



ICIRA 2023 Special Session Proposal

Title of the Proposal: Knowledge-based robot decision-making and manipulation

Technical Outline of the Session and Topics:

Outline of the Session:

As we continue to advance in the field of robotics and automation, the ability to decision making and manipulate is becoming increasingly important. However, traditional methods for decision making and manipulation rely on predefined rules and heuristics, which can limit their flexibility and adaptability in complex and dynamic environments. By leveraging knowledge representation and reasoning techniques, robots can reason about their environment, infer the properties of task, and plan and execute actions to achieve their goals. This session focuses on the fields of knowledge representation and reasoning, decision making and manipulation.

Topics of the Session:

- *Knowledge representation and reasoning*
- *Knowledge graph construction and application*
- *Human intention prediction and task planning*
- *Multi-Modal knowledge fusion for decision making*
- *Large language model based decision making*
- *Manipulation with domain-specific knowledge*
- *Learning to make decision and manipulate*

Contact details of the Session Organizers

- *Organizer 1: Wei Song, Zhejiang Lab, weisong@zhejianglab.com*
- *Organizer 2: Zhixu Li, Fudan University, zhixuli@foxmail.com*
- *Organizer 3: Zheng Chen, Zhejiang University, zheng_chen@zju.edu.cn*
- *Organizer 4: Jianfeng Liao, Zhejiang Lab, jfliao@zhejianglab.com*