ASME Journal of Offshore Mechanics and Arctic Engineering
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Journal of Offshore Mechanics and Arctic Engineering

Editorial

Profiles of Two *JOMAE* Associate Editors (The Seventh in a Continuing Series)

Associate Editors of the Journal of Offshore Mechanics and Arctic Engineering

The ASME *Journal of Offshore Mechanics and Arctic Engineering* (JOMAE), published six times a year, is an international resource for original peer-reviewed research that advances the state of knowledge on all aspects of analysis, design, and technology development in ocean, offshore, arctic, and related fields. Over more than 30 years, the journal has been supported by a large and enthusiastic community and by ASME's Ocean, Offshore and Arctic Engineering (OOAE) Division. The journal's primary goal remains one of showcasing fundamental research and development studies; it has often also featured review articles and perspectives on well-established as well as emerging topics. The OOAE Division organizes a conference every year where presentations on new and emerging developments in ocean, offshore, and arctic settings are discussed. The 43rd International Conference on Ocean, Offshore & Arctic Engineering, often referred to as the OMAE conference, is being held in Singapore in June 2024. In 2022 and 2023, the conferences were held in Hamburg (Germany) and Melbourne (Australia) after a couple of conferences in 2020 and 2021 that were virtual events due to the pandemic.

Since June 2019, I have included profiles of two JOMAE Associate Editors at a time in journal issues offered each year. The present editorial represents the seventh in this series; the most recent one appeared in the October 2023 issue [1]. Similar editorials profiling JOMAE Associate Editors appeared in the June 2019, August 2020, October 2021, April 2022, and April 2023 issues. My hope in offering you, the reader, these profiles is to highlight important behind-the-scene efforts of an international team of Associate Editors of this journal. At the same time, I also attempt to share a little about the accomplishments of these experts, while highlighting snippets of their work and professional achievements and goals.

The journal's 27 Associate Editors are experts in specialty areas that include offshore technology; structures, safety, and reliability; materials technology; ocean engineering; ocean renewable energy; pipelines, risers, and subsea systems; computational fluid dynamics and vortex-induced vibration; offshore geotechnics; arctic engineering; and ocean space utilization. They come from 13 countries including Australia, Canada, China, Denmark, Finland, India, Italy, Japan, Mexico, Norway, Singapore, the United Kingdom, and the United States.

It is a pleasure to once again profile two Associate Editors in this ongoing series of editorials. I encourage you to read about the most recently profiled Associate Editors [1]; earlier profiles dating back to June 2019 can be found in back issues of the journal. In the current issue, I am pleased to present to you two Associate Editors—Dr. Yanlin Shao, Associate Professor and Head of Studies of the Nordic Master's Program in Maritime Engineering at the Technical University of Denmark and Dr. Nilanjan Saha, Professor in the Department of Ocean Engineering at the Indian Institute of Technology Madras (Chennai).

Associate Editor, Dr. Yanlin Shao

Dr. Yanlin Shao (Fig. 1) is an Associate Professor of Maritime Engineering and serves as Head of Studies of the Nordic Master's Program in Maritime Engineering in the Department of Civil and Mechanical Engineering at the Technical University of Denmark (DTU), Denmark. He obtained his MSc degree from Shanghai Jiao Tong University, China, in 2006, and his PhD in Marine Hydrodynamics from the Norwegian University of Science and Technology (NTNU) in Norway in 2010, where he continued as a postdoctoral researcher for an additional two years. Before returning to academia when he joined DTU in 2016, Dr. Shao worked for 4 years at Det Norske Veritas (DNV) and Sevan Marine as a senior engineer specializing in hydrodynamic and mooring analysis.

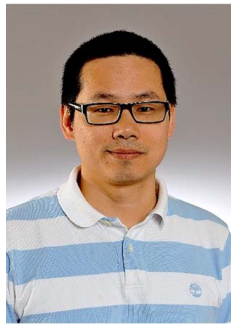

Fig. 1 Dr. Yanlin Shao

Dr. Shao's main research interests relate to the modeling of ocean waves and their interaction with various manmade and natural structures in the ocean. He has a demonstrated record of research innovation, including more than 90 peer-reviewed papers in computational physics/methods and his field. His research work has received funding from the Independent Research Fund Denmark, COWIfonden, the Research Council of Norway, and DNV. He has supervised or co-supervised more than 10 PhD students and has provided mentorship, supervision, and education to more than 25 MSc students.

