Special Issue

Multimodal Deployable Flexible Robots in Medical Domains

Message from the Guest Editors

Multimodal deployable flexible robots represent robotic systems with deployable mechanisms and multimodalities in perception, motion, and application. There have been recent advances in multiple areas, including the development of novel deployable mechanisms that target specific medical scenarios, deployable mechanisms that incorporate smart materials, multi-stable deployable mechanisms, multi-agent collaborative control, multimodal perception that provides redundant information for robust robotic control and precise diagnosis, and high-fidelity simulation that facilitates the production of flexible robots. In addition, promising improvements could be expected for multimodal deployable flexible robots to benefit surgery and rehabilitation by integrating emerging technologies such as imitation learning, embodied intelligence, tactile and haptics, digital twin, and VR/AR/XR. This Special Issue aims to bring together research on the latest progress and topical reviews in multimodal deployable flexible robots and their applications in medical domains.

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About the Journal

Message from the Editorial Board

We are just entering the Next Wave of Technology (NWT) where actuators will play the same role as the computer chip did for computers/social media approximately four decades ago. Just in the U.S., production of $1 trillion year of electromechanical systems (vehicles, orthotics, manufacturing cells, freight trains, aircraft, etc.) will be impacted by the NWT, all driven by actuators. Five key trends can be found for the future perspectives: “Performance to Reliability”, “Hard to Soft”, “Macro to Nano”, “Homo to Hetero” and “Single to Multi functional”. We invite papers that primarily impact these economic sectors; those illustrating basic scientific principles are also welcome.

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