Special Issue

Recent Developments in Precision Actuation Technologies

Message from the Guest Editors

Precision actuation technologies are vital in many fields of precision engineering, such as precision machining, active control of micro-vibration, surgical robots, etc. One of the main components of precision actuation technologies is precision actuators. Actuators based on smart materials have attracted the attention of a large number of researchers in recent years. These materials include piezoelectric materials, magnetostrictive materials, shape memory alloys, dielectric materials, etc. Another of the main components of precision actuation technologies is control methods. Smart material actuators often have strong nonlinearity, so it is necessary to study effective control methods to achieve precise actuation. Research into new precision actuators, precision actuation control methods and applications of precision actuation technology is still very active. This Special Issue aims to collect original papers on various types of precision actuation mechanisms, actuator design, control methods and applications, not limited to specific application areas.

Guest Editors

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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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