A Force-Driven Evolutionary Approach for Multi-objective 3D Differentiated Sensor Network Deployment

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Abstract

Wireless Sensor Networks (WSN) is a wireless network consisting of spatially distributed autonomous sensors to monitor physical or environmental conditions. Deciding the location of sensor to be deployed on a terrain with different criteria is an important issue for the design of WSN. A Multi-Objective Genetic Algorithm (MOGA) with a force-driven method is proposed to solve 3D differentiated WSN deployment problems with the objectives of the coverage of sensors, satisfaction of detection levels and energy conservation. The experimental results demonstrated that the proposed approach is capable of obtaining a set of non-dominated solutions for multi-objective 3D differentiated WSN deployment problems.

Keyword：differentiated wireless sensor network; multi-objective optimization; evolutionary