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Brief Performance Analysis of Routing Protocols

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Abstract: ***Routing in Wireless Sensor Networks (WSNs) plays an important role in areas such as environment-oriented surveillance and traffic monitoring. Here we have explored the large contribution of routing to WSNs. This paper is primarily intended to categorize routing issues and investigate optimization issues related to routing. The following describes various features related to routing energy, security, speed, and reliability issues. The documentation is then analyzed for simulated environments and test configurations, knowledge of quality of service (QoS) and implementations in various applications..***
Keywords: Wireless Sensor Networks; reliability, energy-efficient data communication; energy management; energy enviorment

I. INTRODUCTION

In WSN, routing is a very important task that is to be handled carefully. Routing technique is needed for sending the data between the sensor nodes and the base stations, so as to establish communication. The main criterion, which is focused in this paper, is about the routing protocol that varies based on the application. The routing problem leads to decreased network lifetime with increased energy consumption. So, various routing protocols have been developed to minimize the energy consumption and to maximize the network lifetime. The routing protocols can be categorized based on the nodes' participation, clustering protocols, mode of functioning and network structure. The various challenges in routing include energy consumption, node deployment, scalability, connectivity, coverage, security. Fig. 1 explains the routing protocol of the wireless sensor networks.

II. LITERATURE REVIEW

In 2015, 2% of works are done in the field of routing, which is comparatively % higher than the works that are done in the consecutive years 2008, 2009, 2011 and 2012. About 8% works are done in 201 and 2016. The predicted data represent the recent research and developments in the field of routing in wireless sensor networks. The routing protocols have been developed to face the challenges, which are caused due to the features such as energy, security, delay and error. The protocol that imparts energy efficiency has been developed more in number than the other featured protocols and it has peaked 38. 6% in 2015. The percentage of works that pertain to the development of security based routing protocols has been found to double every year, since 2013. Further, the number of delay less protocols that has been developed from 2011 onward is found to exhibit a constant percentage of 6.67%, except for the year 2015. The interest shown toward developing a reliable protocol has dropped in 2012. However, the demand for error free protocols has risen to about 50% in 2015. And till now routing protocol are the advanced topic of research.

III. ENERGY EFFICIENT ROUTING

In 2008, Wang et al. [1] have developed a multi layer routing scheme to optimize routing in Distributed Source coding (DSC). The network performance was enhanced by energy scheduling, which satisfies the end to end transmission rate. In addition, they have also proposed the energy usage scheduling concept for efficient energy optimization.
Phan et al. [2] have worked on the joint crosslayer optimization method for efficient routing and energy distribution to meet the QoS requirements. They have found that the optimization problem equals the twostep convex problem and the problem of increasing the network lifetime is quasiconvex. In 2007, Baek and Veciana [9] have focussed on the tradeoff optimization problem to achieve energy efficiency in ad hoc network systems. The tradeoff optimization is done between the improved spatial balance of energy burdens and the energy cost of spreading traffic. Further, multipath routing was found to minimize the probability of energy loss. Guha et al. [11] have examined poweraware routing schemes in wireless networks to propose a fair coalition routing algorithm.

IV. DELAYLESS PROTOCOLS

In 2011, Basan and Jaseemuddin [3] have considered both the operations of the underlying directional MAC protocols and the physical interference to develop a colour conflict graph abstraction. The developed model renders a framework to analyze the wireless link conflicts by evaluating the end to end delay transmission. In 2012, Dai et al. [2] have proposed a QoS routing algorithm to send the visual information with quality of service. A correlation aware inter node differential coding scheme was introduced to minimize the traffic hub and the average delay in different source coding is studied. In 2013, Chen and Shen [18] have worked on the routing schemes in delay tolerant networks and developed an inter landmark data routing algorithm, called

