

Welcome Message

On behalf of the organizing committee, it is our great honor and pleasure to welcome you to the 2021 International Conference on Advanced Robotics and Intelligent Systems and National Conference on Advanced Robotics (ARIS & NCAR 2021) organized by National Tsing Hua University, Taiwan. The ARIS & NCAR 2021 is held virtually online from August 18 to August 19, 2021.

Serving as the flagship conference of the Robotics Society of Taiwan (RST), the ARIS & NCAR 2021 continues to promote advanced and novel robotics technologies by providing a forum for international researchers from the academia and industries to share their latest findings, novel and frontier research results, to exchange their ideas and innovation to network, and to foster collaboration opportunities. We hope to bring an effective, convenient, content-abundant annual event to all scientists, researchers, and practitioners in this conference.

National Tsing Hua University is very honored and grateful to have such an opportunity to host the ARIS & NCAR 2021. In the original plan, we planned to bring you all to the City of Taipei in which we would be able to invite your enthusiastic participation in our annual international conference on the latest innovations, state-of-the-art ideas, and advances in all aspects of robotics technologies and their applications, also give a chance to all participants to visit the Taiwan Automation Intelligence and Robot Show (TAIROS) at the same time. However, due to the sudden outbreak of COVID-19, after careful consideration, in order to avoid in-person interaction in the conventional conference that would put risk to all participants, we had decided to change ARIS & NCAR 2021 to an online virtual format in order to comply with the relevant regulations of Taiwan Central Epidemic Command Center to ensure the health and safety of participants.

Even so, COVID-19 definitely does not and will not change our minds in search for truth and innovations through science, technology, engineering, and mathematics. I believe none of us is as strong as all of us! I am sure that this epidemic makes us stand together even closer and stronger than before. Through the virtual mode this year, we will definitely demonstrate our determination in research and development fields relevant to Robotics!

In this conference, we proudly present a program of 134 highly selected technical papers arranged in 27 technical sessions and 3 paper contest sessions. These papers come from all over the world (Egypt, Spain, Indonesia, Japan, Lithuania, Latvia, and Taiwan), which further demonstrates the internationalization and cross-regional connection nature of the ARIS & NCAR 2021. Also, we are honored to invite three internationally renowned scholars as keynote speakers to share their outstanding achievements and to enrich the ARIS & NCAR 2021. We deeply appreciate the distinguished speeches by Prof. I-Ming Chen (Nanyang Technological University, Singapore), Prof. Masayoshi Tomizuka (University of California, Berkeley, USA), and Prof. Dr. Gurvinder Singh Virk (PES University, Dehradun, Uttarakhand, India).

We are equally proud and grateful to have your participation and contributions to ARIS & NCAR 2021. In addition, we would like to express our tremendous gratitude to all the authors of papers submitted to the conference and our sincere thanks to all the reviewers and program committee members for their hard-working and significant efforts.

Furthermore, the sponsorships from the Ministry of Science and Technology (MOST), Taiwan, and MDPI Electronics are deeply appreciated. Special thanks are also extended to the Robotics Society of Taiwan (RST), Industrial Technology Research Institute (ITRI), and Artificial Intelligence for Intelligent Manufacturing Systems Research Center (AIMS) for technical support and consultation. We'd like to thank all the members in the Organizing Committee and Award Committee, Track Chairs, Session Chairs, and the conference secretariats for their excellent support in all the matters of the conference execution. Without the help from the aforementioned entities and individuals, this conference cannot be made successfully. Finally, thank you all for coming to this conference. Please enjoy the content offering of the virtual conference. We hope the virtual ARIS & NCAR 2021 will be a unique, exciting, and memorable experience for everyone. Please Stay safe and keep healthy!



Hong Hocheng, Ph.D.
Honorary General Chair



Jen-Yuan (James) Chang, Ph.D.
Conference General Chair

