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Title
MAS 0: Multi-scale Actuation and Sensing: An Overview

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Controlled Mobility, Adaptive Sampling, NIMS and NAMOS

- Controlled mobility may reduce the energy cost of data transport in wireless sensor networks
- Multiscale methods can exploit sparsely deployed low resolution sensors to both extract models of observed phenomena and detect events that guide actuated sensors to best sample dynamically varying fields.
- Development of aquatic sensing systems (NAMOS lake monitoring) and NIMS (aquatic stream, river, and lake systems as well as many terrestrial ecosystems).

Multiscale Sensing:
- Hierarchy of sensor data sources
- Varying levels of resolution
- Achieve high fidelity by multiple levels of sparse sensing

Model Based Methods:
- Directly extract phenomena behavior
- Communication, computation, and actuation optimized for highest utility sensing operations
- Continuous model update

MAS Theory

Coordinated Actuation for Environment Observation

NAMOS: Networked Aquatic Microbial Observing System