UNIVERSITY OF DELAWARE
ENGINEERING

DEPARTMENT OF BIOMEDICAL ENGINEERING

FALL SEMINAR SERIES 2020

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Biomedical Engineering

Northwestern University

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10:30AM

Zoom
https://udel.zoom.us/j/97153721365
Passcode: BMESeminar

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ABSTRACT:

THE MECHANICS OF HUMAN LIMBS: HOW THEY ARE REGULATED BY THE NERVOUS SYSTEM AND HOW THEY INFLUENCE NEURAL CONTROL

We have an amazing ability to alter the mechanical properties of our limbs. For example, the human nervous system can change the impedance of our arms by nearly three orders of magnitude, depending on whether the task at hand requires a stiff or compliant interface for interacting with our physical environment. Much of this regulation occurs automatically, relying on the intrinsic mechanics of muscles and the subconscious neural pathways contributing to muscle activation. This presentation will review our work on how the mechanics of the human upper and lower limbs are regulated across a variety of tasks, explore the mechanisms contributing to that regulation, and investigate how these properties can be leveraged to simplify the neural control of posture and movement.

BIOGRAPHY:

Eric Perreault is Professor and Chair of Biomedical Engineering at Northwestern University, with appointments in Physical Medicine and Rehabilitation, and at the Shirley Ryan AbilityLab. He received his BEng and MEng degrees in Electrical Engineering from McGill University and his PhD in Biomedical Engineering from Case Western Reserve University. Eric's research focuses on the neural and biomechanical factors involved in the control of movement and posture. The goal is to provide a scientific basis for understanding normal and pathological motor control to guide rehabilitative strategies for individuals with motor deficits. Eric is a fellow of the American Institute for Medical and Biological Engineering, a member of the National Advisory Board on Medical Rehabilitation Research, and the current president of the International Society for Electrophysiology and Kinesiology.

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