# 3D printing Approaches for Soft Robotics

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Inspired by living organisms, soft robots can move and operate in complex environments by adapting their shape and movement strategy, thus paving the way to accomplish new real-world tasks. Primarily composed of elastomers and gels, soft robots have the potential to revolutionize the importance of robotics in, e.g., healthcare [1], human-machine interaction [2,3], and field exploration [4].

Owing to their versatility and appealing properties, soft robots have captured remarkable interest, but their fabrication is still challenging and represents an interdisciplinary challenge for the engineering community. Recently, 3D printing has emerged as an effective solution for the fabrication of soft robots' components with complex architectures [5].

Indeed, by combining multi-material processing and the free-design approach, 3D printing allows the fabrication of highly deformable, selective, and performant sensors, as well as the implementation of pneumatic actuators with large contraction ratios that are able to perform smooth movements [5]. Moreover, 3D printing offers the opportunity to explore sophisticated and bio-inspired architectures, opening new opportunities to the fabrication of the overall robotic system in a seamless procedure [5,6]. These aspects will be described in detail and explored throughout the description of diverse proofs of concept, which assess the key role of 3D printing in leading to a new class of soft robots.

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