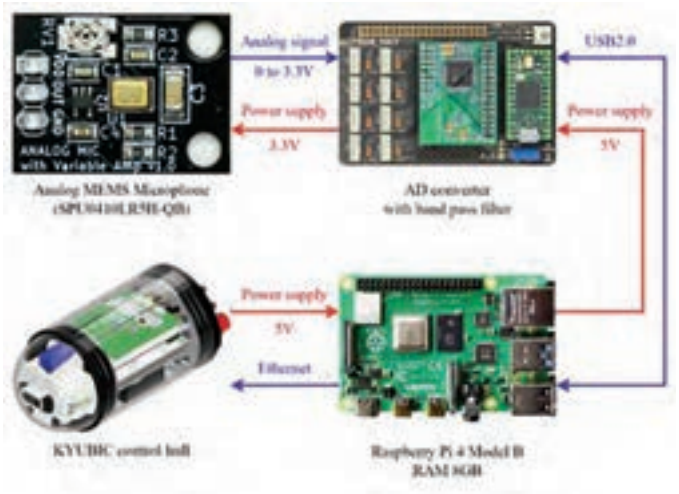


Fig. 5 Device connection.

Fig. 6 Hydrophone.

Strategies for the Intelligence/ Measurement Challenge

We developed acoustic positioning technology for the intelligence measurement challenge. Because the development was not completed in time for this competition, only two of the hydrophones installed in KYUBIC could be used, and the pinger position was estimated only using SSBL. In position estimation using SBL and all hydrophones, reaching the estimated coordinates of the pinger can be used as a determination of arrival, but SSBL can only estimate the direction of Pinga relative to KYUBIC and cannot calculate the distance. Therefore, the captured sound pressure of the Pinga was used as a measure of the distance between the Pinga and the KYUBIC, and when the sound pressure exceeded a critical value, it was determined that the Pinga was sufficiently close to the Pinga.

Result

In the first preliminary round of the AUV normal task, KYUBIC started moving backwards immediately after starting it. After that, we restarted, but timed out in the diving area. In the second preliminary round, there was no problem starting the KYUBIC, but it suddenly sank in the diving area, stopped working, and had to be recovered. In the final race, after KYUBIC started up, it ran straight ahead diagonally to the left. Halfway through the diving area, the KYUBIC stopped near an embankment on the left side of the course. KYUBIC turned on the spot and faced the embankment, then turned toward the maritime navigation area and headed straight ahead. We turned around in the maritime navigation area, went straight to the left again, went off course, and recovered. Although many unexpected problems arose, the overall score in the AUV normal task category was 1st out of 4 teams, and we were able to receive a special award.

In the "Intelligence Measurement Challenge" category, when the KYUBIC is activated, after a few seconds it is judged to have reached its goal and the KYUBIC returns. In the second preliminary round, KYUBIC arrived around Pinga and was spinning around, but it was not determined that they had arrived at the landmark, so they were unable to score points.

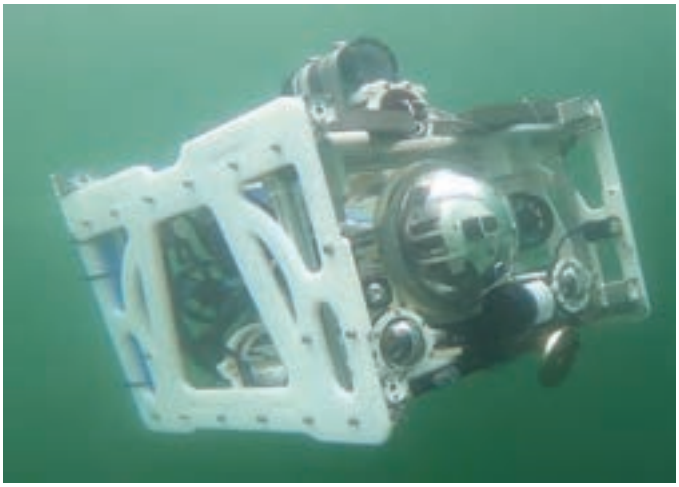


Fig. 7 KYUBIC navigating underwater.

Comments

Yuta Matsuoka: At this Okinawa competition, the program we created could not be utilized well, so we thought it was necessary to debug and improve it.

