COLLABORATIVE
HUMAN-AI SYSTEMS
AT THE EXTREMES

We cordially invite you to join the first AIX SEMINAR

Wednesday, January 27th at 3:00 PM EST

Zoom Link | https://northeastern.zoom.us/j/96209636039

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Allostasis and Interoception: Brain-Body Interactions and Implications for Robotics

Dr. Karen Quigley, Northeastern University, and Dr. Erin Reilly, Veteran Affairs

Abstract: For much of the history of psychology, sensation, perception, action, emotion, and cognition were studied as if they were separate, biologically-defined faculties -- they are not. A prominent current neuroscientific perspective (and variants thereof) suggest that a brain runs an internal, predictive model or simulation of itself in the world. This model supports all functions achieved by a brain, and in this view, predictions constitute the internal model. Our lab has marshaled neuroanatomical evidence that predictions arise from visceromotor control regions in the brain to support anticipated action and other metabolically-costly functions such as learning. Collectively, these anticipatory regulatory processes are called allostasis. Allostasis is the major task of a brain, which utilizes 20% of the energetic budget of a human. A brain also requires a body, which is the effector by which the brain supports maintenance of its own energetic needs. The internal model also is modified by prediction error arising from unanticipated inputs from both exteroceptive (e.g., vision) and interoceptive (e.g., viscerosensory) sources. Interoceptive sensations provide critical information to the brain about the status of the body, enabling motor and visceromotor actions that can most efficiently support the brain's energetic needs. Understanding these biological realities can bring new ideas to both the design of robots, and also to our understanding of how to optimize humans-robot interactions.

Improving Interaction using Intelligence

Dr. Jaime Ruiz, University of Florida

Abstract: Adding intelligence to user interfaces provides unique opportunities to improve the way users interact with computing systems. In this talk, I will give a broad overview of the types of projects undertaken by may lab. I will also highlight several projects that aim to use intelligence to create the next generation of multimodal interfaces.