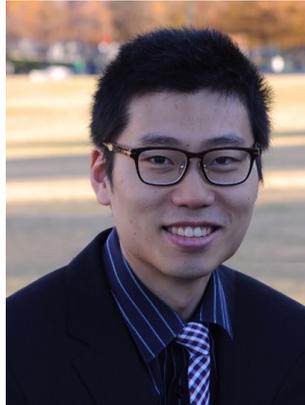


University of Houston - Biomedical Engineering Seminar

Friday, October 30, 2020, 12 noon

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

Closed-loop Sensory Augmentation and Its Effect On Motor Control



Hangue Park, Ph.D.

Abstract

The nervous system is highly adaptive to cope with changes. But the natural neural adaptation is often not optimal. If we interface and communicate with the nervous system, we might be able to guide the neural adaptation to the proper direction. Electrical circuits and systems can favorably intervene the nervous system operation, as the neural signal can be recorded and modulated by electrical stimulation (E-stim). The closed-loop E-stim has been applied in multiple ways to modulate ascending sensory feedback or descending motor commands. In this talk, I will introduce one approach of this closed-loop E-stim, applied onto distal cutaneous nerves. The closed-loop E-stim not only augments sensory feedback but also modulates motor output in a desired way. I will also share multiple human and animal experimental data to show the efficacy of the closed-loop E-stim.

Biosketch

Hangue Park is an assistant professor in ECE at Texas A&M. He received his Ph.D. in ECE at Georgia Tech., in 2017. There, he studied people after spinal cord injury and amputee cats. He also has 5+ years of industrial experience in circuit and system design for cell phone and handheld electronic devices. His current research interests lie in artificial sensory feedback and closed-loop optimization of sensorimotor loop, to assist incomplete body functions and enhance rehabilitation outcomes in patterned movements. He is a recipient of the Trainee Professional Development Award from Society for Neuroscience at 2017, the Outstanding Research Award from the Association of Korean Neuroscientists at 2016, and the Best Demonstration Award at the IEEE Biomedical Circuits and Systems Conference 2012.