



The 16th International Conference on Intelligent Robotics and Applications (ICIRA 2023)

July 5-7, 2023 in Hangzhou, China

ICIRA 2023 Special Session Proposal

Title of the Proposal: Robots in tunnelling and underground space

Technical Outline of the Session and Topics:

Outline of the Session: In the past decade, there has been a strong demand for tunnel excavation and underground space development. As applications in specific scenarios, robots in tunnelling and underground space are attracting the interest and attention. For example, unmanned and intelligent operation equipment such as segment assembly robots, tool changing robots, unmanned rock drilling trolleys, etc. The world's major TBM companies are developing and improving the performance of robots to make them more adaptable to more complex application scenarios. This session aims to shed light on the cutting-edge innovations and breakthroughs for robots in tunnelling and underground space.

Topics of the Session:

- *Design, modelling, and analysis for robots in tunnelling and underground space*
- *Environmental and self-state perception for robots in tunnelling and underground space*
- *Intelligent operation and maintenance decision-making for robots in tunnelling and underground space*
- *High speed, smooth, and high-precision control for robots in tunnelling and underground space*
- *Application of robots in tunnelling and underground space, including but not limited to segment assembly robots, steel arch frame assembly robots, snake arm robots, tool changing robots, unmanned rock drilling trolleys, etc.*

Contact details of the Session Organizers

- *Organizer 1: Xinjun Liu, Tsinghua University, xinjunliu@mail.tsinghua.edu.cn*
- *Organizer 2: Haibo Xie, Zhejiang University, hbxie@zju.edu.cn*
- *Organizer 3: Jianfeng Tao, Shanghai Jiao Tong University, jftao@sjtu.edu.cn*
- *Organizer 4: Lianhui Jia, China Railway Engineering Equipment Group Co., Ltd, jialianhui2005@163.com*
- *Organizer 5: Yixin Zhai, Shanghai Shield Design and Test Research Center Co., Ltd, 26851102@qq.com*