Shun Fukushima: The Okinawa Underwater Robotics Competition was the first underwater robotics competition

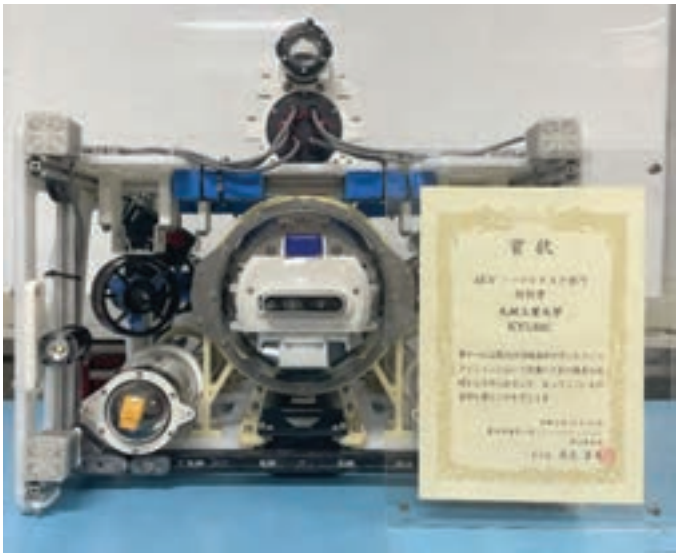


Fig. 8 KYUBIC and certificate.

Table 2. Scores in normal task category

Presentation	qualifying game1	qualifying game2	finals	overall band score
30	15	15	30	70

Table 3. Scores in the intelligence measurement challenge category

Workshop points	Competition score (average)	Technical explanation points	total	rank
20	0	32.5	52.5	3

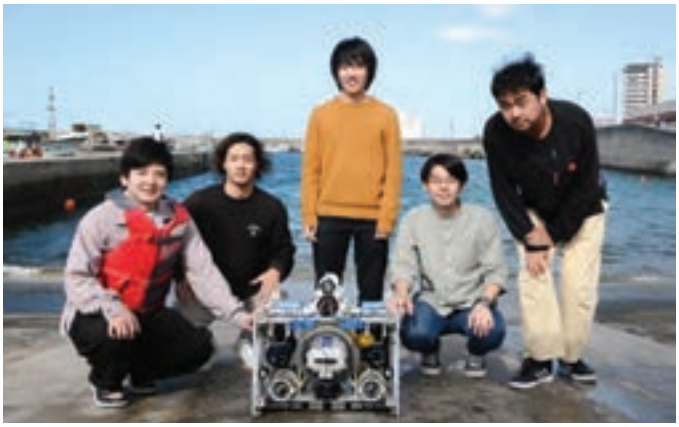


Fig. 9 Competition participating members (From left, Mr. Nishimuta, Mr. Fukushima, Mr. Matsuoka, Mr. Nakazuru, Mr. Han).

I participated in. I believe that developing underwater robots through this competition will greatly benefit my future career.

Keisuke Nishimuta: During the competition, we felt the difficulty of controlling an underwater robot in a rough sea. In addition, there were some unexpected accidents, which made us realize the importance of the ability to react on the spot.

Yuto Nakazuru: This time, since the competition was held in actual waters, various accidents occurred, and I was disappointed that I could not show my full performance in the actual race. I will try to improve KYUBIC in order to get a satisfactory result at the next competition.

Xu Han: Looking back, I realized how difficult it was to develop underwater robots and the importance of teamwork. Through cooperation with team members during the development process, I was able to not only increase team cohesion but also gain valuable team development experience. I believe that what I learned at this conference will definitely be of great help in my future research.

Acknowledgment

The 2023 Okinawa Marine Robot Competition is organized by IEEE/OES Japan Chapter, Ia Co., Ltd., Marine Engineering Co., Ltd., Globalway Co., Ltd., Sankei Shimbun (Offshore Tech Japan), Tsuneishi Craft & Facilities Co., Ltd., Japan Marine Enterprises Co., Ltd. The event was sponsored by the Japan Underwater Drone Association, FullDepth Co., Ltd., Yanmar Holdings Co., Ltd., Kowa Co., Ltd., Space One Co., Ltd., Sensite Competition, Bell Techne Co., Ltd., and Osago Co., Ltd. We would like to express our sincere gratitude to all the sponsors for their tremendous support and cooperation in organizing the tournament.

References

[1] The 9th Underwater Robotics Competition in Okinawa. https://www.robo-underwater.jp/2023/rchp/JPN/index.php

[2] Yoshiki Tanaka, Toshimune Matsumura, Yuichiro Uemura, Kentaro Yanagise, Yuya Nishida, Kazuo Ishi, "Development of a Testbed AUV for Shallow Water Observation and Its Controller Evaluation," Journal of Robotics, Networking and Artificial Life, Vol. 10(1), pp. 6–16, 2023.

