Special Issue

Pneumatic Actuators

Message from the Guest Editor

Pneumatic actuators have been used in robotics for many years. However, historically, they have only been used in applications that use bang-bang control, e.g., industrial grippers or factory automation. In recent years, pneumatic actuation has seen increasing application in all areas of robotics. This has been a result of the development of better control techniques, more accurate mathematical models and the development of new actuator designs. Additionally, increased interest in compliant actuators and systems, as well as soft robots which are highly deformable, inherently safe and often do not use conventional actuators has led to the development of new pneumatic actuators being produced. This Special Issue aims to present advances in both the development of novel pneumatic actuators and the use of pneumatic actuators in new application domains.

Guest Editor

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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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