

Neural Control of Locomotion: From Neurons to Newtons Laws

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Knott Hall B03

Cowan collaborates with biologists to apply a "reverse-engineering" approach to discover systems-level principles of animal locomotion. Their approach involves using physics-based mathematical and robotic models of animal sensation and movement, together with control theoretic data analysis, to furnish quantitative predictions about how the brain controls movements at the task level. They then test these predictions using neurophysiological techniques. Cowan will describe two examples: how the cockroach follows surfaces with its antennae, and how the glass knifefish controls its ribbon fin to hide in moving refuges.

REFRESHMENTS WILL BE SERVED