

Routing and Energy Efficiency through Data Coupled Clustering in Large Scale Wireless Sensor Networks (WSNs)

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Abstract : A typical wireless sensor networks (WSNs) consists of several tiny and low-power sensors which use radio frequency to perform distributed sensing tasks. The longevity of wireless sensor networks (WSNs) is a major issue that impacts the application of such networks. While routing protocols are striving to save energy by acting on sensor nodes, recent studies show that network lifetime can be enhanced by further involving sink mobility. A common approach for energy efficiency is partitioning the network into clusters with correlated data, where the representative nodes simply transmit or average measurements inside the cluster. In this paper, we propose an energy- efficient homogenous clustering (EHC) technique. In this technique, the decision of each sensor is based on their residual energy and an estimate of how many of its neighboring cluster heads (CHs) will benefit from it being a CH. We, also explore the routing algorithm in clustered WSNs. We show that the proposed schemes significantly outperform current approaches in terms of packet delay, hop count and energy consumption of WSNs.

Keywords : wireless sensor network, energy efficiency, clustering, routing

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