

Call And Response: Navigation Strategies for a Mobile Sensor Array

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Abstract: We begin by constructing a range of statistical characterizations of environmental phenomena that differ in terms of their spatio-temporal variation. We next create a similar classification of the time requirements for different kinds of sensors. These two ranges are then used to study the question of adaptive spatial designs for NIMS (networked infomechanical systems). NIMS nodes are mobile sensor arrays that have been deployed mainly for environmental monitoring. We discuss connections between sequential design for field estimation, optimal design for moving sensors, and biologically-inspired searching behaviors.