Abstract

Wireless Sensor Networks (WSNs) consist of a large number of energy-limited sensor nodes that are densely deployed in a large geographical region. The main challenge facing us in the design and conception of Wireless Sensor Networks (WSNs) is to find the best way to extend their life span. Therefore, proper energy management technics and communication protocols optimization have received increasing attention. The clustering algorithm is a key technique used to increase the scalability and life span of the network in general. In this paper, to generate clusters of sensors and reduce the cost of communication in them, we used a new approach from stochastic geometry as well as a distributed random algorithm. Moreover, we compute the optimal probability of becoming a cluster head in both cases rectangular and circular area. This study can successfully prolong the network's life span by reducing
the total energy dissipation on the network and evenly distributing energy consumption over all sensor nodes. Our results could be used in any form of space deployment of sensors.

References


Index Terms

Computer Science

Wireless

Keywords

Energy-Efficient Poisson Process Stochastic Geometry Distributed Random Algorithm