DTNFLOW. In 2011 , Cheng et al. [1] have developed an efficient QoS aware geographic opportunistic routing scheme for the wireless sensor networks. In terms of latency, the protocol has organized the prioritized sets. In 2015, Tang et al. [5] have studied the routing algorithm of network on chip and introduced a novel metric, known as routing pressure, for evaluating the performance of the routing method. The traditional methods use degree of adaptiveness as the metric measure, but it imparts very less performance. So, the new metric measure that has the capacity to predict congestion has been introduced. Jie et al. [15] have addressed the issue in the publishing or the subscriber system and proposed a novel algorithm, known as Hierarchy hybrid routing scheme. The proposed scheme was able to deliver the local publication to the core domain and solves the issue in remote publication routing into the edge domain, allowing the objects to be routed aptly to the subscribers. Zhang and Dong [19] have examined few issues in routing such as the delay in transmission and proposed a bypassing void routing protocol. The whole theory was dependent upon the virtual coordinates to prevent the void problem

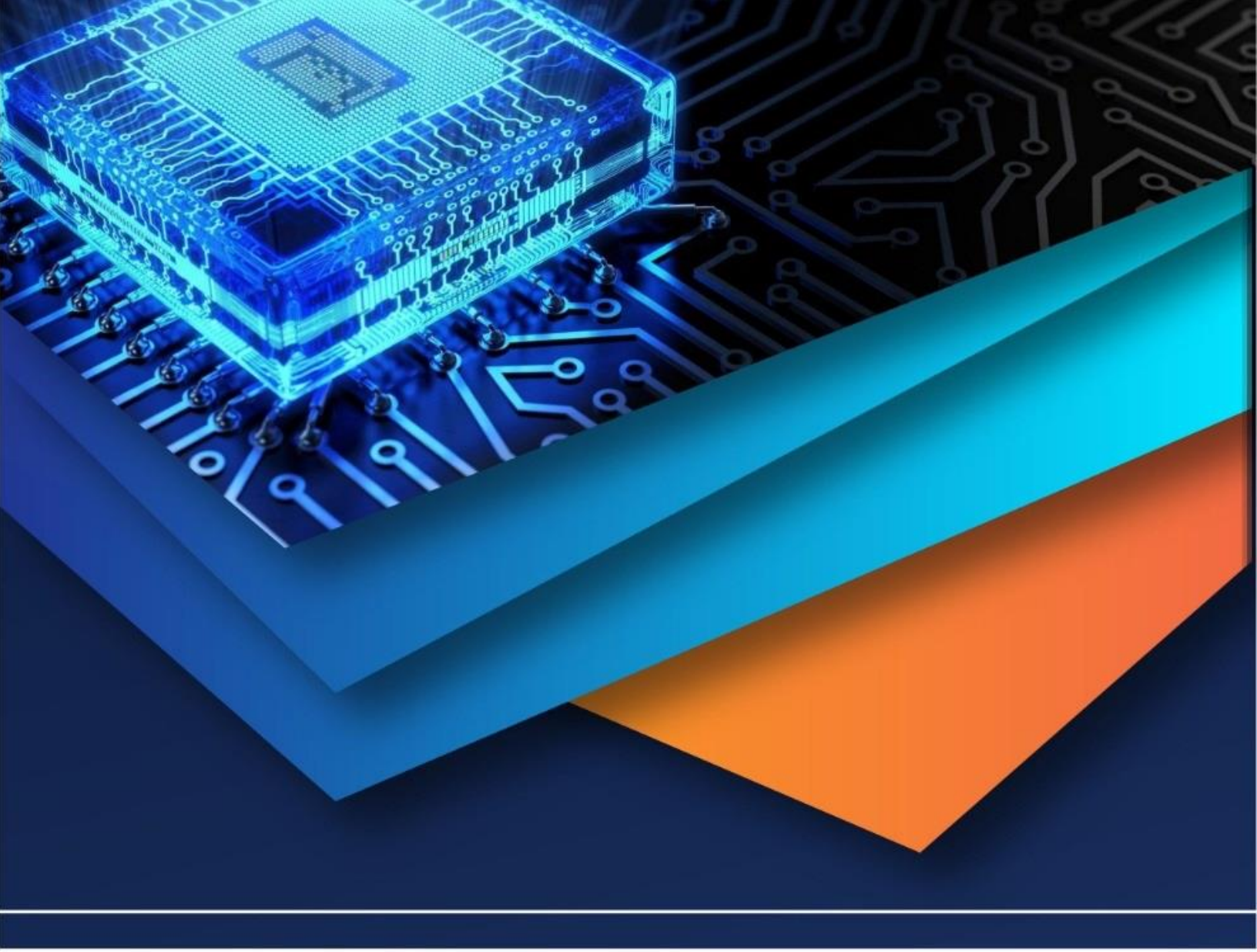
V. CONCLUSION

In this paper, we have discussed the overview on routing protocls (its ,features, advantages, disadvantages), Routing protocol, Wireless network and security with the concept of data transfer, in the paper, in which we get to know about what is different protocols its survey how important it is and how it has been used and the issues that should kept in mind for the betterment of a reliable and comfortable result. Too, considered security with their goals and attacks and From all we can conclude that routing is a swift developing and dynamic field with a vast scope of research work in this field.

REFERENCES

[1] Akyildiz, I.F.; Weilian, S.; Sankarasubramaniam, Y.; Cayirci, E. A survey on sensor networks. IEEE Commun. Mag. 2002, 40, 102–114. [CrossRef]
[2] Anastasi, G.; Conti, M.; Di Francesco, M.; Passarella, A. Energy conservation in wireless sensor networks: A survey. Ad Hoc Netw. 2009, 7, 537–568. [CrossRef]
[3] Raghunathan, V.; Schurgers, C.; Park, S.; Srivastava, M. Energy-aware wireless microsensor networks. IEEE Signal Process. Mag. 2002, 19, 40–50. [CrossRef]
[4] Chowdhury, S.; Hossain, A. Different Energy Saving Schemes in Wireless Sensor Networks: A Survey. Wirel. Pers. Commun. 2020, 114, 2043–2062. [CrossRef]
[5] Singh, J.; Kaur, R.; Singh, D. A survey and taxonomy on energy management schemes in wireless sensor networks. J. Syst. Archit. 2020, 111. [CrossRef]
[6] Singh, J.; Kaur, R.; Singh, D. Energy harvesting in wireless sensor networks: A taxonomic survey. Int. J. Energy Res. 2020. [CrossRef]
[7] Engmann, F.; Katsriku, F.A.; Abdulai, J.; Adu-Manu, K.S.; Banaseka, F.K. Prolonging the Lifetime of Wireless Sensor Networks: A Review of Current Techniques. Wirel. Commun. Mob. Comput. 2018, 2018. [CrossRef]
