Special Issue

Advancement in the Design and Control of Robotic Grippers

Message from the Guest Editor

Robotic arms interact with the environment by means of their end effectors. Such devices allow the robotic arm to grasp items with various properties (e.g., shape and weight), even applying high forces when required. Above all, the scarce instrumentation, in terms of electronics and sensors, complicates the implementation of advanced control algorithms. This is a shortcoming particularly affecting pneumatic grippers, which are the most employed type of robotic gripper. As the market of robotic grippers shows a clearly growing trend, the need to conceive more sophisticated devices becomes stronger. Therefore, this Special Issue aims at collecting valuable articles that can produce a significant advancement in the state of the art of robotic grippers. Key challenges regard the augmentation of the gripper intelligence, which passes through the integration of reliable sensors in the gripper, and the design improvement of crucial components (such as actuators, fingers, etc.). Topics will focus on but are not limited to the following:

- design
- actuation
- instrumentation
- real-time control
- performance evaluation
- modeling and test

Guest Editor

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Deadline for manuscript submissions

closed (30 September 2024)

Actuators

an Open Access Journal by MDPI

Impact Factor 2.3
CiteScore 4.3

mdpi.com/si/153319

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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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