SEMINAR SERIES

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The Center for Research in Human Movement Variability (MOVCENTR)

TELLING TIME AND PRODUCING COMPLEX TEMPORAL MOTOR PATTERNS WITH THE DYNAMICS OF RECURRENT NEURAL NETWORKS

Featuring Dr. Dean Buonomano

University of California, Los Angeles

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Friday, Oct. 8 | 12:00 - 1:15 pm | Via Zoom
https://unomaha.zoom.us/s/92012305734

PRESENTATION ABSTRACT

The ability to tell time and generate complex spatiotemporal motor outputs are among the most fundamental computations the brain performs. But how do networks of neurons tell time and generate appropriately timed motor movements in a flexible manner? We have characterized learning of complex temporal motor patterns, and the degree to which humans can produce the same patterns at different speeds (temporal scaling). Mechanistically, we have proposed that motor timing on the scale of seconds relies on population clocks: time-varying patterns of neural activity that emerge from the dynamics of recurrent neural circuits. These stable neural trajectories comprise "dynamic attractors" that represent a fundamental computational strategy in the brain. Importantly, these population clocks can produce temporal scaling and motor patterns at different speeds.

ABOUT DR. BUONOMANO

Dean Buonomano is a professor in the Departments of Neurobiology and Psychology, and a member of the Integrative Center for Learning and Memory at UCLA. He is a computational and experimental neuroscientist, and leading expert on how the brain tells time. Buonomano is the author of *Brain Bugs: How the Brain's Flaws Shape our Lives* and *Your Brain is a Time Machine: The Neuroscience and Physics of Time*

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