[8] Yetgin, H.; Cheung, K.; El-Hajjar, M.; Hanzo, L. A Survey of Network Lifetime Maximization Techniques in Wireless Sensor Networks. IEEE Commun. Surv. Tutor. 2017, 19, 828–854. [CrossRef]
[9] Yadav, S.; Yadav, R. A review on energy efficient protocols in wireless sensor networks. Wirel. Netw. 2016, 22, 335–350. [CrossRef]
[10] Rault, T.; Bouabdallah, A.; Challal, Y. Energy efficiency in wireless sensor networks: A top-down survey. Comput. Netw. 2014, 67, 104–122. [CrossRef]
[11] Cui, S.; Goldsmith, A.; Bahai, A. Energy-constrained modulation optimization. IEEE Trans. Wirel. Commun. 2005, 4, 2349–2360. [CrossRef]
[12] Rosas, F.; Oberli, C. Modulation and SNR optimization for achieving energy-efficient communications over short-range fading channels. IEEE Trans. Wirel. Commun. 2012, 11, 4286–4295. [CrossRef]
[13] Gumusalan, A.; Simon, R.; Aydin, H. Dynamic modulation scaling enabled multi-hop topology control for time critical wireless sensor networks. Wirel. Netw. 2020, 26, 1203–1226. [CrossRef]
[14] Nosratinia, A.; Hunter, T.E.; Hedayat, A. Cooperative communication in wireless networks. IEEE Commun. Mag. 2004, 42, 74–80. [CrossRef]
[15] Li, Q.; Hu, R.Q.; Qian, Y.; Wu, G. Cooperative communications for wireless networks: Techniques and applications in LTEadvanced systems. IEEE Wirel. Commun. 2012, 19, 22–29. [CrossRef]
[16] Shuguang, C.; Goldsmith, A.J.; Bahai, A. Energy-efficiency of MIMO and cooperative MIMO techniques in sensor networks. IEEE J. Sel. Areas Commun. 2004, 22, 1089–1098. [CrossRef]
[17] Soorki, M.; Manshaei, M.; Maham, B.; Saidi, H. On uplink virtual MIMO with device relaying cooperation enforcement in 5G networks. IEEE Trans. Mob. Comput. 2018, 17, 155–168. [CrossRef]
[18] Song, L.; Chai, K.; Chen, Y.; Loo, J.; Jimaa, S.; Iraqi, Y. Energy efficient cooperative coalition selection in cluster-based capillary networks for CMIMO IoT systems. Comput. Netw. 2019, 153, 92–102. [CrossRef]
[19] Singh, M.; Amin, S. Energy-efficient data transmission technique for wireless sensor networks based on DSC and virtual MIMO. ETRI J. 2020, 42, 341–350. [CrossRef]
[20] Peng, Y.; Al-Hazemi, F.; Kim, H.; Youn, C.H. Design and Optimization for Energy-Efficient Cooperative MIMO Transmission in Ad Hoc Networks. IEEE Trans. Veh. Technol. 2017, 66, 710–719. [CrossRef]
[21] Peng, Y.; Al-Hazemi, F.; Boutaba, R.; Tong, F.; Hwang, I.; Youn, C. Enhancing Energy Efficiency via Cooperative MIMO in Wireless Sensor Networks: State of the Art and Future Research Directions. IEEE Commun. Mag. 2017, 55, 47–53. [CrossRef]
[22] Peng, Y.; Li, J.; Park, S.; Zhu, K.; Hassan, M.; Alsanad, A. Energy-efficient cooperative transmission for intelligent transportation systems. Future Gener. Comput. Syst. 2019, 94, 634–640. [CrossRef]
[23] Correia, L.H.; Macedo, D.F.; dos Santos, A.L.; Loureiro, A.A.; Nogueira, J.M.S. Transmission power control techniques for wireless sensor networks. Comput. Netw. 2007, 51, 4765–4779. [CrossRef]

