



Special ISOPE-2022 Sessions in Hydrodynamics -in-person on

The 1st Intelligent Hydrodynamics**First CALL FOR PAPERS**

In recent decades, the world has witnessed an explosive progress of AI/ML. These new technologies offer a wealth of techniques to discover patterns in high-dimensional data, which provides a tangible solution to understand and control the complex nonlinear marine hydrodynamics and fluid-structure interaction (FSI) at a greater scale and a broader scope. However, most of the approaches so far are black boxes and their generalizability, interpretability and robustness remain an open challenge, and hence difficult to be implemented in the industry. Therefore, we invite your contribution in all aspects of data-driven/scientific/statistical learning for marine hydrodynamic to the inaugural special sessions.

Topics include, but are not limited to:

Machine-Learning Method and Application for Hydrodynamics:

Data-driven modelling
 Physics-informed ML
 New learning algorithms for turbulence modeling

Sensing, Control and Optimization:

Flow control, sensing and optimization
 Reinforcement learning for active flow control

Measurement and Visualization:

Uncertainty quantification
 ML-assisted flow visualization

Smart System Development:

Cyber-physical system for fluid experiments
 AI/ML implementation in experiments and simulation

In parallel, a panel session on “Future of Intelligent Hydrodynamics” is being organized.

 Welcome to the sessions to present your own findings. Discuss with colleagues from academia, industry from around the world. All together we learn more about opportunities and challenges of AI/ML technology for the development in the field of hydrodynamic research in the future. The culture of this special sessions is to vigorously discuss all presentations and thus promote the scientific exchange as part of the annual ISOPE conference with more than 1,000 participants each year: www.isopec.org .

We, ISOPE and the Special Session Organizing Committee invite colleagues to join this *Intelligent Hydrodynamics* sessions.

Key Dates	Abstract Submission October 20, 2021	Manuscript for Review January 20, 2022	Final Manuscript due March 28, 2022
------------------	--	---	--

Submit abstract online <http://www.isopec.org/index.php/online-submission/>

General topic: **Hydrodynamics**; Specific Topics; **Artificial Intelligence and Machine Learning**, . Key = 51

Symposium Organizing Committee

Prof. Dixia Fan, Queen’s Univ. Canada

dixia.fan@queensu.ca

Prof. M S Triantafyllou, MIT, USA

mistetri@mit.edu

Prof. Jiasong Wang, Shanghai Jiao Tong Univ., China

jswang@sjtu.edu.cn

Prof. Jin S. Chung, ISOPE, USA

jschung@isopec.org

Prof. Zhicheng Wang, Dalian Univ. Tech, China

zhicheng_wang@dlut.edu.cn

Dr. Qiang Zhong, Univ. of Virginia, USA

qz4te@virginia.edu

Dr. Giovanni Iacobello, Univ. Surrey, UK

giovanni.iacobello@polito.it