Special Issue

Actuators for Climbing Robotics

Message from the Guest Editor

Climbing robotics has steadily gained interest over the years due to its potential of unlocking safe, efficient, and autonomous inspection and maintenance of dangerous and hard-to-reach spaces. Robots targeting these tasks have been traditionally multidimensional in terms of utilized adhesion and motion technologies, while being tailored to match specific application scenarios and environments. The motion and adhesion capabilities required for efficient handling of sensors and tools and the structural requirements posed by different environments spanning from aerospace to nuclear and underwater facilities have led to several actuation methods developed and evaluated on climbing robot designs. In this Special Issue, both theoretical and practical contributions are encouraged, covering all aspects related to the design, modeling and control of adhesion and locomotion actuators for climbing robots, as well as contributions in navigation, localization, and collaboration of climbing robot systems. Comprehensive surveys on current technologies, industries and applications related to climbing robotics are also encouraged.

Guest Editor

Dr. Georgios Andrikopoulos
Mechatronics Unit, KTH Royal Institute of Technology, Stockholm, Sweden

Deadline for manuscript submissions

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

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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.

Editors-in-Chief

Prof. Dr. Kenji Uchino
Emeritus Academy Institute, The Pennsylvania State University, University Park, PA 16802, USA

Prof. Dr. Norman M. Wereley
Department of Aerospace Engineering, University of Maryland, 3179J Martin Hall, College Park, MD 20742, USA

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