# The Coverage Problem in Directional Sensor Networks with Rotatable Sensors

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## Abstract

Directional sensor network is composed of many directional sensor nodes. Unlike conventional omni-directional sensors that always have an omni-angle of sensing range, directional sensors may have a limited angle of sensing range due to technical constraints or cost considerations. Therefore, it is possible that when directional sensor nodes are randomly scattered in the environment, some interested targets cannot be covered due to the limited angle of sensing direction even if the targets are located in the sensing range of sensors. We propose a Maximum Coverage with Rotatable Sensors (MCRS) problem in which coverage in terms of the number of targets to be covered is maximized whereas the angle's degrees to be rotated are minimized. We present two centralized greedy algorithm solutions for the MCRS problem. Simulation results are presented to apply angle adjustment algorithm to enhance the coverage of the directional sensor network.

Keyword：Directional Sensor Networks, Coverage, Rotatable Sensors, Centralized Greedy Algorithm.