Title: Decentralized adaptive awareness coverage control for multi-agent networks

Abstract:

In this paper a novel problem of adaptive awareness coverage is formulated. We model the mission domain using a density function which characterizes the importance of each point and is unknown beforehand. The desired awareness coverage level over the mission domain is defined as a non-decreasing differentiable function of the density distribution. A decentralized adaptive control strategy is developed to accomplish the awareness coverage task and learning task simultaneously. The proposed control law is memoryless and can guarantee the achievement of satisfactory awareness coverage of the mission domain in finite time with the approximation error of the density function converging to zero.