Abstract

In this paper, an Enhanced Threshold Sensitive Stable Election Protocol using Fuzzy Logic (ETSSEPFL) is proposed to prolong the lifespan of heterogeneous wireless sensor networks (HWSNs). It improves existing SEP and TSEP protocols by using a fuzzy logic expert system which intelligently assigns cluster heads (CHs) which lead to energy efficient HWSN. The focus is on two linguistic variables for the design of a fuzzy expert system, which include residual energy and distance to a base station (BS). The simulation results of this research are compared with SEP and TSEP protocols to evaluate the performance of the proposed routing protocol. The evaluation concludes that the proposed routing protocol is better in prolonging network lifetime, increasing stability period and throughput. ETSSEPFL builds a more stable routing environment as compared to SEP and TSEP.

References


Index Terms

Computer Science
Fuzzy Systems
Keywords

Wireless sensor networks, clustering, threshold sensitive stable election protocol, fuzzy logic.