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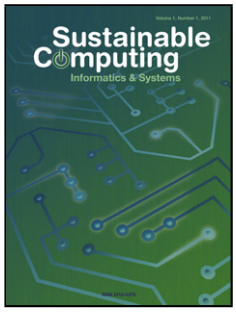

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Adaptive Energy-Efficient Clustering Path Planning Routing Protocols for Heterogeneous Wireless Sensor Networks

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Abstract

Centralized clustering routing schemes promise significant network stability by centralized energy-efficient path planning that prominently share computational burden of monitoring devices of Wireless Sensor Networks (WSNs). Scalability and adaptiveness of WSNs present vital challenges for researchers to design a power-aware, well-organized routing schemes that can maintain centralized routing decisions and distributed data forwarding. Investigations on central cluster formation acknowledge the fact that higher computational and energy resources of Base Station (BS) are still required in specific network conditions and need more careful path planning to generalized their performance validity. In this paper, we propose two energy-efficient path planning routing protocols for three level heterogeneous WSNs namely, Two-Hop heterogeneity-aware Centralized Energy Efficient Clustering (THCEEC) and Advanced heterogeneity-aware CEEC (ACEEC). Both of these protocols are derived from Centralized Energy Efficient Clustering (CEEC) in different manner to deal with the fluctuation of network deployments and adoptive transmission range of WSNs. BS utilizes algorithms of THCEEC and ACEEC routing protocol to identify the suitable Cluster-Heads (CHs) by considering initial energy, residual energy, regional flag,

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