International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 07 Issue: 04 | April - 2023 Impact Factor: 8.176 ISSN: 2582-3930

PROTOCOL TO OPTIMIZE NETWORK LIFETIME USING WSN

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ABSTRACT:

This paper investigates the problem of energy consumption in wireless sensor networks. Wireless sensor nodes deployed in harsh environment where the conditions change drastically suffer from sudden changes in link quality and node status. The end-to-end delay of each sensor node varies due to the variation of link quality and node status. On the other hand, the sensor nodes are supplied with limited energy and it is a great concern to extend the network lifetime. To cope with those problems, this paper proposes a novel and simple routing metric, predicted remaining deliveries (PRD), combining parameters, including the residual energy, link quality, end-to-end delay, and distance together to achieve better network performance. PRD assigns weights to individual links as well as end-to-end delay, so as to reflect the node status in the long run of the network. Large-scale simulation results demonstrate that PRD performs better than the widely used ETX metric as well as other two metrics devised recently in terms of energy consumption and end-to-end delay, while guaranteeing packet delivery ratio.

Key words:- Wireless Sensor Network (WSN), EESAA, Pairwis, Clustering, Sleep, Awake.

INTRODUCTION:

WIRELESS sensor networks have attracted great attention due to their various potential applications in the area of forest fire detection, transportation, and industrial automation, etc. Generally, sensor nodes are deployed in a specific region and cannot move after deployed. The main task of the sensor nodes is to periodically sense the environment and transmit the information to the data center known as the sink. Sensor nodes are usually battery-powered, and it is difficult to replace or recharge the battery. Due to the limited energy, sensor nodes drain their energy quickly, leading to the sensing area uncovered. Therefore, energy conservation becomes a critical concern in WSNs. In recent years, many energy-efficient techniques for wireless sensor networks have been developed to extend the network lifetime, including duty-cycle

scheduling, medium access control techniques and compressive sensing. Previous studies demonstrate that the communication consumes most of the energy, and transmitting information takes about two thirds of its total energy consumption, while the count of transmissions depends to a great extent on the routing strategy. In other words, an energy efficient routing protocol helps extraordinarily to save energy and extend the network lifetime. On the other hand, many applications such as WSNs used in the fire alarm systems are delay sensitive.

EXISTING SYSTEM:

- Previous studies demonstrate that the communication consumes most of the energy, and transmitting information takes about two thirds of its total energy consumption, while the count of transmissions depends to a great extent on the routing strategy.
- In other words, an energy efficient routing protocol helps extraordinarily to save energy and extend the network lifetime. ETX and ETT are widely used in real WSNs.
- ETX reflects the expected transmission counts including retransmissions needed for a packet to reach its destination, whereas ETT is the expected transmission time of a packet over the link related to the bandwidth and the packet length. Basically, ETX captures the link quality of a routing path and helps to choose a path with the best link quality, whereas ETT captures the end-to-end delay of a routing path and serves to select a path with the shortest end-to-end delay.

DRAWBACKS:

- Designing such a routing metric poses several challenges.
- Challenge is how to combine several factors together into the metric so as to achieve a better performance.
- Last challenge is to balance the energy consumption among the sensor nodes so as to prolong the lifetime of each sensor node. Sensor nodes with low energy die quickly if the energy consumption is unbalanced, leading to a short lifetime and poor network performance.

