

Annual Conference of the IEEE Industrial Electronics Society (IECON 2021)

Special Session on

“Advanced Sensing and Control for Intelligent Robots”

Organized by

Principal Organizer: Huijun GAO (hjgao@hit.edu.cn)

Affiliation: Professor, the Research Institute of Intelligent Control and Systems, Harbin Institute of Technology, Harbin, Heilongjiang, China.

Organizer 1: Yang SHI (yshi@uvic.ca)

Affiliation: Professor, University of Victoria, Victoria, Canada.

Organizer 2: Weiyang LIN (wylin@hit.edu.cn)

Affiliation: Associate Professor, the Research Institute of Intelligent Control and Systems, Harbin Institute of Technology, Harbin, Heilongjiang, China.

Organizer 3: Zhan LI (zhanli@hit.edu.cn)

Affiliation: Associate Professor, the Research Institute of Intelligent Control and Systems, Harbin Institute of Technology, Harbin, Heilongjiang, China.

Organizer 4: Yiyong SUN (yiyonghit@gmail.com)

Affiliation: Assistant Professor, School of Aerospace Engineering, Beijing Institute of Technology, Beijing, China.

Call for Papers

With the ability of cooperate with or substitute human operators to perform a growing variety of tasks, robots are getting increasingly intelligent and complex in order to achieve difficult operations with comprehensive utilization of sensors, vision modules, actuators, controllers, etc., and, the intelligent algorithms with sensing and learning ability running behind are playing an increasingly important role. This Special Session is devoted to the latest theoretical and technological advancements in the design/development of intelligent robot systems, sensing and learning based methods for robot control, modelling, planning, perception, decision, and various related applications of these techniques.

Topics of interest include, but are not limited to:

1 Good quality papers may be considered for publication in the IEEE Trans. on Industrial Electronics, subject to further rounds of review.

- Modelling, planning, parameter identification for intelligent Robots
- Sensing or Learning based perception, recognition, guidance, navigation, mapping and localization;
- Vision-based control for intelligent Robots
- Defect object segmentation methods
- Defect feature extraction and feature selection
- Supervised and non-supervised classifiers
- Establishment of stable and reliable optical imaging system
- Intelligent decision, cooperation, environments and situation understanding
- Self-organized communication for robots based on learning methods
- Robot optimal control, adaptive control and system optimization
- Intelligent computation on health monitor and supervision of complex robot
- Fast, reliable and low-cost intelligent computation and engineering applications for robots

Submissions Procedure: All the instructions for paper submission are included in the conference website: <https://attend.ieee.org/iecon-2021/>

Deadlines:

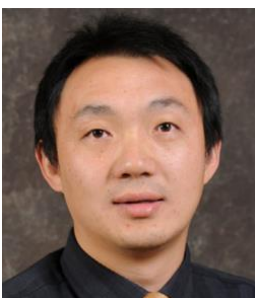
Full paper submission:	June 25, 2021
Paper acceptance notification:	July 30, 2021
Camera-ready paper submission:	Aug. 27, 2021

Organizers:



Prof. Huijun Gao (IEEE Fellow, IES Vice President and Council Member of the International Federation of Automatic Control) received the Ph.D. degree in control science and engineering from the Harbin Institute of Technology, Harbin, China, in 2005. From 2005 to 2007, he carried out his postdoctoral research with the Department of Electrical and Computer Engineering, University of Alberta, Edmonton, AB, Canada. Since 2004, he has been with the Harbin Institute of Technology, where he is currently a Full Professor, the Director of Inter-discipline Science Research Center, and the Director of the Research Institute of Intelligent Control and Systems. His research interests include machine vision, intelligent and robust control, robotics, mechatronics, and their engineering applications. He served/serves as a Co-Editor-in-

Chief for IEEE Transactions on Industrial Electronics, a Senior Editor for IEEE/ASME Transactions on Mechatronics, and an Associate Editor for Automatica, IEEE Transactions on Cybernetics, and IEEE Transactions on Industrial Informatics etc.



Prof. Yang Shi (Fellow of IEEE, ASME and CSME) received the Ph.D. degree in electrical and computer engineering from the University of Alberta, Edmonton, AB, Canada, in 2005. From 2005 to 2009, he was a Faculty Member with the Department of Mechanical Engineering, University of Saskatchewan, Saskatoon, SK, Canada. He is currently a Professor with the Department of Mechanical Engineering, University of Victoria, Victoria, BC, Canada. He was a Visiting Professor with the University of Tokyo, Tokyo, Japan, in 2013. His current research interests include networked and

distributed systems, model predictive control, industrial cyber–physical systems, mechatronics, and energy systems.

Dr. Shi was a recipient of the University of Saskatchewan Student Union Teaching Excellence Award in 2007, the Faculty of Engineering Teaching Excellence Award at the University of Victoria in 2012, the JSPS Invitation Fellowship (short-term), the 2015 Craigdarroch Silver Medal for Excellence in Research at the University of Victoria, and the Humboldt Research Fellowship (for experienced researchers) in 2017. He is currently a Co-Editor-in-Chief of the IEEE Transactions on Industrial Electronics. He also serves as an Associate Editor for Automatica, IEEE Transactions on Control Systems Technology, IEEE/ASME Transactions on Mechatronics, IEEE Transactions on Cybernetics, and ASME Journal of Dynamic Systems, Measurement, and Control.



Dr. Weiyang Lin received the Bachelor and M.Sc. degree in Mechanical Engineering from Harbin Institute of Technology, China, in 2006 and 2008 respectively; and the Ph.D. degree in Mechatronics engineering from Harbin Institute of Technology Shenzhen Graduate School, China, in 2014. He is currently an Associate Professor in the Research Institute of Intelligent Control and Systems, Harbin Institute of Technology, China. His research interests include parallel manipulators, robotic motion control and visual servoing.



Dr. Zhan Li (M'16) received the Ph.D. degree in control science and engineering from the Harbin Institute of Technology, Harbin, China, in 2015. He is currently an Associate Professor with the Research Institute of Intelligent Control and Systems, School of Astronautics, Harbin Institute of Technology. His research interests include motion control, industrial robot control, robust control of small unmanned aerial vehicles (UAVs), and cooperative control of multivehicle systems.



Dr. Yiyong Sun (IEEE IES Member) received the Ph.D. degree in control science and engineering from the Harbin Institute of Technology, Harbin, China, in 2017. He was a research assistant with the Chair of Automatic Control Engineering (LSR), Technical University of Munich, Munich, Germany, from 2015 to 2016. He is now Assistant Professor with Beijing Institute of Technology, Beijing, China. Before June 2021, he worked as research assistant and Post-Doctoral Fellow with the Department of Automation, Tsinghua University, Beijing, China. His research interests include computer vision, robotics and autonomous robot systems.