



## **ICIRA 2024 Special Session Proposal**

### **Title of the Proposal: Robotics for Rehabilitation: Innovations, Challenges, and Future Directions**

#### **Technical Outline of the Session and Topics:**

The field of rehabilitation robotics has seen remarkable growth due to advancements in robotics, artificial intelligence, and biomedical engineering. This special issue aims to showcase the latest developments in this field, focusing on innovative solutions that address current challenges and explore future directions. Rehabilitation robotics holds the potential to revolutionize therapy across a wide range of conditions, offering personalized, engaging, and efficient interventions. Through highlighting state-of-the-art research and emerging trends, this issue will provide insights into how robotics is shaping the future of rehabilitation, emphasizing the importance of technology in enhancing patient care and therapy outcomes. It serves as a crucial platform for researchers, clinicians, and policymakers to discuss the integration of robotics in rehabilitation, ensuring that technological advances lead to practical, impactful healthcare solutions.

#### Topics of the Session:

- *Design and development of robotic systems for rehabilitation*
- *Wearable robots and exoskeletons for movement assistance and muscle retraining*
- *Adaptive control mechanisms for rehabilitation robotics*
- *Human-robot interaction in therapeutic settings*
- *Integration of AI and machine learning in rehabilitation robotics*
- *Virtual reality and augmented reality applications in robotic rehabilitation*
- *Case studies: Impact of robotics on rehabilitation outcomes*
- *Ethical, regulatory, and societal implications of robotics in rehabilitation*
- *Scalability and accessibility of robotic rehabilitation technologies*
- *Future directions and unexplored potential in rehabilitation robotics*
- *Other related topics.*

#### **Contact details of the Session Organizers**

- *Organizer 1: Guangcun Shan, Beihang University/City University of Hong Kong, gshan2-c@my.cityu.edu.hk*

- Organizer 2: Huanghe Zhang, Shandong University, zhanghuanghe@sdu.edu.cn
- Organizer 3: Weiliang Zuo, Xi'an Jiaotong University, weiliang.zuo@xjtu.edu.cn
- Organizer 4: Liangjun Chen, Xi'an Jiaotong University, liangjunchen@xjtu.edu.cn
- Organizer 5: Yimao Sun, Sichuan University, yimaosun@scu.edu.cn