Abstract

To achieve power-efficient monitoring of targets in a terrain covered by a sensor network, it is sensible to divide the sensors into cover sets and make each of these sets responsible for covering the targets for a certain period of time. Generating the maximum number of such cover sets has been proved to be an NP-complete problem, and thus algorithms producing suboptimal solutions have been proposed. This paper proposes an efficient method to extend the sensor network operational time by organizing the sensors into a maximal number of non-disjoint sensor covers that are activated successively. Only the sensors from the current active sensor cover are responsible for monitoring all targets and for transmitting the collected data, while nodes from all other sensor covers are in a low-energy sleep mode. It first discusses the problems associated with existing heuristic for the target coverage and then this paper proposes a new solution to maximize total network lifetime.

References


Index Terms

Computer Science  Wireless

Keywords
Heuristic  NP completeness  Wireless Sensor Networks  Network lifetime