Among his other contributions in the field of marine hydrodynamics, it is worth mentioning two fundamental contributions of Dr. Shao. (1) He pioneered the development of the harmonic polynomial cell (HPC) method, which is a novel, accurate, and time-efficient way to solve linear and nonlinear potential-flow problems for ships and large-volume offshore structures in waves. This

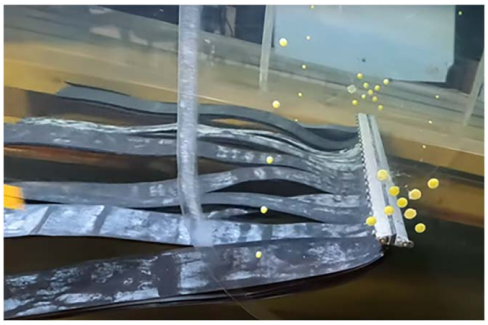

Fig. 2 Tank test of an artificial kelp blade under forced oscillations to understand flow around the blade and its dynamic response

method was extended to solve accurately and efficiently the Poisson equation and has been applied in solving the Navier–Stokes equations for viscous-flow effects on offshore structures. (2) He paved the way for applying nonlinear perturbation solution methods for ships and floating offshore structures in waves using a body-fixed coordinate system, which theoretically avoids some well-known difficulties encountered in state-of-the-art traditional seakeeping models.

In addition to research dealing with hydrodynamic aspects of ships, floating wind and wave energy devices, floating bridges, and offshore aquaculture structures, Dr. Shao is actively engaged in emerging research areas that could support an ongoing green transition. He leads a research project seeking to understand the hydrodynamics and structural dynamics involved in evaluating the performance of floating seaweed farms in exposed offshore environments. This work is being undertaken in collaboration with NTNU and the SFI BLUES Centre hosted by SINTEF Ocean. Figure 2 shows a tank test for artificial kelp blades, which is work supported through this effort.

In addition to his research contributions, Dr. Shao has devoted a considerable amount of time to enhancements in knowledge sharing for engineers and junior researchers. He co-hosted the 19th Nordic Maritime University Workshop (NMUW) in Lyngby, Denmark; this is an annual event primarily for PhD students and postdoctoral researchers in maritime-related areas. He also co-organized the 1st and 2nd International Workshop on Marine Hydrodynamics Modelling in Harbin, China. He was a co-founder of the Norwegian-Chinese Engineer Association and served as Vice-Chair until his relocation to Denmark.

In Dr. Shao's words, "The oceans, which cover more than 70% of the surface of the Earth, have great potential in food and energy supply, along with absorbing CO2. Many new types of offshore structures, e.g., floating offshore wind/wave energy devices, floating solar islands, marine aquaculture, and floating seaweed farms, have been proposed/developed for those purposes. It is too early to say that we already have a good enough understanding of the key physics involved in those applications. Therefore, validation of existing engineering tools and development of new physics-based tools are urgently needed for those new applications. Here, model tests and high-fidelity state-of-the-art simulations can play an important role."

Associate Editor, Dr. Nilanjan Saha

Professor Nilanjan Saha (Fig. 3) is a Full Professor in the Department of Ocean Engineering at the Indian Institute of Technology, Madras (Chennai). He obtained his Bachelor's degree in Civil Engineering from Jadavpur University in 2001. Later, he obtained Master's and PhD degrees in Civil Engineering from the Indian Institute of Science, Bangalore, in 2004 and 2008, respectively. After completion of his PhD studies that focused on the stochastic analysis of structures, he began postdoctoral research at the Norwegian University of Science and Technology (NTNU) in the

Fig. 3 Dr. Nilanjan Saha

Department of Marine Technology, where he worked from 2008 to 2010. At NTNU, he was introduced to the fields of offshore structures and renewables and worked under the tutelage of Prof. Torgeir Moan and Prof. Arvid Naess. Later, he joined the Department of Ocean Engineering as an Assistant Professor and now serves as Professor there. Dr. Saha's research interests are wide ranging and include work related to offshore structures, coastal structures, marine renewable energy, and safety and retrofitting of offshore and coastal structures. He has published around 100 peer-reviewed articles and has been involved in the supervision of 15 PhD students and many Master's students.

