基于人工鱼群与粒子群融合算法的 WMSN 覆盖优化研究

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摘　要： 采用人工鱼群与粒子群融合算法，解决无线多媒体传感器网络中，当节点随机部署时存在的能量利用率低和覆盖盲区的问题.该算法将快速收敛的人工鱼群算法与搜索效率高的粒子群算法结合起来运用到 WMSN 的覆盖中，首先用人工鱼群算法调整传感器节点分布，使节点分布均匀；其次用粒子群算法进行快速的局部搜索，调节传感器节点的位置和方向，使网络中的节点分布合理，以达到覆盖的最大化，弥补了人工鱼群算法后期收敛不足和粒子群过早陷入“早熟”的缺点.实验结果表明，该算法在提高覆盖性能优化中表现出优越性.

关键词： 无线多媒体传感器网络；覆盖优化；粒子群算法；人工鱼群算法

Wireless Multimedia Sensor Network Coverage Optimization Based on Ant Colony Algorithm and PSO Algorithm

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Abstract： To solve the problem of low energy utilization ratio and coverage blind area in the wireless multimedia sensor networks when nodes are randomly deployed ,An algorithm which fusion by artificial fish swarm algorithm and particle swarm optimization algorithm is proposed. This algorithm combines the fast convergence of the artificial fish swarm algorithm and the search efficiency of the particle swarm algorithm to apply to WMSN coverage. Firstly the artificial fish swarm algorithm is used to adjust the distribution of sensor nodes, so that the nodes are distributed evenly, then the particle swarm optimization algorithm is used to adjust the position and direction of the sensor nodes, so that the distribution of the nodes in the network is reasonable, so as to maximize the coverage of the sensor nodes,to make up for the lack of convergence of artificial fish school algorithm and the shortcomings of premature convergence of particle swarm. Experimental results show that the proposed algorithm is more advantageous in improving the performance of coverage optimization.

Key words： wireless multimedia sensor networks; coverage optimization; particle swarm optimization algorithm; artificial fish swarm algorithm

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