Special Issue

Applications of Soft Robotics and Exoskeletons in the Medical Field

Message from the Guest Editor

Soft robotics and exoskeletons represent an exciting trend in the field of robotics that offers to provide novel and high-impact applications. Their inherent flexibility improves comfort, usability, and portability while not constraining the user's natural degrees of freedom. Innovative applications for soft robots and exoskeletons include robotic muscles, climbing, biomimetic, edible, wearable, and prosthetic robots. Robots in the medical field are transforming how surgeries are performed, streamlining supply delivery and disinfection, and enabling providers to focus on engaging with and caring for patients. However, due to their nonlinear behaviors, there are significant challenges of design, fabrication, modeling, and control for soft robots and exoskeletons. This Special Issue focuses on the Soft Robotics and Exoskeletons, applied to the medical fields, such as:

- medical devices
- soft actuators and sensors
- Human–robot intelligent collaboration and shared control
- wearable technologies
- Tactile and haptic feedback in robotics
- physical human–robot interactions based on soft technologies

Guest Editor

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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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