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A Review of Duty-Cycling for Flooding in Wireless Sensor network to Improve Energy Optimization

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ABSTRACT
Numerous mechanisms are employed to optimize energy consumption, such as optimizing the sensing coverage and the network topology, controlling the transmission power, and notably duty-cycling. Given that the most amount of energy is supposed to be devoted to communication, duty-cycling the radio is the most relevant technique to achieve power efficiency. In this paper we review the energy consumption, delay aware optimization techniques in synchronous duty cycled wireless sensor network.

Keywords:- Wireless Sensor network (WSN), Clustering, Duty-Cycling, Quality of Services (QOS), Medium Access Control (MAC), Energy-Efficient.

INTRODUCTION
Wireless Sensor Networks (WSNs) , a type of physical monitoring system, consist of a self-organized and linked sensors widely dispersed in a coverage area. The collection, communication, and treatment of sensed information among various sensors is achieved through specific communication protocols, and the data is transmitted via multi-hop routing to the sink.

A common characteristic of many WSN application scenarios is that sensor nodes are deployed to just monitor the environment and relay (preprocessed) data to a sink node for further processing. In particular, when sensor nodes detect a significant effect, they are not expected to respond themselves. The prime reason being that often some physical action is required like sounding an alarm, adjusting some valves, or stopping an intruder, which would drain the batteries and increase the form factor significantly.

The rest of this paper is organized as follows in section II we discuss about the rich literature survey for the existing Wireless Sensor Network techniques to improve energy and Quality of Services and improve the performance in terms of delay and other techniques used in wireless sensor networks, here we also describe the about comparative study in a table no. 1. And finally in section III we define the overall summary with conclusion of this study and review paper.

II COMPARATIVE STUDY ANALYSIS

Sr. No.	Ref No.	Author Name	Publication	Year	Title	Objective of paper
1.	[1]	Shaobo Wu, Jianwei Niu, Wusheng Chou, Mohsen	IEEE TRANSACTIONS	2016	Delay-Aware Energy Optimization for Flooding in Duty-Cycled	This paper proposes a delay-aware energy-optimized flooding algorithm (DEF) tailored for synchronous duty-cycled WSNs, which can act as an enhanced scheme for most flooding trees.

		Guizani			Wireless Sensor Networks	
2.	[4]	KOEN LANGENDOEN	Book Chapter, Delft University of Technology	2007	Medium Access Control In Wireless Sensor Networks	This chapter provides a broad overview of the MAC protocols especially developed for sensor networks. These MAC protocols differ from typical WLAN access protocols in that they trade off performance (latency and throughput) for a reduction in energy consumption to maximize the lifetime of the network.
3.	[7]	Yanchao Zhau, Wei Liu, Wenjing Lou, Yuguang Fang	IEEE	2006	Location-Based Compromise-Tolerant Security Mechanisms for Wireless Sensor Networks	propose the notion of location-based keys (LBKs) by binding private keys of individual nodes to both their IDs and geographic locations. They then develop an LBK-based neighborhood authentication scheme to localize the impact of compromised nodes to their vicinity.
4.	[6]	Nessrine Chakchouk	IEEE COMMUNICATION SURVEYS & TUTORIALS	2015	A Survey on Opportunistic Routing in Wireless Communication Networks	They provide a comprehensive survey of the existing literature related to opportunistic routing. They first study the main design building blocks of opportunistic routing. Then, they provide a taxonomy for opportunistic routing proposals, based on their routing objectives.
5.	[2]	Guodong Sun, Bin Xu	WASA	2010	Dynamic Routing Algorithm for Priority Guarantee in Low Duty-Cycled Wireless Sensor Networks	In this paper, they propose a Dynamic Routing Algorithm for priority Guarantee(called DRAG) in low duty-cycled sensor networks. Both schemes of dynamic forwarding decision making and priority-based schedule are used in DRAG to achieve priority guarantee in low duty-cycled sensor networks.
6.	[5]	Journal of Network and Computer Applications	IEEE	2016	Routing in wireless multimedia sensor networks: A survey and challenges ahead	This paper begins with the challenges and requirements in the design of WMSN routing, followed by an exhaustive survey on routing from the perspective of application requirements and key techniques. The existing routing solutions are classified into below major categories based on their design and optimization objectives, i.e., QoS provisioning, multimedia awareness, energy efficiency etc.
		Jinfang Jiang, Guangjie Han, Hui Guo, Lei Shu,	Journal of Network and Computer	2015	Geographic multipath routing based on geospatial	They propose two novel multi-path strategies called Greedy Geographic Forwarding based on Geospatial Division (GGFGD) and Geographic Forwarding based on Geospatial

7.	[10]	Joel J.P.C Rodrigues	Applications, Elsevier ltd.		division in duty-cycled underwater wireless sensor networks	Division (GFGD). The proposed two algorithms mainly consist of two phases, choosing the next target small cube, and choosing the next hop node in the target small cube.
8.	[3]	Messaoud Doudou, Djamel Djenouri, and Nadjib Badache	IEEE	2013	Survey on Latency Issues of Asynchronous MAC Protocols in Delay-Sensitive Wireless Sensor Networks	This paper reviews current asynchronous WSN MAC protocols. Its main contribution is to study these protocols from the delay efficiency perspective, and to investigate on their latency. The asynchronous protocols are divided into different categories: static wake-up preamble, adaptive wake-up preamble, collaborative schedule setting, collisions resolution etc.
9.	[11]	Oswald Jumira , Riaan Wolhuter, Sherali Zeadally	John Wiley & Sons, Ltd.,	2012	Energy-efficient beaconless geographic routing in energy harvested wireless sensor networks	In the paper they presented in detail an online geographic routing scheme called EBGRES, which can provide fully stateless, energy-efficient source-to-sink, and scalable routing approach that has communication overheads without the need to maintain neighborhood information with perpetual energy supply.
10.	[9]	Dan Chen , Zhixin Liu, Lizhe Wang, Minggang Dou, Jingying Chen, Hui Li	Springer	2013	Natural Disaster Monitoring with Wireless Sensor Networks: A Case Study of Data-intensive Applications upon Low-Cost Scalable Systems	In this study, they emphasized improving utility of net-work and minimizing the energy consumption as far as the harsh environment the system designed for is concerned. A distributed algorithm for joint optimal control of power and rate has been developed. In wireless sensor networks, network throughput and energy consumption are two important and contradictive specifications in protocol design.

Table 1: Shows the comparative study of Duty-Cycling in Wireless Sensor network Techniques to improve energy efficiency and Quality of Services issues and Challanges.

III CONCLUSION

Recent years have witnessed a huge interest in monitor-ing and management of natural disasters using the wireless sensor network technology from researchers and government agencies, In this study presents the survey of various research papers on wireless sensor network field for duty-cycling to improve the performance of system relates to power consumption, energy efficiency, minimum delay and improve the throughput.

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