International J. of Engg. Research & Indu. Appls. (IJERIA).
ISSN 0974-1518, Vol.7, No. II (May 2014), pp. 127-140

AN EFFICIENT ROUTING METHOD TO IMPROVE PERFORMANCE OF WSN USING A-STAR ALGORITHM AND FUZZY APPROACH

KIRAN NAPTE[1] AND S. S. SONAVANE[2]
[1] E& TC Department, Dr.D.Y.Patil School of Engg, Pune, India.
[2] Director, D. Y. Patil Technical Campus, Pune, India.

Abstract

Energy conservation is a critical problem in wireless sensor networks (WSNs) so that the energy consumption must be minimized while satisfying application requirements. Distributing energy dissipation evenly throughout the sensors and saving energy are important goals in designing of WSN protocol. Resource limitations have to be taken into account when designing a WSN infrastructure. Unbalanced energy consumption is an inherent problem in WSNs, characterized by multihop routing and a many-to-one traffics pattern. This uneven energy dissipation can significantly reduce network lifetime. This paper shows the implementation of algorithm having combination of fuzzy approach and A-star algorithm. It shows the comparison of new method with existing methodologies. While approaching we must consider some criteria like remaining battery power of each node, minimum number of nodes in routing path, minimum traffic load. To demonstrate the effectiveness of the new method in terms of balancing energy consumption, maximization of network lifetime and various parameters of WSN, we compare our approach with the A-star search algorithm and fuzzy approach using the same routing criteria. Simulation results demonstrate that the network lifetime and improvement in performance of parameter achieved by the new method increased to considerable extent.

Keywords : Wireless sensor Network, network lifetime, A star algorithm, fuzzy approach.