Dr. Saha's research thrusts span the disciplines of ocean science and engineering. His main works deal with offshore renewables applications and use nonlinear dynamic analysis. He is also interested in marine geotechnical engineering work, stochastic analysis of structures under wind and wave loading, extreme value statistical analysis, controlled load analysis on structures, and reliability analysis of offshore floating platforms, mooring systems, and marine anchoring systems. After returning to India from Norway, Dr. Saha has also worked on coastal structures, port and harbor structures, retrofitting of port/harbor structures, and studies on the effect of piling on breakwaters and associated erosion protection using analysis involving geosynthetics. Lately, he has been working with researchers toward the development of numerical and experimental algorithms for the nonlinear analysis of offshore wind turbines.

Dr. Saha has completed several projects related to ocean energy and coastal infrastructure. One of his research papers was cited in the 2022 International Towing Tank Conference Recommended Guidelines, Model Tests for Offshore Wind Turbines.[1]

Dr. Saha is a Technical Committee Member for Offshore Wind Energy development under the Ministry of New and Renewable Energy, Government of India. He is actively involved in efforts toward the development of offshore wind energy in India. A notable research of his is his involvement in field trials of a scaled offshore wind turbine floating platform in 20–25 m water depth that is well-suited for Indian conditions. A novel pontoon device will house the wind energy semi-submersible floater (Fig. 4). Platform motion will be measured; this will help toward station-keeping requirements as well as in studies related to the control of motions in a harsh environment. Such studies are necessary to develop and demonstrate India's indigenous technology toward future sustainability. They also help in goals to combat climate change with innovative ocean technology. The platform and related indigenous technologies serve to further highlight India's capabilities in offshore engineering and in support of future deepwater missions. Importantly, the work is well-aligned with the United Nations' sustainable development goals.

In Dr. Saha's vision, "Offshore energy especially from wind will become one of the prime resources for energy and, therefore, challenges with respect to analysis, design, operation and installation of structures/equipment—especially wind turbines with innovative floating structures, clean drinking water, food—will gain importance with time. Industry practices will need to consider life-cycle management and system integrity in field trials. At the same time, the development of simulators and deployment strategies in these trials will help to validate data science and artificial intelligence tools. An important challenge for us in ocean engineering is how to enhance traditional ocean science with new features and developments (e.g., in AI/ML, automatic control, 3D-printing and fabrication) and infuse these in our research."

[1]https://www.ittc.info/media/9747/75-02-07-038.pdf

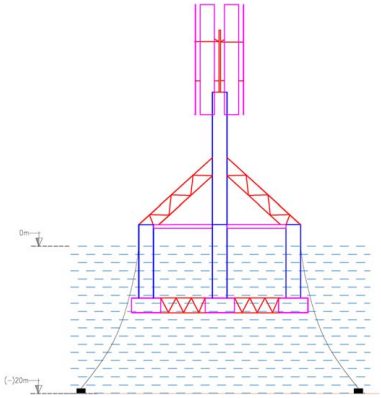

Fig. 4 Concrete semi-submersible pontoon for an offshore wind development project in India

In addition to the work on offshore projects described above, Dr. Saha also stresses the importance of addressing contrasting coastal issues (erosion, sea level rise, etc.) in different countries, as one solution does not work everywhere. Therefore, climate change impacts along with food, energy, and raw materials security will indeed be a challenge that should be addressed throughout the maritime industry for the entire world population and done so in a sustainable manner. To summarize, Prof. Saha believes that in order to be beneficial to society at large and to the industry in particular, we at universities should always be at the forefront in the development of new knowledge and remain an attractive partner for new and practical solutions.

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Conflict of Interest

There are no conflicts of interest.

Data Availability Statement

No data, models, or code were generated or used for this paper.

Reference

[1] Manuel, L., 2023, "Profiles of Two JOMAE Associate Editors (The Sixth in a Continuing Series)," ASME J. Offshore Mech. Arct. Eng., **145**(5), p. 050201.