Hong Kong IEEE CE/OES Joint Chapter Runs the Young Engineer Conference (YE-23) at the Hong Kong University

Paul Hodgson, Hong Kong Chapter Chair and Dany Cho, OES Senior Member

The IEEE CT/OES Joint Chapter in Hong Kong has been organizing Young Engineer conferences since 2019. The purpose of the conference has been to provide students an opportunity to practically solve real-life problems and YE-23, being the fourth Young Engineer Conference held, presented the most interesting projects we've seen yet.

YE-23 has been the year where projects have converged towards a space concept, with examples including a multifunctional CubeSat Design, ways to terra-form sand into growing medium, and data results from a JOVE Radio Telescope that was installed inside a school's classroom. Our chapter, taking note of this, decided to integrate the concept and start pushing a Future Explorers theme—where we realized the niche methods students were utilizing, such as hydroponics and Bokashi composting, are actually viable skills in a planet like Mars. To us, this is truly significant, as frequent headlines about technological revolutions from Virgin Galactic and SpaceX must be taken into account by the IEEE. These apparent changes may be hints towards an imminent shift in industries and, who knows, maybe a space economy is closer than we think.

Back to the initiative, for those unfamiliar, our chapter provides a chance for students to pursue a real-life problem of their interest. They begin by initiating research on their chosen topic, and are then guided through the process of producing three things: a poster, presentation, and paper. We give a certificate with IEEE credentials and students can benefit in their university applications.

To promote innovation, students are essentially given free rein in what they pursue. However, at the CT/OES, we want to reduce the impact humans have on the planet, particularly ecosystems, and so there are two simple pieces of criterion kept in mind. One, the mandate from IEEE, which is "Advancing Technology for Humanity," and two, the United Nations Sustainable

HK IEEE Chairman—Dr Kenneth Wong.

Development Goals. With this in mind, the conference program has been building momentum since it was conceived. Momentum has been building in terms of the number of presenters and schools involved. YE-19 had 16 student presentations, and YE-20 had 19. In YE-22, we had 43 projects. For YE-23 there were 40 projects.

The conference was held at the Hong Kong University over the 11th and 12th of November, 2023. It was officially opened by the HK IEEE Chairman, Prof. Kenneth Wong. The keynote speaker was Prof Anthony Chan from the Hong Kong St. Francis University giving everyone a lecture on a very important topic at the moment--the future of AI. This was followed by a talk on the history of the Young Engineer's Conferences and the future of the Future Explorers, the latter given by the current HK CT/OES Chairman, Paul Hodgson.

The projects in YE-23 covered a very diverse range of topics and addressed issues that humanity currently faces. The list is below:

Space Themed:
1/ Simple Cubesat Frame
2/ Growing Food with bokashi
3/ Solar Panel Angle Efficiency
4/ Radio Telescope Results

Health & Human Body
1/ Allowing Blind People to see Colours
2/ Safe Intelligent Construction Helmet
3/ Checking for Scoliosis
4/ Health via Blood Conductivity
5/ Pollen Detector
6/ Smarter Chair
7/ Collective Memory Therapy for Alzheimer Patients
8/ Motion to message

Environmental
1/ Classroom Air Quality
2/ Blast Fishing in Sabah
3/ CoralWatch result at Coral Beach, Hoi Ha Wan
4/ Active Noise Cancelling
5/ Dolphin Soundscape
6/ Drone Data Collection
7/ Maintenance Indicator for Consumer Products
8/ Tree Damage by Typhoon Prediction

Growing Food with Bokashi.

Maintenance Indicator for Consumer Products.

CubeSat for training local school students.

Making Solar panels more efficient.

9/ Node Type Pollution Monitor
10/ Investigation of Light Pollution in Hong Kong
11/ Coral Reef Fish Populations in Hong Kong
12/ Household CO2 Detection
13/ Illegal Fishing in Hong Kong Marine Parks

ROV
1/ Underwater Robot Direction Indicator
2/ Seawater Quality Survey

Energy
1/ Current Sensing for Solar Panels
2/ Anti-reflective Coating for Solar Panels
3/ Waste Heat Salvaging via Peltier Device

General
1/ IoT Speeding Car Detection
2/ Investigation of Peltier Cooling Devices
3/ Effectiveness of UV Protection Materials Properties
4/ Ethanol Sensing with ZnO Nanowires
5/ Drainage Clogging Detection
6/ Using Simulation to solve Tunnel Traffic Congestion
7/ Minibus routing
8/ Digital Aquarium
9/ Using AI to detect AI in Essays

The Goals of these projects.

