

عنوان مقاله:

Wireless sensor network design through genetic algorithm

محل انتشار:

مجله هوش مصنوعی و داده کاوی، دوره 2، شماره 1 (سال: 1392)

تعداد صفحات اصل مقاله: 12

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خلاصه مقاله:

In this paper, we used WSN design, as a multi-objective optimization problem through Genetic Algorithm (GA) technique. We examined the effects of GA parameters including population size, mutation probability, and selection and crossover methods on the design. Choosing suitable parameters is a trade-off between different network criteria and characteristics. Type of deployment, effect of network size, radio communication radius, deployment density of sensors in an application area and location of base station are the WSN's characteristics, which were investigated in this paper. The simulation results of this study indicate that the value of radio communication radius has direct effect on radio interference, cluster-overlapping, sensor node distribution uniformity and communication energy consumption. The optimal value of radio communication radius depends on network deployment density rather than network size and deployment type. Location of the base station affects radio communication energy, cluster-overlapping and average number of communication per cluster head. BS located outside the application domain is preferred over that located inside. In all the network situations, random deployment has better performance compared to grid deployment

کلمات کلیدی:

Wireless sensor network, cluster head, genetic algorithm, active sensor, base station

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