



Actuators in Robotic Control

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Message from the Guest Editor

Dear Colleagues,

Actuators are essential devices in these robotics and automation systems; in particular, humanoid/legged robots have different needs compared to industrial robots. To meet these different needs, many researchers have developed new types of actuator.

The future of robotics will rely heavily on actuators with force/torque control. For robotic systems, how to manipulate fragile items as humans can do is a big and challenging task. Electric actuators are suitable for this purpose, but they are not yet optimized. As a matter of fact, robotic arms and legs should reproduce the ability of human arms and legs on several levels. However, human muscles in limbs can also store energy and have a sort of internal elasticity. To reproduce the behaviors in human muscles, one or more elastic elements are inserted into electric actuators. The implementations of soft actuators exhibit high mechanical complexity and their size, weight, and cost prevent their widespread use. As a result, their application to multi-degree-of-freedom robotic machines still remains an open issue and a challenging task.

Prof. Dr. Chih Jer Lin
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