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IMA Public Lectures

Tuesday, October 11, 2011, 7:00 p.m.

175 Wiley Hall, 225 19th Ave. South

West Bank, University of Minnesota, Minneapolis

Flocks and Fleets: Collective Motion in Nature and Robotics

Naomi Ehrich Leonard, Princeton University

From bird flocks to fish schools, animals move together and respond to their environment in remarkable ways; their natural collective motion patterns appear well choreographed and their collective survival strategies seem ingenious. These animal group behaviors inspire design for robotics, where demanding cooperative sensing tasks find their analogue in natural group behaviors, such as foraging and feeding. Leonard will present an introduction to the study of collective motion in nature and robotics and will show how mathematical modeling and analysis play a critical role in addressing the joint challenge to explain the enabling mechanisms in animal groups and to define provable mechanisms for robotic groups.

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