Special Issue

Design and Control of Compliant Manipulators: Volume II

Message from the Guest Editor

As popular robotic devices, compliant manipulators are based on compliant mechanisms that deliver displacement/force by elastic deformation of the materials. Targeting at different tasks, compliant manipulators can be driven by various actuators, such as smart material actuators (e.g., piezoelectric actuators, shape memory alloys, magnetostrictive actuators, ionic polymers, dielectric elastomers), electromagnetic actuators, fluidic/pneumatic actuators, electrothermal actuators, etc. Compliant manipulators have been applied extensively in different scenarios ranging from macro-, to micro-, to nano-scale. Example applications include micro/nano-manipulation, assembly automation, medical instruments, rehabilitation robots, biomedical engineering, and more. These applications are enabled by the design and implementation of sophisticated control strategies, involving motion control, force control, visual servo control, intelligent control, etc. The main focus of this Special Issue is on new design, control and applications of compliant manipulators dedicated to diverse science and engineering fields.

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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