基于聚类特征自适应机制的无线传感网异常节点检测算法

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摘　要：提出了一种基于聚类特征自适应机制的无线传感网节点检测算法.首先，基于节点聚类特征自适应机制，通过特征采样，不断获取异常节点的路由信息、链路抖动率以及数据分组传输率等关键参数信息，从而计算节点特征值，并联合矢量内积对异常节点进行识别，提高对异常节点的感知能力；随后，采用分区聚类，对可能的疑似异常节点进行聚合提纯，降低网络对正常节点的误判，提高了异常节点的检出效率；最后，定义异常节点检举规则，通过对分区进行筛选，有效降低了正常节点出现在异常节点集合中的概率，从而提高了算法对异常节点的搜寻效率.与当前 PSO 算法、SDR 算法相比，此算法具有更高的异常节点检出率与更低的数据传输时延，能够有效避免异常节点对传输数据的篡改.

关键词：无线传感网络；关键特征参数；节点聚类；聚类特征自适应机制; 异常节点检举规则

Anomaly Node Searching Algorithm of Wireless Sensor Networks

Based on Adaptive Mechanism of Clustering Feature

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Abstract：This paper presents a method based on the clustering of the abnormal nodes report mechanism of networking malicious behavior selection algorithm. On the basis of node clustering analysis, through the feature sampling construction characteristics of the node values, and according to the actual situation taken to increase the key characteristic parameters of malicious node behavior to carry on the accurate localization; then constructs the cluster mechanism, take the clustering partition continue to suspected nodes aggregate, to further reduce the misjudgment; rules for the prosecution of the definition of malicious nodes, the partition selection further reduces the normal nodes appear in the malicious node in the collection probability and improve the algorithm's perception of malicious nodes. Simulation results show that compared with the commonly used PSO algorithm and the SDR algorithm, the algorithm of the malicious node detection rate, and can effectively avoid tampering of malicious nodes to transmit data, has a strong practical value.

Key words：wireless sensor networks; key characteristic parameters; node clustering; clustering aggregation mechanism; abnormal node reporting rules

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