Fuzzy logic based energy efficient protocol in wireless sensor networks

Abstract

Wireless sensor networks (WSNs) have been vast ly developed due to the advances in microelectromechanical systems (MEMS) using WSN to study and monitor the environment s towards climates changes. In environment al monitoring, sensors are randomly deployed over the interest area to periodically sense the physical environment s for a few months or even a year. Therefore, to prolong the network lifetime with limited battery capacity becomes a challenging issue. Low energy adaptive cluster hierarchical (LEACH) is the common clustering protocol that aim to reduce the energy consumption by rotating the heavy workload cluster heads (CHs). The CHs election in LEACH is based on probability model which will lead to inefficient in energy consumption due to least desired CHs location in the network. In WSNs , the CH s location can directly influence the network energy consumption and further affect the network lifetime. In this paper , factors which will affect the network lifetime will be presented and the demonstration of fuzzy logic based CH selection conducted in base station (BS) will al so be carried out . To select suitable CHs that will prolong the network first node dies (FND) round and consistent throughput to the BS, energy level and distance to the BS are selected as fuzzy inputs.