The students worked either individually or as a team of up to six members. They could operate school based or independently. They selected a project topic, or an issue of interest, and carried out the work needed to develop a solution. Criteria for YE-23 conference acceptance were that the project should be in-line with the United Nations' 17 Sustainability Development Goals and the students should apply or advance technology to address the problems facing Humanity. Basically, the IEEE motto: *"Advancing Technology for Humanity,"*

Prizes were awarded to the following projects:
Project Awards:
First: ISF 15.
How Accurately Do AI Detection Systems Detect the Use of AI in English Analytical Essays?

Second: HKAGE-3
How Does Collective Memory Therapy Improve Cognitive Functions of Alzheimer's Disease Patients?

Third: CDNIS-1
Terraforming sand to grow food using Bokashi and hydroponics

Poster Awards:
First: ISF-11
Anti-Reflective Coatings on Solar Panels

Second: CDNIS-4
Fast Scoliosis AI Screening Mobile App Using Deep Neural Network and Bare Back Images

Third: ISF-5
An investigation of Peltier Air-Cooling devices: Modeling to test the feasibilities of implementing Peltier systems cooling

Judges Special Mention:
1. CDNIS-6 Maintenance Indicator for electronic/electrical appliances
2. TSK-2 Motion-to-Message Translator
3. SPCC-1 Using Simulations to Solve Tunnel Congestion
4. HKIS-3 Hand-Held Pollen Detector (Laser Light Scattering Particle Size Analysis)

The HK CT/OES Joint Chapter is very grateful to the Electrical and Electronic Department of the Hong Kong University for the sponsorship of the conference venue. Other sponsors include the Rotary Club of Metropolitan Hong Kong, Lingnan University and TelcoX. Technical sponsors were OASA and the Oceanway Corporation.

Special mention and thanks for the hard working people who made the event happen, particularly, George Woo, Jacky Liang and Min Ng. Many others helped out on the day including Lee Kwan Yue, Hugo Tsoi, Enson Peng, Lam Wing, Lam Yu and Tony Pang.

For those interested, the web site with all of the details is located at: http://www.hkctoes.com/ Links to the poster and paper formats are given.

The next Young Engineer's Conference will be the YE-24 and the tentative date is the 16th and 17th of November, 2024. We have already started accepting projects for this conference and if anyone is interested please contact http://www.hkctoes.com/ for more details.

Group Photograph.

HK ROV 2023—HK CTOES Has Another Productive ROV Year

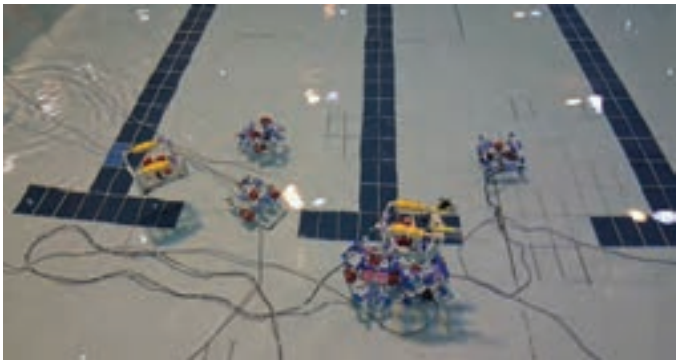
Paul Hodgson, Hong Kong Chapter Chair and Dany Cho, OES Senior Member

Another incredible ROV year for us in 2023. We trained ROV workshop instructors in Japan, Mainland China and Thailand and set the path to do so for Sabah, Malaysia. A total of 70 basic ROVs were built and several ROV based projects were presented at the Hong Kong IEEE YE-23 Conference.

We ran an ROV BattleBots, with student teams fighting it out underwater in three classes; underwater Sumo, Jousting (Spiders from Mars) and ROV-push. We also tested the water for a task qualification event rather than a traditional competition. This will happen in March 2024. An ROV competition was arranged for Guangzhou, China, and this will be opened to Hong Kong teams when the next event occurs in July 2024.

We now have two new designs for the Basic ROV from the equipment supplier and a junior ROV course in which we are currently involved with the development. New designs for the mini-ROV were also presented to one school for evaluation. New geared thrusters, ROV grab and joy-stick PWM control are all now part of the revised advanced course options possible for continuing education.

