AN EFFICIENT MULTIPATH ROUTING ALGORITHM IN WIRELESS SENSOR NETWORKS

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ABSTRACT
A wireless sensor network (WSN) is made of dispersed self-governing sensors which are used to perform many critical tasks such as the monitoring of environments, military operations, medicals, cars, traffic managements. The work of WSN entails, every single sensor node is assigned a precise role to detect events, collection of data or information, and transmit the data to the sink node. Owing to the short transmission range among the sensor nodes, multi-hop is the key elements used to transmit the packets to the sink node therefore several intermediate nodes are used in-between to forward packets to the destination, base station or sink node. Research over the years have proven multi-path routing technique are the prefer choice being promoted for use in WSN not only because its capability to boost network performance by way of proficient utilization network resources, data reliability, security and load balancing but also it is dynamic and various procedure can be applied to enhance efficient consumption of resources such as Directed diffusion (DD) and Geographic Adaptive Fidelity (GAF). One of WSN key setback is its limited energy supply, so energy efficiency is of prime importance to the network, because distribution of data among the nodes might be curtailed when deplete their energy source and thereby cannot forward packets even to the shortest paths of the nodes. Another issue also emanated from the routing protocols using the single path algorithm to transmit data from source nodes to sink node which cannot operate at optimal levels because sink node does not receive adequate knowledge about the general nodes route conditions to make the most favourably judgments. Secondly, single path routes are known to pointlessly put strains on the sensor nodes by depleting the nodes energy supply at a quicker rate because of the same optimal path being re-used many times, so nodes disconnections are rampant. Further multi-path routing needs further multi-path algorithm enhancement and substitute routes path because most of the current routing protocols does so at extra overhead cost namely Route Setup time (RST), Amount of traffic (TF), Average path length (Plen), Average delay (Delay). The focal purpose of the research therefore is to emphasize multi-path routing procedures in WSN, and how the technique can assist in overall utilization of network resources in terms of performing metrics such as energy efficiency, lifetime (LFT), loading balancing (LB), reliability, packet delivery rate (DPR), number of paths (NOP) and a new proposed routing algorithm that can broadcast information through multiple paths to facilitate the achievements of the desired utilization performances. The methodology will be based on quantitative research because of the prudent need to compare and contrast the various current multi-path routing algorithms being used for WSN and also additionally information from journals, and research papers. The expected results based on the proposed multi-path routing algorithm for WSN and the analyzed from the derived results.