IEEE ICUS 2022
Invited Session Summary

Title of Session

Intelligent Marine Robots and Systems

Name, Salutation and Affiliation of Organizers

1. Prof. Hongde Qin

Harbin Engineering University, China

2. Prof. Jianxun Li

Shanghai Jiao Tong University, China

3. Assoc. Prof. Yu Wang

Institute of Automation, Chinese Academy of Sciences, China

Biosketches of Organizers

Hongde Qin is a Full Professor of naval architecture and ocean engineering at Harbin Engineering University, Harbin, P.R. China. He was born in 1976 in Dehui, Jilin Province, P.R. China. He received the PhD degree in design and construction of naval architecture and ocean structure in 2003 from Harbin Engineering University. In November 2005, he joined the Harbin Engineering University as an Associate Professor, and was then promoted to a Full Professor in October 2012. Prof. Qin's current research interests include intelligent marine robotics and artificial intelligence. He has published 1 book and over 90 research papers in international referred journals and conferences. In his prize list, there are 3 second prizes on provincial and ministerial level. Owing to his academic influence, he is awarded as the IEEE Senior member, and editor-in-chief or editors for several international academic journals, which include Signal, Image and Video Processing, Science Progress, Designs, Journal of Marine Science and Application, etc. Now, he is the principal scientist for a National key research and development program, and was awarded the National Science Fund for Distinguished Young Scholars in 2020.

Jianxun Li received the Dr. Eng. Degree in Control Theory and Engineering with highest honors from Northwestern Polytechnical University, Xi'an, China, in1996. He is currently a Professor with the School of Electronics and Information Technology, Shanghai JiaoTong University, Shanghai, China. From 1997 to 1999, he joined the Key Laboratory of Radar Signal Processing of Xidian University, Xi'an, China, as a Postdoctoral Fellow. He was a visiting Professor at the Imperial College London, London, U.K., from 2006 to 2007. He has successively won five provincial and ministerial level scientific and technological progress awards. He (co-authors) was awarded the 2013 IET Signal Processing Premium Award. He has been listed since 2015 in Who's Who in the World. His main research interests include information fusion, intelligent information processing and control. He has published about 50 Journal papers and 50 Conference papers. He is a member of IEEE. He is on the editorial board of Applied Physics, ISRN Sensor Networks. Command Control & Simulation, Journal of Information Fusion, AERO WEAPONRY, Electronics Optics & Control. Member of the Standing Committee of the Information Fusion Branch of the Chinese Aeronautical Society, and Intelligent Unmanned System Branch of the Chinese Institute of Electronics. Evaluation expert of Navy carrier aircraft pilot training, Shanghai Science and Technology Progress Award, National Key R&D Program "Earth Observation and Navigation", and Ministry of Education Science and Technology Progress Award. He is the Technical Program Committee of the 2nd International Workshop on Advances in Wireless Sensor Networks 2007 (IWASN 2007), organization Chair of the International conference on Intelligence Commutating and Intelligent Systems (ICIS2009), The International Program Committee (IPC) for the IASTED International Conference on Robotics, Telematics and Applications (RTA 2009); Technical Program Committee of 2010 International Conference on Industrial Engineering(ICIE2010).

Yu Wang, Ph.D., Associate professor, member of the Youth Innovation Promotion Association of Chinese Academy of Sciences. His scientific research interests include underwater bionic robots, robotic control, etc. He currently serves as the vice president of the Information Management Branch of the Youth Innovation Promotion Association of Chinese Academy of Sciences. He has published more than 60 academic papers in high-level international

journals in the field of robotics and control technology. He presided over the National Natural Science Foundation-Outstanding Youth Foundation, Project of the National Basic Research Program of China, Talent Program of Youth Promotion Association of Chinese Academy of Sciences, National Natural Science Foundation of China-Surface Project. He won the first prize of the 2019 CAA Technology Invention Award, the 2019 Chinese Society of Automation Science Popularization Award, and the first prize in online recognition group of the 2018 China Underwater Robot Picking Contest.

Details of Session

In recent years, persistent autonomy has become a key area of interest for marine robotics researchers. Ocean observatories require autonomous robot deployments over different periods, observing dynamic phenomenon both synoptically and over variational scales in space and time. Emerging marine robotic developments will afford scientists advanced tools to explore and exploit the oceans at an unprecedented scale, in a sustainable manner. This session is aimed to promote exchange and sharing of experiences among researchers in the field of autonomy for intelligent marine robots. The marine robotics session aims to build up a platform to present comprehensive works for international audience sharing and exchanging latest results on marine robots.

The invited session invites original papers of innovative ideas and concepts, new discoveries and improvements, and novel applications relevant to the following selected topics of “Intelligent Marine Robots and Systems”:

- Underwater urgent search and rescue robots
- Intelligent underwater robots
- Intelligent surface robots
- Intelligent control in complex ocean environment
- Intelligent perception of ocean environment
- New conceptions and applications of marine robots
- Swam and cooperation of marine robots