5. Workshop 5

August 21st (Sunday) 09:30-15:15 / Room 513

Title	Closing the Loop on Upper-Limb Assistive Device Design, Sensing, Control, & Clinical Practice
Organizers	● **Laura A. Hallock**, University of Pennsylvania ● **Cara M. Nunez**, Harvard University & Cornell University ● **Robert D. Howe**, Harvard University
Abstract	Developing effective assistive devices that can be used in a clinical setting is a multidisciplinary effort requiring expertise in not only robotic design, sensing, controls, and human–machine interaction, but also knowledge of the needs of medical and patient communities. At the same time, researchers must inherently specialize in these domains, and often the communication lines between these communities are limited, causing the development of suboptimal tools and devices for the intended use case or target population. This workshop aims to bring these communities together to a) engage in an open discussion of successful endeavors in bridging this development–application gap, and best practices for doing so, and b) present ongoing work in assistive device tooling and clinical needs definition to enable new connections and partnerships across disciplines. By bringing together experts in device design, sensing, and control, as well as clinicians and practitioners well-placed to understand immediate clinical needs, and providing a venue to discuss both early-stage and established work, we aim to provide attendees with a broad sense of ongoing challenges and state-of-the-art methods in upper-limb assistance and rehabilitation, as well as the opportunity to expand the use of technologies currently under development in new and impactful application domains.

List of Talks	
Session 1: Talks & Panel Discussion	
09:30 KST/20:30 EST	**Greetings, introduction to workshop and logistics**
09:35 KST/20:35 EST	**Invited Speakers**
09:35 KST/20:35 EST	**Conor Walsh, PhD**, Harvard University uniting design, biomechanics, engineering, and business communities to build and deploy soft exosuits
09:50 KST/20:50 EST	**Marcia O'Malley, PhD**, Rice University user-centric EMG- and FES-based design and control of upper limb exoskeletons
10:05 KST/21:05 EST	**Michelle Johnson, PhD**, University of Pennsylvania development and deployment of therapeutic robots for diverse pathologies and populations
10:20 KST/21:20 EST	**Andrew McPherson**, UC Berkeley building effective assistive devices and assistive tech organizations as an engineer, leader, and user
10:35 KST/21:35 EST	**David Lin, MD**, Massachusetts General Hospital clinical and neurological perspectives on upper extremity rehabilitation robotics in stroke
10:50 KST/21:50 EST	**Kristin Nuckols, OTD, MOT, OTR/L**, Co-Founder, Imago Rehab rehabilitation in the startup space
11:05 KST/22:05 EST	**Break**
11:15 KST/22:15 EST	**Panel discussion with invited speakers**
Session 2: Posters, Demos, & Networking	
13:00 KST/00:00 EST	**Welcome back, introduction to lightning talk/poster logistics**
13:05 KST/00:05 EST	**Lightning Talks**
13:35 KST/00:35 EST	**Break, poster & demo set-up**
13:40 KST/00:40 EST	**Poster/demo session, general networking & discussion**