

**10:35-11:50**

**Research Talks**

**Conor Walsh (SEAS)**

**Title:** Soft wearable robots: a chance to connect the clinic with the community

**Abstract:**

Walking through a vendor exhibit hall at a physical medicine and rehabilitation conference, it becomes obvious that technology has not yet infiltrated this area of medicine. For the most part current, clinical interventions in this field are based on patient interactions with skilled physical and occupational therapists. However, each therapist has limited time to spend with each patient, and tools for quantitatively measuring progress and individualizing therapy are lacking. The last decade has seen developments of robotic technology to address some of these challenges. Unfortunately, it is currently almost entirely limited to in-clinic use, thus patients often have a hard time receiving sufficient therapy. What if a patient could be given a pair of low profile, lightweight robotic pants or a soft glove while beginning therapy in a clinic, but could then bring it home to continue daily therapy while going about their day to day activities in the community? And what if these devices could be low cost and include sensors that would allow a therapist to remotely monitor the patient progress via data collected from embedded sensors? I will give a brief overview of next generation soft wearable robots in development at Harvard. These robots use soft materials such as textiles and elastomers to provide a more conformal, unobtrusive and compliant means to interface to the human body. I'll present examples of robots that assist with mobility for patients with limited walking capacity (e.g., patients who are post-stroke, have Parkinson's Disease or are elderly) those that assist with grasping for individuals unable to perform activities of daily living (e.g., patients with muscular dystrophy or spinal cord injury).