IEEE ICUS 2022
Invited Session Summary

Title of Session

Intelligent Perception and Multi-source Information Fusion

Name, Salutation and Affiliation of Organizers

1. Prof. Xingfa Shen

Hangzhou Dianzi University, China

2. Prof. Jianjun Li

Hangzhou Dianzi University, China

3. Prof. Wenhui Zhou

Hangzhou Dianzi University, China

Biosketches of Organizers

Xingfa Shen, Professor, School of computer science, Hangzhou Dianzi University. He received his B.S. degree and Ph.D degree from Zhejiang University in 2000 and 2007. He is a visiting scholar at the twin cities of the University of Minnesota from 2011 to 2012. His research interests include the Internet of things, intelligent sensing, integrated navigation etc. He has successively undertaken 6 projects of National Natural Science Foundation of China including 1 major project (as PI in 3 of them), 1 national key R & D plan project and 1 sub-project of National Social Science Foundation major project, 1 1 973 preliminary research special project and 4 projects of Zhejiang Provincial Natural Science Foundation. More than 60 academic papers have been published, including nearly 30 of them indexed in SCI. Member of hybrid intelligence special committee, cognitive computing and systems special committee and youth working committee of Chinese Association of Automation; Member of embedded and Internet of things special committee of Zhejiang computer society and individual member of Zhejiang Internet of things industry association. Young and middle-aged discipline leaders in colleges and universities in Zhejiang Province, 5050 innovative and entrepreneurial talents in Hangzhou National High-tech Zone. He has been invited to serve as evaluation expert of the national key R & D plan "Internet of things and smart city", and communication evaluation expert of the National Natural Science Foundation of China for many times.

Jianjun Li, Ph.D., Professor and doctoral supervisor of Hangzhou Dianzi University, expert in artificial intelligence and microelectronics, has made remarkable achievements in artificial intelligence, multi-source information fusion, signal processing and design, especially in international video standards, graphics and image processing, biometric recognition and medical image processing. He has been engaged in research work in the fields of computer vision intelligent analysis, detection and recognition, microelectronics and sensor design for more than 30 years. He has written one monograph in English and one monograph in Chinese, published more than 70 papers in domestic and international journals and more than 20 invention patents. He has successively worked in five countries and six organizations, including China's Research Institute (CETC), Canada's national auditory Laboratory (NCA), Mitsubishi Research Institute (MERL), Switzerland's Lausanne Institute of Technology (EPFL), Turkey's Bilkent University and Ankara University. He was a long-term assistant professor of the University of Ankara.

Wenhui Zhou, Professor, School of computer science, Hangzhou Dianzi University. He received a Ph.D degree from Zhejiang University in 2005. From June 2005 to October 2007, he engaged in post doctoral research in Zhejiang University. From October 2007 to now, he has worked in the computer school of Hangzhou Dianzi University. From April 2015 to April 2016, he visited the school of computer science at Indiana University Bloomington campus for one year. He has been engaged in theoretical and applied research on image processing, computer vision, computational photography and three-dimensional modeling for a long time. He has presided over a number of national, provincial and ministerial projects such as National Natural Science Foundation of China, 863 sub projects, key projects of Zhejiang Provincial Natural Science Foundation and major special priority themes of Zhejiang Province. More than 40 SCI / EI papers have been published and more than 10 invention patents have been authorized.

Details of Session

High precision, efficient and safe autonomous unmanned system is extremely important for national strategic needs such as scientific exploration and resource discovery in unknown environments such as land and sea. The complexity and variability of the unknown environment, the non-structural perception characteristics

and the uncertainty of environmental elements make the ability of environmental perception, cognitive understanding and multi-source information fusion become the basic problems to support the autonomous and safe operation and accurate detection of unmanned systems. Aiming at the problems of environmental dynamics, limited perception and incomplete information faced by autonomous systems in complex and unknown environments, this topic focuses on technologies such as deep learning, multi-source information fusion, visual perception and light field imaging, and discusses the new progress of theory and technology of multi-source perception and intelligent processing of autonomous systems in unknown and complex environments.

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 Perception and Multi-source Information Fusion”.

- Intelligent perception and processing
- Multi source information fusion
- Visual signal processing
- Perception oriented AI algorithm
- Light field signal acquisition