A key highlight was the American Geophysical Union (AGU) project involving the collection of mineral samples in a water and debris filled mine shaft in Hong Kong. Two Hong Kong Secondary school students from the ISF school took on the challenge. The vehicle used was a cut down version of our



ROV Monster Mash during the HK BattleBot event.

The HK ROV BattleBot event winners.

Building an ROV for science—HK Choi Hung School workshop.

The Thailand Instructor training workshop—24 ROVs Built.

ROV Sumo during the HK BattleBot event.

Preparing for the HK BattleBot event.—QCOBSS workshop.

Basic ROV being used for mud sample collection in HK.

The result of a successful build session—13 ROV.

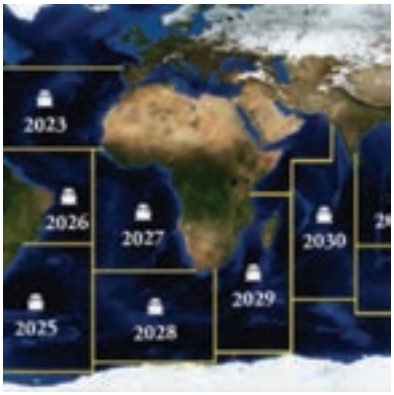
Collecting mineral samples in Adit 5.

Mini ROV Build in a Hong Kong School—testing & fun stage.

standard pipe frame ROV. The collection device turned out to be problematic. Site issues included challenges like a small area of maneuverability as well as scattered samples. A small area to fit and operate the ROV grab also proved to be a challenge. Key advice from JAMSTEC in Japan and Mr. Wernli in the US inspired a design that worked. The students have been asked to refine the design and present it at the YE-24 conference in November 2024.

Our ROV qualification and BattleBot tryout is scheduled for March 2024. There will be another event in October for qualification and a full on ROV BattleBot.

Finally, the IEEE CT/OES Young Engineer's Conference (YE-24), planned to be held in November 2024, will be held in Hong Kong. We hope to see you there.



Program Summary

The Berth of Opportunity program matches OES members who are students or young professionals with available berths on the R/V Falkor (too), an oceanographic vessel owned and operated by Schmidt Ocean Institute.

Falkor (too) conducts ocean-related biology, chemistry, physics, geology, oceanography and/or marine technology research. Research cruises normally last between 10 and 30 days. Participants in the program will either support the Principal Investigators of the research cruise or conduct their own experiments in addition to supporting the PI's research program.

The purpose of this program is two-fold:

(1) provide members who do not have access to sea trials with an opportunity to experience field research, learn valuable skills, and make life-long connections;

(2) build and strengthen relationships between the IEEE OES community and the scientific community through Schmidt Ocean Institute's network.

Application Process

o Interested candidates are requested to submit an application here: https://forms.gle/w2rbvv9x4CDTh2xJ9

o Travel costs associated with participating in a cruise will be paid by the IEEE-OES. These costs include airfare, accommodations, incidental and meal allowance, and ground transportation. On-cruise costs, such as accommodation and meals, are covered by SOI.

o A tentative schedule for future expeditions will be available on the Cruise Website. Applicants should provide 1-3 preferred expeditions that they would like to join;

o Berths can be made available during shorter transits between ports if candidates want to test technology or use the vessels underway systems;

o All submitted applications will be reviewed by the IEEE-OES committee, SOI team, and PIs of the research cruises that the applicant selects;

o Applicants will receive notification of acceptance of their application no later than one month before cruise departure.

o Selection criteria include the applicant's research plan, career goals, academic qualifications, professional qualifications, creative innovation, and the relevance of their research interests with the research cruise.

Expectations

o Participants are expected to follow the SOI operational procedures before and during the cruise, including its COVID policy, as well as safety training onboard the Falkor (too) on the day before the R/V sets sail;

o Participants are expected to maintain good health before and during the cruise. If you experience COVID symptoms or any serious health conditions before the cruise, please contact the SOI and IEEE-OES to review if we need to reschedule;

o If participants conduct their own experiments during the cruise, they are expected to share the data from these experiments as specified in the SOI agreement;

o Participants are expected to obtain a receipt for all costs that they submit to the IEEE-OES for reimbursement after the cruise;

o Before joining the expedition, participants are required to have completed Basic Training in Sea Survival Techniques or Personal Survival Techniques, as outlined in table A-VI/1-4 of the STCW Code.

o Participants are expected to submit a short report of their experience for publication in Earthzine, the IEEE-OES on-line magazine and the IEEE-OES Beacon newsletter;

o Participants are encouraged to present papers based on the research done during the expedition at an upcoming IEEE OCEANS conference.

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