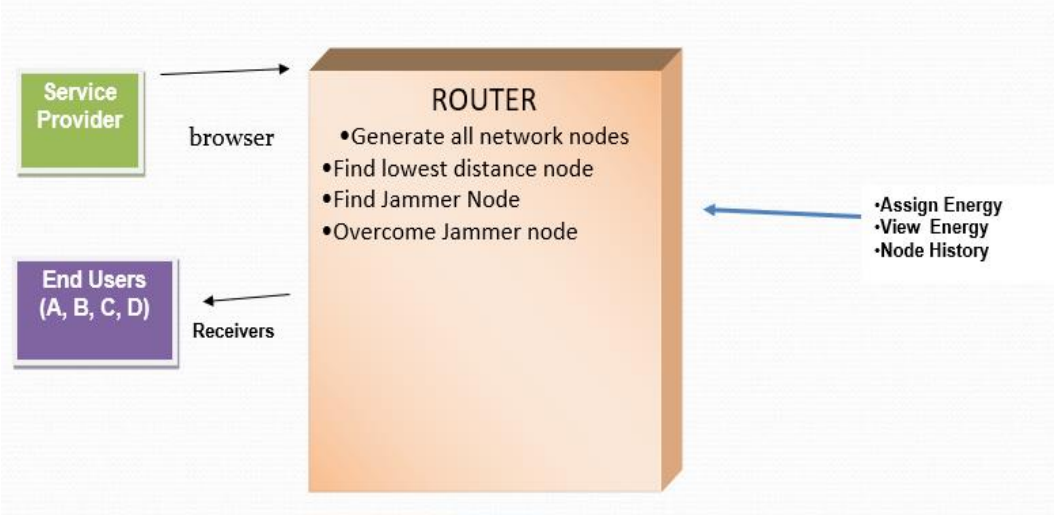
PROPOSED METHOD:

- This paper focuses on the routing metric design for the applications of WSNs where the environment changes drastically, e.g. the intertidal environment. Our experiments of a WSN system deployed in the intertidal environment exhibit long end-to-end delay and unbalanced energy consumption among sensor nodes
- To overcome those challenges, we propose a novel design of the routing metric combining the link quality, the residual energy, the distances and the end-to-end delay.
- The main contributions of this paper are summarized as follows.
- We introduce *Predicted Remaining Deliveries* (PRD), a novel link and delay aware routing metric for WSNs with harsh environment such as intertidal environment.
- We analyse the properties of the proposed metric and demonstrate that it is guaranteed to find the lightest paths, and it is loop-free and consistent, when applied with hop-by-hop routing.
- We analyse the average energy consumption of sensor nodes related to their average distance to the sink and give a closed form of the average energy consumption, which can give an instruction for the design of a real WSN.

ADVANTAGES:

- The system is implemented based on Link-delay aware techniques.
- No Packet Drops

SYSTEM ARCHITECTURE:



IMPLEMENTATION:

The service provider will browse the data file path and then send to the particular receivers. Service provider will send their data file to wireless router and router will connect to networks, in a network smallest distance sensor node will be activated and send to particular receiver (A, B, C…). And if any jammer node will found, then service provider will reassign the energy for sensor node.

CONCLUSION:

This paper proposes a novel link-delay aware energy efficient routing metric called PRD for the routing path selection tailored for WSNs deployed in harsh environments, where the networks are exposed to extremely long end-to-end delay and unbalanced energy consumption among sensor nodes. PRD captures the *predicted remaining deliveries* within one unit of delay, which reflects the ability of each sensor node to forward packets. PRD also takes the end-to-end delay into consideration. The main purposes of PRD are to balance the energy consumption of the sensor nodes and extend the network lifetime, as well as controlling the end-to-end delay. Large-scale simulations are conducted to evaluate the performance of PRD. The results indicate that PRD outperforms traditional metrics such as ETX, EFW and PTX in terms of end-to-end delay, energy consumption and network life time performance, while guaranteeing high packet delivery ratio. Therefore we can conclude that the proposed PRD metric can be an effective and efficient solution to choose appropriate routing paths for WSNs deployed in harsh environments.

detecting the facial conduct per every unit of face measures as a sub part of facial action rendering system.

Emotion recognition is the subject which can be used to determine their possibleanti-social motives. To understand the significance of Speech emotion & facial expression and how it's important for emotion discovery. Emotion discovery from our design has vast study for farther unborn exploration and development. Emotion modeling has an intriguing part in the coming generation mortal machine interactive systems.

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