

Title:

Designing exoskeletons and prostheses that enhance human performance

Abstract:

Exoskeletons and active prostheses could improve mobility for hundreds of millions of people. However, two serious challenges must first be overcome: we need ways of identifying what a device should do to benefit an individual user, and we need cheap, efficient hardware that can do it. In this talk, we will describe a new approach to the design of wearable robots, based on versatile emulator systems and algorithms that automatically customize assistance. We will discuss exoskeletons that use no energy themselves, yet reduce the energy cost of human walking, and efficient, electroadhesive actuators that could make wearable robots an order of magnitude cheaper and more efficient. Finally, we will consider the implications of these technologies for clinical practice and commercial products.

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