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Autore	Cisnal de la Rica Ana
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Sommario/riassunto	This book presents the development of a multimodal physiological signal acquisition system and cooperative control strategies for applications in upper-limb robotic rehabilitation. First, it introduces a non-pattern recognition EMG-based platform for hand rehabilitation, demonstrating its strong performance in both gesture recognition accuracy and responsiveness. It also discusses the role of EMG-based visual feedback, showing how real-time visualization of muscle activation enhances user performance during training. In turn, it reports on the validation of a low-cost multimodal acquisition solution using two different real-time biocooperative control strategies. The results demonstrate that the developed low-cost wearable platform, which integrates multiple sensors, wireless communication, and a high-efficiency real-time microcontroller, is highly versatile and

configurable, and shows a good signal quality. By addressing two main aspects that limit the adoption of biocooperative systems in clinical rehabilitation settings – hardware affordability and system reliability – this outstanding PhD thesis paves the way to the implementation of real-time biocooperative controls for future applications in robotic rehabilitation. .