Movement Assisted Sensor Deployment in Directional Sensor Networks

梁秋國,何孟佳,蔡志鴻
Computer Science & Information Engineering
Computer Science and Informatics
ckliang@chu.edu.tw

Abstract

A 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. Area coverage is still an essential issue in a directional sensor network. In this paper, we study the area coverage problem in directional sensor networks with mobile sensors, which can move to the correct places to get high coverage. We present distributed self-deployment schemes of mobile sensors. After sensors are randomly deployed, each sensor calculates its next new location to move in order to obtain a better coverage than previous one. The locations of sensors are adjusted round by round so that the coverage is gradually improved. Based on circumcenter and incenter of sensing direction of the directional sensors, we design two schemes, namely Circumcenter-based and Incenter-based schemes respectively, to guide the moving direction. Simulation results show the effectiveness of our schemes in term of the coverage improvement.

Keyword：directional sensors; mobile sensors; area coverage;