

University of Houston - Biomedical Engineering Seminar

Friday, April 23, 2021, 12 noon

Via Zoom: <https://uofh.zoom.us/j/92470065206>

Harmony Exoskeleton: A Journey from Robotics Lab to Stroke Patients



Ashish D. Deshpande, Ph.D.

Abstract

Stroke is a leading cause of disability in the US and around the world, and the current rehabilitation treatments are costly, labor-intensive and insufficient, leaving millions of stroke survivors with life altering disabilities. Deshpande's group has built a novel robot, called Harmony Exoskeleton, for upper-body rehabilitation. Fundamental design and control advanced have resulted in a number of features that make the Harmony Exoskeleton a suitable tool for delivering early-stage subject-specific *treatment*, for advancing the *science* of neuro-recovery and for *assessing* disability and recovery outcomes. The talk will discuss these key features and also the results from preliminary testing with stroke patients. And the progress on the commercialization path toward bringing this rehabilitation robot in the hands to therapists to treat patients will also be presented.

Biosketch

Dr. Deshpande is passionate about helping stroke patients recover from their disabilities and he believes robots could serve as important tools in the recovery process. He is in the M.E. Department at UT Austin, where he directs the ReNeu Robotics Lab. His work focuses on the study of human system and design of robotic systems toward the goals accelerating recovery after a neurological injury (e.g. stroke and spinal cord injury), improving the quality of lives of those living disabilities (e.g. amputation) and enhancing lives and productivity of workers, soldiers and astronauts. Specifically, his group has designed two novel exoskeletons for delivering engaging and subject-specific training for neuro-recovery of upper-body movements after stroke and spinal cord injury. Dr. Deshpande is a co-founder of Harmonic Bionics whose mission is to improve rehabilitation outcomes for the stroke patients.