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11:30am - 1:00pm

Virtual Seminar

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From exoskeletons to legged robots: how human gait studies can elucidate human-robot interaction

Abstract:

A world embedded with robots seems inevitable, from exoskeletons to assist gait to companion robots to help us with activities of daily living. One challenge, however, is designing robots to work with us, not against us. In this talk, I will discuss a few studies that help us understand how to build better robot systems, from exoskeleton controllers to legged robots. I will first discuss some of the challenges in exoskeleton research through the use of a biologically-inspired neuromuscular controller for lower-limb exoskeletons to assist individuals with paraplegia. I will then discuss our into-the-wild gait studies to fill in scientific gaps on how healthy individuals remain upright during gait. We will conclude on how legged robots can affect human gait, even without physical interactions, and what that means for human-robot interaction. Robots have the potential to greatly improve human lives, and we can leverage biomechanics and gait studies to ensure that they are designed to interact well with us.

About the Speaker

Amy R. Wu is an Assistant Professor in the Department of Mechanical and Materials Engineering at Queen's University and the Mitchell Professor in Bio-inspired Robotics. She is the head of the Biomechanics x Robotics Laboratory (BxRL) and a member of Queen's Ingenuity Labs Research Institute. Her research interests are at the intersection of biomechanics and robotics with the aim of augmenting legged mobility. Prior to joining Queen's, she was a postdoctoral researcher in the Biorobotics Laboratory at the Ecole Polytechnique Fédérale de Lausanne (EPFL) in Switzerland and completed her Ph.D. in Mechanical Engineering at the University of Michigan.