COLLEGE OF ENGINEERING

Control Seminar

Sponsored by: Bosch, Ford, and Toyota

Learning from nature: When Models Meet Multitudes

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3:30 – 4:30 pm • 1500 EECS

ABSTRACT: Feedback is as ubiquitous in nature as it is in design. So control theory can help us understand both natural and designed systems. Even better, generalized models abstracted from nature give us a mathematical means to connect control theoretic explanations of nature with opportunities in control design. Control theory is enriched by the language, questions, and perspectives of fields as diverse as animal behavior, cognitive science, and dance. I will present a model for multi-agent dynamics that is informed by these fields. The model derives from principles of symmetry and bifurcation, which exploit instability to recover the remarkable capacity of natural groups to trade off flexibility and stability.

BIO: Naomi Ehrich Leonard is the Edwin S. Wilsey Professor of Mechanical and Aerospace Engineering and associated faculty in Applied and Computational Mathematics at Princeton University. She is a MacArthur Fellow, member of the American Academy of Arts and Sciences, and Fellow of IEEE, SIAM, IFAC, and ASME. She received her B.S.E. in Mechanical Engineering from Princeton University and her Ph.D. in Electrical Engineering from the University of Maryland. Her current research focuses on control and dynamical systems with application to multi-agent systems, mobile sensor networks, collective animal behavior, and human decision dynamics.