



Department of Biomedical Engineering
Graduate Seminar

Date
Friday, February 28th

Location
Central King Building (CKB 217)

Time
11:30 AM



Jonathan Realmuto

Postdoctoral Scholar and Visiting Scientist
Children's Hospital Orange County
Department of Electrical Engineering and Computer Science
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Subject- Empowering ability through wearable robotics

Abstract: Wearable robots offer a tremendous opportunity to enhance the quality of life for individuals with mobility impairments. Examples include bionic prostheses for limb replacement after amputation or movement assisting exosuits for people with spinal cord injury. Such technologies restore or supplement motor function through mechanical interactions between human users and body-mounted robots. However, fundamental challenges that are not encountered in traditional engineered systems limit the capabilities of current devices. For one, the presence of time-varying (personalized) human dynamics and human-robot-environment interactions make robot control challenging. Another issue is the physical embodiment of wearable robots. Strict constraints on acceptable morphology, including the physical human-robot interface, complicate robot design. In this talk, he will highlight his work tackling these challenges. First, he will discuss the development of a fabric-based pneumatic forearm orthosis that can assist in a user's wrist rotations. He will highlight design and fabrication techniques, and discuss preliminary work on a reflex-based controller. Next, he will describe his research on lower limb prostheses. Here, he will present results on a human-in-the-loop control strategy. He will conclude by outlining his vision for future directions.

Light refreshments will be served.