

IEEE ICUS 2022
Invited Session Summary

Title of Session

Unmanned Surface System Technology

Name, Salutation and Affiliation of Organizers

1. Prof. Wei Han

Systems Engineering Research Institute, CSSC, China

2. Assoc. Prof. Wei Zhang

Harbin Institute of Technology, China

3. Prof. Haiwei Pan

Harbin Engineering University, China

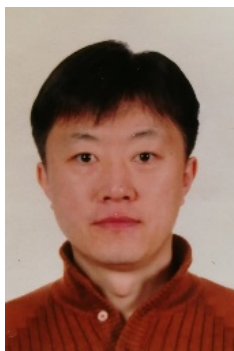
Biosketches of Organizers



Wei Han, research fellow, academic leader of China State Shipbuilding Corporation Limited (CSSC), member of Unmanned System Professional Group of Central Military Commission's Equipment Development Department, member of CSSC Unmanned System Professional Group, member of Technical Committee on Swarm Intelligence and Collaborative Control of Chinese Institute of Command and Control. Major areas of expertise: electronic weapon systems, surface unmanned systems and equipment. Successively responsible for four XX projects of the Navy, one major basic scientific research project of the SASTIND (State Administration of Science, Technology and Industry for National Defense), one key military trade scientific research project of SASTIND, one innovation project of CSSC, and more than ten surface unmanned systems related projects. Standards and patents: 2 naval standards and more than 10 invention patents. Honor and awards: 1 National Defense Science and Technology Progress Award, 1 special prize and 2 first prizes of CSSC, Contribution Award of CSSC, innovation Team Award, Defense Advanced Group Award.



Wei Zhang, associate professor in the Department of Computer Science and Technology at Harbin Institute of Technology. His research interests include data science and technology, software of surface unmanned systems. He has been PI of 10 projects, including one NSFC project, nine projects related to surface unmanned system and massive data processing, participated in more than ten projects of NSFC, 973 project and National key research and development program in the fields of wireless sensor networks and cloud computing and big data technology. He has published more than 20 papers in in well-known scholarly journals and conference proceedings.



Haiwei Pan, Professor and Doctoral Supervisor in the Department of Computer Science and Technology at Harbin Engineering University. Dr. Pan has also served as a Prominent member of China Computer Federation (CCF), Executive member of CCF Database Committee, Vice Chairman of CCF Harbin Branch, Executive Director of Heilongjiang Computer Federation (HLJCF), Deputy Director of HLJCF Data Science and Big Data Technology Committee. His research interests include Big Data Analysis, Artificial Intelligence, and Smart Medical Care. Dr. Pan's research has been supported by National Natural Science Foundation of China, Heilongjiang Provincial Natural Science Foundation, the Ministry of Industry and Information Technology's Major Innovation Project on High-Tech Ships, and other academic and industrial sponsors. Dr. Pan has published more than 80 papers in well-known scholarly journals and conference proceedings, and other monographs and translations. He has won 4 Province S&T Progress Awards, and obtained 4 authorized patents.

Details of Session

Unmanned system technology is one of the most active area in scientific research and industrial application. The development of unmanned systems such as Unmanned Aerial Vehicle (UAV), Unmanned Ground Vehicle (UGV), Unmanned Surface Vehicle (USV) and robots is of great significance for economic growth, social progressing, life improvement and national security. Unmanned surface system can be widely applied in marine transportation, marine environment investigation, resources exploration, search for rescue, maritime training and testing, vigilance and patrol, and ship escort, etc. The research of unmanned surface system

deeply applies technologies such as automatic control and artificial intelligence, to achieve the stability, universality and intelligence of surface unmanned system, and further promote the development and application of unmanned system technology.

Currently, combining with autonomous control and artificial intelligence, the research on unmanned surface system aims at stability, adaption and intelligence to promote the development and application for unmanned system.

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 "Unmanned Surface System Technology", including but not limited to

- System architecture design
- System information interaction
- System intelligent control
- System independent decision
- Environmental perception and information fusion
- Swarm intelligence and swarm controls