

عنوان مقاله:

An Evolutionary Approach to Optimize the Number of Guide Nodes in RSSI Algorithm

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خلاصه مقاله:

Positioning in the wireless sensor networks is a challenging issue. Several algorithms are proposed for this issue, each with its own advantages and disadvantages. One of them is RSSI algorithm, which is a method based on the range and anchorage (guide node). This algorithm uses two phases to detect the location. In the first phase, it estimates the distance between an unknown node and anchorage, and in the second phase, it estimates the location of the unknown node. This algorithm is the cheapest ones among its category because it does not need additional hardware for coordinating and sending of the signal. This paper uses a genetic algorithm to optimize the number of guide nodes required for this algorithm. Furthermore, the arrangement of nodes for this algorithm is discussed. In the proposed method, if the transmitter and receiver have not any motion, the received power is constantly changing causing the total error to be %05. Also, another error easily occurs because of the existence of obstacles in the way of sending signals. Such error makes the estimation of the distance unrealistic. Several features are considered in the proposed genetic algorithm such as the ratio of the normal nodes to the guide nodes, providing LOS condition for nodes and appropriate distribution of the nodes. On the subject of optimizing with genetic algorithm, it should be mentioned that determining Domain of Signal (DOS) distance is one of the requirements of optimization as well.

کلمات کلیدی:

Guide Nodes, RSSI Algorithm, Sensor networks, Genetic Algorithm

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