



Actuators

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Special Issue Reprint

Actuator Technologies and Control

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This Reprint focuses on recent advances in the control, optimization, design, and application of modern actuation systems. A central theme is the development of intelligent control strategies for electric drives, including methods to enhance efficiency, reduce torque oscillations, and improve performance under varying operating conditions. Contributions also address robustness and reliability in cyber-physical systems, with innovative solutions for resilient control under communication constraints and cyberattacks, as well as real-time optimization techniques for industrial robotics. The Reprint further highlights the importance of accurate modeling and experimental characterization for actuator performance evaluation and system integration. Beyond conventional electric drives, it showcases emerging actuator technologies, including soft actuators, compliant mechanisms, and adaptive transmission systems, alongside advances in piezoelectric actuation for high-precision applications. Application-driven research is a key component, with examples spanning robotics, healthcare, transportation, and autonomous inspection systems. These contributions demonstrate how actuation technologies are increasingly integrated with sensing, computation, and intelligent control to meet the demands of complex, real-world environments. Overall, this Reprint reflects the interdisciplinary nature of modern actuation research, bringing together innovations in control, materials, design, and applications. It provides valuable insights for developing efficient, robust, and intelligent next-generation actuator systems.



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