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**Special Session on Robotic Systems for Physical Interaction: Bridging
Humans, Machines, and the Real World**

organised by

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Call for Papers

Abstract: Modern robots are fundamentally distinct from their industrial predecessors, which were primarily designed for predefined, repetitive tasks within highly controlled environments, such as factory settings. In contrast, contemporary robotics is advancing toward systems that interact with dynamic, real-world environments. Exoskeletons, for instance, offer mobility support for elderly adults or stroke patients, assisting with daily activities, while humanoids and robotic dogs are developed to operate in hazardous settings, including nuclear plants. These new-generation robotic systems, capable of physical interaction with their surroundings, are essential in addressing the challenges posed by super-aged societies, as well as the transformations driven by Industry 5.0 and beyond. In response, numerous studies in recent decades have proposed novel design and control approaches to enhance robot-environment interaction. This special session aims to gather researchers to discuss the latest advancements in this field, with a focus on, but not limited to, the following topics of interest.

Advanced motion control techniques for physical robot-environment interaction.

Compliant and soft robotics.

Assistive robotics.

Medical and rehabilitation robotics.

Human-robot collaboration.

Physical robot-environment interaction.

Intelligent and adaptive robotics.

Agile robotics such as wheeled and legged locomotion.

- **IES Technical Committee Sponsoring the Special Session:**
 - IEEE IES Technical Committee on Sensors and Actuators.
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