

# Area Coverage Enhancement Schemes in Directional Sensor Networks

梁秋國, 徐寅鐘, 朱定豪

Computer Science & Information Engineering

Computer Science and Informatics

ckliang@chu.edu.tw

## Abstract

Adequate coverage is very important for sensor networks to fulfill the issued sensing tasks. In traditional sensor networks, the sensors are based on omni-sensing model. However, directional sensing sensors are with great application chances, typically in video sensor networks. Toward this end, this paper discusses the problem of enhancing coverage in a directional sensor network. First, based on a rotatable directional sensing model, we describe a method to rotate the sensing direction of each sensor improve the coverage rate for a given deployment. Moreover, the concept of priority is introduced to model the importance of rotating sequence of sensors. According to the characteristic of adjustable sensing directions of directional sensors, we study the area coverage enhancing problem and propose two coverage-enhancing algorithms to maximize the sensing area of directional sensors only with local topology information. Extensive simulation is conducted to verify the effectiveness of our solutions and detailed discussions are also given on the performance compared with previous approach

Keyword : Directional sensor networks; Area coverage; Greedy algorithms; Distributed algorithms; Rotatable sensors;