0910908: Intelligent Tracking Systems that Reason about Group Behavior

Top-4 topics in this award:

(topic 400) Computer Vision
(topic 512) Small Mammals
(topic 319) Tracking Systems
(topics 94) Complex Systems

The ability to reason about the complexity of living organisms in diverse environments is one of the hallmarks of intelligence. In this project the PI and her interdisciplinary team of investigators will design computer vision algorithms for intelligent tracking of large groups of living individuals in three-dimensional space. She will develop specific systems for tracking groups of microorganisms, bats, birds, and humans. And she will formulate machine learning methods for analyzing group behavior, specifically the conditions for formation and dispersal of groups, and the interactions of individuals within a group. An important innovative aspect of this research is the systematic and comprehensive approach to reasoning about the motion of large groups of living organisms observed in video data, independently of whether they happen to be humans, animals, or cells ...