It's Alive! From Bioinspired to Biohybrid Robots

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Abstract. Bioinspired robotics serves a dual role of advancing technology for real-world applications and creating tools for basic science research. However, just as there are gaps between simulations and reality, there are gaps between synthetic bioinspired robots and the animals they abstract or mimic. For example, the complex ability for abstract decision making and behavioral flexibility of biological brains, the adaptability and self-healing of living muscle, and the natural compliance of many biological systems, are lacking in many bioinspired robotics approaches. In this talk, I will explore the role of bioinspired robotics as a tool for basic science and address how biohybrid robotic approaches may help bridge the gap between bioinspiration and true biomimetics. I will also present recent work from our lab towards addressing sustainability in robotics and conclude with the ethical considerations and challenges facing biohybrid robotics as the field grows.

Keywords: Bioinspired robotics · Biohybrid robotics · Sustainability in robotics

J. M. Cascalho et al. (Eds.): CLAWAR 2022, LNNS 530, p. 4, 2023.
https://doi.org/10.1007/978-3-031-15226-9_2