

EAACM: ENHANCED ACK AWARE CLUSTERING MECHANISM FOR ENERGY EFFICIENT AND SECURE ROUTING IN WIRELESS SENSOR NETWORKS

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ABSTRACT

Wireless Sensor Network (WSN) is an emerging and very interesting technology applied to different applications. They are formed by little, self-deciding sensors that cooperate to form a large scale network with thousands of nodes covering a large area. Clustering the sensor nodes is an effective technique for achieve the energy efficiency of the network. Current clustering schemes utilize the two Passive Clustering schemes that create a hierarchical control structure for the clusters in the Wireless Sensor Networks; selecting the cluster heads with more residual energy, and rotating the cluster heads periodically to distribute the energy consumption among nodes in each cluster and prolong the network lifetime. The proposed system is Enhanced ACK Aware Clustering mechanism, called EAACM, to provide persistent routing path in Wireless Sensor Networks.

The EAACM introduces the Predicted Routing Path to assist in constructing the cluster head and gateway nodes. By determining the suitable Predicted Routing Path of the nodes in the cluster, the energy efficiency of the routing path will be increased, and by using the enhanced channel aware technique called ACKnowledgement Aware Detection for secure routing. An AAD uses the passive malicious node detection method, by measuring the time occurrence of ACK packets that are received by the source node. EAACM proposes the suitable efficient path for the ACK packet that increases the Energy-Efficiency and Secure-Routing by using ACK Aware Detection in Wireless Sensor Network. In AAD the ACK packet is sent after every node routing and also CH routing. If the ACK packet is delayed by the predefined time then the node is considered to be the malicious node and also that node will be avoided when routing. In case of the CH malicious node the next CH node will be elected according to the possible node from another possible route using the path provided by the PRP.

KEYWORDS: Wireless Sensor Network, Clustering Mechanism, Secure-Routing, Energy-Efficient Routing