Special Issue

Soft and Compliant Actuators and Their Robotic Applications

Message from the Guest Editors

New trends in robotic applications demand physical human–robot interactions (pHRIs), the adaptability of the robotic platform to unknown and challenging environments, resilience against impacts and sudden changes, etc. These require substantial breakthroughs in the actuation aspect of robotic technology, where embedded compliance and softness are a plus if not a must. This Special Issue is intended to provide a forum for academic researchers and technical professionals to exchange their recent works on the design, development, and control of compliant and soft actuators. Topics of interest include but are not limited to the following:

- active and passive impedance control
- variable stiffness actuators
- artificial muscles
- pneumatic soft actuators
- dielectric elastomer actuators
- soft actuators based on electroactive polymers (EAPs)
- thermo-active soft actuators
- hydraulic soft actuators
- electromagnetic soft actuators (ESAs)
- fluidic elastomer actuators (FEAs) and shape morphing polymers (SMPs).

Guest Editors

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Deadline for manuscript submissions

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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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