

# CARNEGIE MELLON UNIVERSITY

## BME 2021 SPRING SEMINAR SERIES

### Targeted Neuroplasticity: Natural and Artificial Shaping of Neural Correlations through bi-directional Neural Interfaces



#### PRESENTED BY

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#### SCHEDULE

**Thursday, April 22**  
(10:45-11:45AM)

Our ultimate understanding of the brain as a complex system is reflected in our ability to predict its dynamics in the normal state and eventually control these dynamics in the pathological state. Interest in interfacing with the brain using electrical and/or optical means has been surging, but the extent to which these interfaces can restore lost sensorimotor functions remains a significant challenge. In this talk, I will discuss our effort to characterize key neuroplasticity mechanisms necessary for these interfaces to become clinically viable and how they can be used to facilitate perceptual and motor learning. I will also discuss means to artificially shape neuroplasticity via peripheral nerve stimulation to accelerate learning. I will conclude with a discussion on our ongoing clinical trial to alleviate severe essential tremor in humans using a novel responsive deep brain stimulation approach.

