Paper Summary by (1907121)

Problem: Energy-Efficient Routing in Wireless Sensor Networks

Low-Energy Adaptive Clustering Hierarchy Using Affinity Propagation for Wireless Sensor Networks: The letter introduces a new protocol called LEACH-AP for wireless sensor networks. It simplifies network functionalities, reduces sensor hardware costs, and improves energy efficiency. Using a fully distributed cluster formation based on affinity propagation, LEACH-AP outperforms existing LEACH-based protocols in network lifetime, energy dissipation rate, and total number of transferred bits. Its distributed algorithm uses a factor graph representation for cluster formation, ensuring efficient clustering and energy minimization while minimizing computational burden. LEACH-AP shows potential for practical deployment in real-world WSN applications and contributes to advancements in wireless sensor technology.

PEGASIS: Power-Efficient Gathering in Sensor Information Systems: The paper "PEGASIS" proposes a protocol for energy-efficient data gathering in sensor networks. PEGASIS is compared to existing LEACH protocol and outperforms it by 100% to 300%. The protocol is chain-based where each node communicates with its neighbor and takes turns transmitting to the base station, reducing energy expenditure per round. The paper outlines the radio model, energy cost analysis, and implementation details of PEGASIS. Experimental results show a significant improvement in system lifetime and network quality compared to LEACH.

EECS An Energy Efficient Clustering Scheme in Wireless Sensor Networks: This paper introduces the Energy Efficient Clustering Scheme (EECS) for wireless sensor networks (WSNs). EECS uses clustering to enhance network scalability and prolong its lifetime, with innovative approaches for cluster head election based on residual energy and load balancing using a weighted function. Through analysis and simulations, EECS exhibits better performance than existing protocols like LEACH, resulting in significant improvements in network lifetime and energy efficiency.