

IEEE ICUS 2021

Invited Session Summary

Title of Session Biologically Inspired Intelligent Robots and Systems
Name, Salutation, Affiliation and Email of Organizers 1. Prof. Qing Shi Beijing Institute of Technology, China shiqing@bit.edu.cn 2. Prof. Qirong Tang Tongji University, China qirong.tang@outlook.com 3. Prof. Zhangguo Yu Beijing Institute of Technology, China yuzg@bit.edu.cn
Details of Session (including aim and scope) <p>The evolution of robotics has enabled today's robots to operate in a variety of unstructured and dynamically changing environments in addition to traditional structured environments. Robots have thus become an important element in our everyday life. One key approach to develop such intelligent and autonomous robots is to draw inspiration from biological systems. Biological structure, mechanisms and underlying principles have the potential to feed new ideas to support the improvement of conventional robotic design and control. Such biological principles usually originate from animal or even plant models for robots that can sense, think, walk, swim, crawl, or fly. Thus it is believed that these bio-inspired methods are becoming increasingly important in the face of the complex applications. Biologically inspired intelligent robots and systems are leading to the study of innovative structures and computing with sensory-motor coordination and learning to achieve intelligence, flexibility, stability and adaptation for the emergent robotic application, such as manipulation, learning, and control.</p> <p>The invited session invites original papers of innovative ideas and concepts, new discoveries and improvements, and novel applications relevant to the following selected topics of "Biologically Inspired Intelligent Robots and Systems".</p> <ul style="list-style-type: none">• Biomimetic robots• Bio-inspired manipulation

- Humanoid robots
- Bio-inspired learning and control
- Bio-inspired robot design and application
- Bio-inspired robotic locomotion
- Swarm intelligence and swarm robots