

# CARNEGIE MELLON UNIVERSITY

## BME 2021 SPRING SEMINAR SERIES

### Brain-Computer Interfaces for Human Gait Restoration



#### PRESENTED BY

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#### SCHEDULE

**Thursday, March 18**  
(10:45-11:45AM)

Neurological conditions such as spinal cord injury (SCI) or stroke can cause significant gait impairments. These in turn have a profound effect on independence and quality of life of those affected. Sedentary lifestyle associated with these conditions can also lead to a number of medical comorbidities, which significantly augment their healthcare costs and presents a public health concern. In the U.S. alone, the primary and secondary healthcare costs associated with SCI and stroke are estimated to exceed \$80 B/year. Currently, there are no biomedical solutions capable of reversing the loss of motor/sensory function after these conditions and best physiotherapies provide only a limited degree of recovery. Therefore, novel approaches to these conditions are in dire need. Brain-computer interfaces (BCIs), which aim to bypass neurological lesions by means of neurotechnology, may be a promising new approach to these conditions. In this presentation I will discuss how BCIs can be used for either neuroprosthetic or neurorehabilitation purposes to address gait impairments after SCI or stroke. Most of our work has been in the domain of noninvasive electroencephalogram-based BCIs, but some of our recent studies have explored the utility of invasive electrocorticogram-based BCIs.



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