Abstract

Wireless sensor networks have a broad range of applications in the military, surveillance, environment monitoring, and healthcare fields. Coverage of sensor networks describes how well an area is monitored. Different kinds of holes can form in such networks creating geographically correlated problem areas such as coverage holes, routing holes, jamming holes, sink/black holes and worm holes, etc. In many potential working environments, such as remote harsh fields, disaster areas and toxic urban regions, sensor deployment cannot be performed manually. To scatter sensors by aircraft is one possible solution. However, using this technique, the actual landing position cannot be controlled because of the existence of wind and obstacles, such as trees and buildings Alternative methods may lead to imprecise placement resulting in coverage holes. To provide the required high coverage in these situations, we propose to deploy sensor networks composed of a mixture of mobile and static sensors in which mobile sensors can move from dense areas to sparse areas to improve the overall coverage. In this report, we have developed a java based simulator for wireless sensor network and estimated coverage hole for different type of node deployment. With help of this we can find out the area being monitored or tracked by sensors. Our finding shows that fixed deployment of the nodes gives better coverage. However random deployment of the nodes also gives 77.8% efficiency compared to fixed deployment. Further we are proposing an idea to overcome the coverage problem in more efficient way. Here we are proposing a new distributed bidding protocol for the deployment of mobile sensors, especially designed for sensor networks in which only a subset of deployed sensors are mobile. In our protocol, mobile sensors are treated as servers to heal *coverage holes*, which are locations not covered by any sensor. Each mobile sensor has a certain base price for serving one hole in the sensing field. The price is related to the size of any new hole generated by their movement. Static sensors will detect the coverage holes locally, estimate their sizes as bids, and bid the mobile sensors with a base price lower than their bids. Mobile sensors choose the highest bids and move to heal the largest coverage holes. This process iterates until no static sensor can give a bid higher than the base price of any mobile sensor and the process terminates naturally. We will address issues such as surveillance and exposure of sensor networks coverage.