Special Issue

Innovations in Soft Robotics: Enhancing Safety, Performance, and Dexterity

Message from the Guest Editors

Soft robotics is an emerging field that leverages compliant materials, bio-inspired designs, and flexible actuation to create systems capable of safe and adaptive interactions with complex, dynamic environments. Unlike traditional rigid robots, soft robots are engineered with materials that mimic the elasticity of natural organisms, enabling them to conform, adapt, and interact delicately with both objects and humans. This multidisciplinary research area combines advances in materials science, organic chemistry, mechanics, control theory, and manufacturing technologies to overcome challenges in dexterity and operational safety. As applications expand—from biomedical devices and wearable assistive technologies to search-and-rescue operations and delicate manufacturing—the need for innovations that improve performance while ensuring user safety becomes increasingly critical.

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