[24] Fernandes, D.; Ferreira, A.; Abrishambaf, R.; Mendes, J.; Cabral, J. Survey and taxonomy of transmissions power control mechanisms for wireless body area networks. IEEE Commun. Surv. Tutor. 2018, 20, 1292–1328. [CrossRef]
[25] Lee, W.; Kim, H.; Hong, M.; Kang, M.G.; Jeong, S.; Kim, N. A survey of the transmission-power-control schemes in wireless body-sensor networks. KSII Trans. Internet Inf. Syst. 2018, 12, 1854–1868. [CrossRef]
[26] Sodhro, A.; Chen, L.; Sekhari, A.; Ouzrout, Y.; Wu, W. Energy efficiency comparison between data rate control and transmission power control algorithms for wireless body sensor networks. Int. J. Distrib. Sens. Netw. 2018, 14. [CrossRef]
[27] Sodhro, A.; Sangaiah, A.; Sodhro, G.; Lohano, S.; Pirbhulal, S. An energy-efficient algorithm for wearable electrocardiogram signal processing in ubiquitous healthcare applications. Sensors 2018, 18, 923. [CrossRef]
[28] Sodhro, A.; Pirbhulal, S.; Qaraqe, M.; Lohano, S.; Sodhro, G.; Junejo, N.; Luo, Z. Power Control Algorithms for Media Transmission in Remote Healthcare Systems. IEEE Access 2018, 6, 42384–42393. [CrossRef]



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