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# Intelligent Robotics and Applications

15th International Conference, ICIRA 2022  
Harbin, China, August 1–3, 2022  
Proceedings, Part IV

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Part IV



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# Preface

With the theme “Smart Robotics for Society”, the 15th International Conference on Intelligent Robotics and Applications (ICIRA 2022) was held in Harbin, China, August 1–3, 2022, and designed to encourage advancement in the field of robotics, automation, mechatronics, and applications. It aims to promote top-level research and globalize the quality research in general, making discussions, presentations more internationally competitive and focusing on the latest outstanding achievements, future trends, and demands.

ICIRA 2022 was organized by Harbin Institute of Technology, co-organized by Huazhong University of Science and Technology, Shanghai Jiao Tong University, and Shenyang Institute of Automation, Chinese Academy of Sciences, undertaken by State Key Laboratory of Robotics and Systems, State Key Laboratory of Digital Manufacturing Equipment and Technology, State Key Laboratory of Mechanical Systems and Vibration, and State Key Laboratory of Robotics. Also, ICIRA 2022 was technically co-sponsored by Springer. On this occasion, ICIRA 2022 was a successful event this year in spite of the COVID-19 pandemic. It attracted more than 440 submissions, and the Program Committee undertook a rigorous review process for selecting the most deserving research for publication. The advisory Committee gave advice for the conference program. Also, they help to organize special sections for ICIRA 2022. Finally, a total of 284 papers were selected for publication in 4 volumes of Springer’s Lecture Note in Artificial Intelligence. For the review process, single-blind peer review was used. Each review took around 2–3 weeks, and each submission received at least 2 reviews and 1 meta-review.

In ICIRA 2022, 3 distinguished plenary speakers and 9 keynote speakers had delivered their outstanding research works in various fields of robotics. Participants gave a total of 171 oral presentations and 113 poster presentations, enjoying this excellent opportunity to share their latest research findings. Here, we would like to express our sincere appreciation to all the authors, participants, and distinguished plenary and keynote speakers. Special thanks are also extended to all members of the Organizing Committee, all reviewers for peer-review, all staffs of the conference affairs group, and all volunteers for their diligent work.

August 2022

Honghai Liu  
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