# SIMULATION AND ANALYSIS OF IMPROVING LOW-ENERGY ADAPTIVE CLUSTERING HIERARCHY (LEACH)

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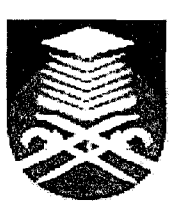

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# ABSTRACT

Wireless sensor networks may contain hundreds or thousands of sensor nodes equipped with sensing, computing and communication abilities. Each node has the ability to sense elements within its environment, perform simple computations, and communicate among nodes or directly to a base station. A sensor node is equipped with a limited energy source and hence has a lifetime that is dependant on that source. Power consumption for sensor node consists of sensing, processing and communication. The limited available energy of sensor nodes is mainly drained during communication and computational processing.

The sensors nodes in sensor networks have limited energy and thus energy-preserving techniques are important. Throughout this study, there are three conventional routing protocols being analysed, which are Communication (DC), Minimum Transmission Energy (MTE) and Low Energy Adaptive Clustering Hierarchy (LEACH). DC is direct communication or one hop while MTE is multi hop communication whereas LEACH constructs cluster base on radio range and the number of cluster members. LEACH technique improves energy efficiency of the sensor network by selecting a cluster head, and having it aggregate data from other nodes in its cluster and transmit it to the base station. LEACH uses randomized rotation of the cluster-heads to evenly distribute the energy load among the sensor nodes in a network. Based on simulation, it shows that LEACH is the most energy efficient routing protocol compared to DC and MTE.

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