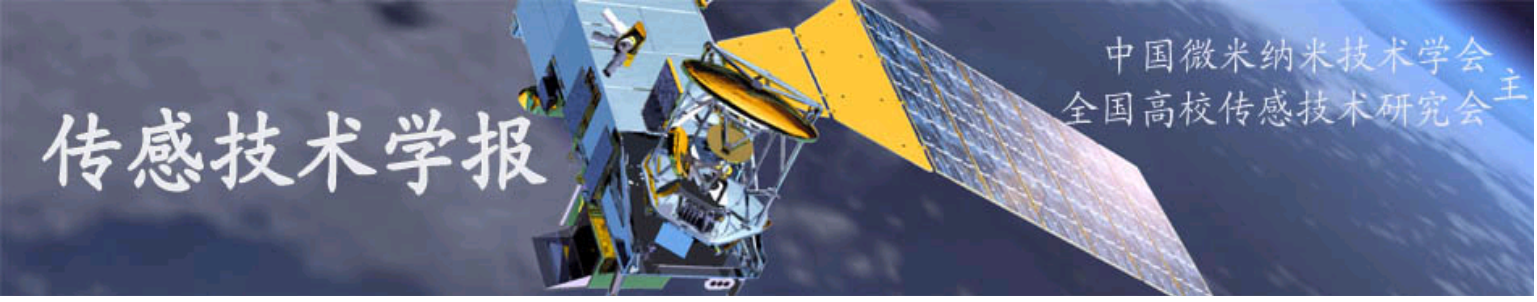

三维水下移动传感网多目标有向路径覆盖增强研究

作　者：张美燕, 蔡文郁, 周丽萍

单　位：杭州电子科技大学

基金项目：基于多尺度时空相关性的无线传感网自适应优化采样技术研究

摘　要：

针对水下传感器网络中对多个移动目标进行协同追踪的技术难题，本文提出了一种分布式的多目标有向路径覆盖增强算法。假设水下传感器节点移动规律遵从ndering Current Mobility模型，多个运动目标沿着基于概率的Random Walk移动模型轨迹运动，覆盖运动路径的传感器节点通过在两跳邻居节点范围内协同决策度决定自身的有向覆盖方向，达到多目标轨迹路径有向覆盖率平均值最大，并使多目标轨迹路径有向覆盖率标准方差尽量小。最后通过仿真验证了本文提出分覆盖增强算法的有效性，能够显著提高目标移动路径的覆盖率。

关键词：水下传感网; 有向覆盖; 目标追踪; 移动传感网; 三维传感网

Research on Directional Path Coverage Enhancement of Multiple Objects in 3D Underwater Mobile Sensor Networks

Author's Name:

Institution:

Abstract:

Collaborative tracking of multiple moving targets in mobile 3D underwater sensor networks remains to be a conundrum, therefore, this paper presents a distributed multi-target path coverage enhancement algorithm to be directed against above problem. In our mobile 3D underwater sensor networks model, underwater sensor nodes and detective targets are assumed to be mobile. The movement law of underwater sensor nodes and multiple moving targets comply with Meandering Current Mobility mode and Random Walk mobility model based on probability respectively. In our algorithm, the maximal average coverage ratio of multi-target trajectory paths is achieved by tl collaborative decision-making of coverage directions within the two-hop neighbor nodes, moreover, the coverage ratio standard deviation of different target trajectory pa remains to be as small as possible. Finally, the effectiveness of distributed coverage enhancement algorithm is verified by simulation and the results proved significantly improvement of multi-target path coverage ratio.

Keywords: underwater sensor networks; directional coverage; objects tracking; mobile sensor networks; 3D sensor networks

投稿时间：**2013-07-10**