Special Issue

Design and Control of Compliant, Energy-Efficient Mechatronic and Robotic Systems

Message from the Guest Editors

In robotics, significant progress is being made through integrating advanced technologies such as artificial intelligence. As mechatronic systems become increasingly sophisticated, their power demands increase, resulting in greater environmental impacts, higher operational costs, and reduced power autonomy—factors that can limit the practical deployment of these innovations. Introducing built-in compliant elements in robotic and mechatronic systems has emerged as an effective strategy to enhance their energy efficiency along with shock tolerance, system responsiveness, and safety in collaborative tasks. For example, compliant elements can be used to modify the dynamic interaction with the environment or store potential energy to generate a free vibration response that can be exploited in cyclic tasks. In this context, this Special Issue will gather innovative research in the field of compliant, energy-efficient mechatronic and robotic systems. Topics of interest include, but are not limited to, the design, control, and application outcomes of innovative architectures aimed at improving system efficiency and safety.

Guest Editors

Dr. Luigi Tagliavini

Department of Mechanical and Aerospace Engineering, Politecnico di Torino, 10129 Torino, Italy

Prof. Luca Bruzzone

Department of Mechanical, Energy, Management and Transportation Engineering, University of Genoa, 16145 Genoa, Italy

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Machines
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
machines@mdpi.com

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Machines is an international, peer reviewed journal on machinery and engineering. It publishes research articles, reviews and communications.
Our aim is to encourage scientists to publish their experimental and theoretical results in as much detail as possible. There is no restriction on the length of the papers. Full experimental and/or methodical details must be provided.
There are, in addition, unique features of this journal: Manuscripts regarding research proposals and research ideas will be particularly welcomed; Electronic files or software regarding the full details of the calculation and experimental procedure - if unable to be published in a normal way can be deposited as supplementary material.

Editor-in-Chief

Prof. Dr. Antonio J. Marques Cardoso
CISE—Electromechatronic Systems Research Centre, University of Beira Interior, Calçada Fonte do Lameiro, P-6201-001 Covilhã, Portugal

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