AI-Enabled Movement Biomechanical Measurement and Analysis

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Tuesday, November 4, 2025
12:00 – 1:00 PM
BMI Classroom 4004
Woodruff Memorial Research Building

or

Join us on Zoom link:
https://zoom.us/j/96782639178

Abstract: This talk will review recent advances in AI-enabled biomechanical human pose estimation and analysis. It will first cover differentiable biomechanics for end-to-end recovery of kinematics with confidence intervals and kinetics. It will show how this approach can be extended to track high quality arm and hand biomechanics, and to monocular whole-body gait analysis. It will also demonstrate new opportunities that emerge with large rehabilitation data such as imitation learning and training multimodal language models that are fluent in human movement.

Biography: Dr. Cotton is an electrical engineer, neuroscientist, and physiatrist working as a physician-scientist at Shirley Ryan AbilityLab and Assistant Professor in the Northwestern University Department of Physical Medicine and Rehabilitation. His lab works at the intersection of artificial intelligence, wearable sensors, computer vision, causal and biomechanical modeling, and novel technologies to monitor and improve rehabilitation outcomes. In particular, the lab focuses on methods that can be easily translated and disseminated at scale into the clinic or real world. This includes biomechanical analysis using computer vision, which they can integrate into the clinic, and establishing how this can be used to improve clinical outcomes.