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Editorial

Advances in the Mechanical Design of Robots

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1. Introduction

Robots are mechatronic systems whose functionalities and tasks are mechanical actions and interactions either with humans or with other systems. Therefore, mechanical design can be considered fundamental to ensure that a robot can perform a given task. In this special issue, attention is paid to the design and development of robots, examining advances in solutions and procedures that provide enhancements to robot structures and functionalities. Papers on topics related to robot structures and architectures, focusing both on theory and practical applications, were solicited.

These papers serve as illustrative examples of the significance of the mechanism design of successful robot systems, including those for new applications. They present results based on theoretical approaches for conceptual design and operation and present details on practical implementation of sensor-controlled solutions.

One paper presents an exoskeleton mechanism designed for finger guidance in motion rehabilitation [1]. Another paper focuses on humanoid torsos based on a cable-driven parallel mechanism, which is shown to be a highly capable prototype [2]. A third paper presents developments in control design, with numerical characterizations of a particular mechanism [3]. The last two papers illustrate new and successful robotic systems designed for challenging tasks, namely, bridge structure inspection and glass building façade cleaning [4,5].

These papers are inspiring and present examples of new, successfully designed robotic systems. Readers will surely enjoy them.

Conflicts of Interest: The author declares no conflict of interest.

References

1. Hsu, T.-H.; Chiang, Y.-C.; Chan, W.-T.; Chen, S.-J. A Finger Exoskeleton Robot for Finger Movement Rehabilitation. *Inventions* **2017**, *2*, 12.
2. Cafolla, D.; Ceccarelli, M. Characteristics and Performance of CAUTO (CAssino hUmanoid TOrso) Prototype. *Inventions* **2017**, *2*, 17. [CrossRef]
3. Mier, G.; Lope, J.D. Control of the Acrobot with Motors of Atypical Size Using Artificial Intelligence Techniques. *Inventions* **2017**, *2*, 16. [CrossRef]
4. Takada, Y.; Ito, S.; Imajo, N. Development of a Bridge Inspection Robot Capable of Traveling on Splicing Parts. *Inventions* **2017**, *2*, 22. [CrossRef]
5. Nansai, S.; Elara, M.R.; Tun, T.T.; Veerajagadheswar, P.; Pathmakumar, T. A Novel Nested Reconfigurable Approach for a Glass Façade Cleaning Robot. *Inventions* **2017**, *2*, 18. [CrossRef]