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Nota di contenuto	Introduction -- Users' Requirements -- State of the Art -- The Solution -- Concept Layout -- Conclusions.
Sommario/riassunto	Environmental conditions and pressurized spacesuits expose astronauts to problems of fatigue during lengthy extravehicular activities, with adverse impacts especially on the dexterity, force and endurance of the hands and arms. A state-of-the-art exploration in the field of hand exoskeletons revealed that available products are unsuitable for space applications because of their bulkiness and mass.

This book proposes a novel approach to the development of hand exoskeletons, based on an innovative soft robotics concept that relies on the exploitation of electroactive polymers operating as sensors and actuators, on a combination of electromyography and mechanomyography for detection of the user’s will and on neural networks for control. The result is a design that should enhance astronauts’ performance during extravehicular activities. In summary, the advantages of the described approach are a low-weight, high-flexibility exoskeleton that allows for dexterity and compliance with the user’s will.