带混沌映射的三维 WSN 蜂群优化定位算法

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摘　要：传感器节点的定位能力对无线传感器网络的性能有很大的影响.为此，本文针对三维无线传感器网络提出了一种带混沌映射的蜂群优化定位算法(CMABC).首先，采用 RSSI 模型获取目标节点与信标节点的测量值，以此为基础基于三面定位法计算目标节点初值集；然后，将混沌映射函数作为参数应用到初始解生成函数和寻优函数中；最后，采用改进的蜂群优化算法优化目标节点的位置.为了验证 CMABC 算法性能，进行了仿真实验.仿真结果表明，该算法在定位成功率和精度方面均优于人工蜂群算法、粒子群优化算法等定位算法.

关键词：三维无线传感器网络；定位；混沌映射；人工蜂群算法

Artificial bee colony optimization localization algorithm with chaotic map in three-dimensional wireless sensor networks

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Abstract：The localization ability of sensor nodes has a great impact on the performance of wireless sensor networks. To this, this paper proposes an artificial bee colony optimization localization algorithm (CMABC) with chaotic mapping in three-dimensional wireless sensor networks. First, the RSSI model is used to obtain the measured value of the target node and the beacon node. Based on the three plane location method, the initial set of target nodes is calculated. Then, several chaotic mapping functions are studied and used as initial solutions to generate functions and optimization functions. Finally, the improved artificial bee colony optimization algorithm is used to optimize the position of target nodes. In order to verify the performance of CMABC algorithm, a simulation experiment is carried out. The simulation results show that the algorithm is superior to artificial bee colony algorithm and particle swarm optimization algorithm in positioning success rate and accuracy.

Key words：three-dimensional wireless sensor network； location; chaotic map; artificial bee colony

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