S.P.Gayathri *et al*, International Journal of Computer Science and Mobile Applications,
Vol.6 Issue. 4, April- 2018, pg. 46-51 **ISSN: 2321-8363**
Impact Factor: 5.515

A STUDY ON SPATIAL REUSABILITY TECHNIQUE IN MULTIHOP WIRELESS SENSOR NETWORKS

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Abstract: Message authentication is the process that authenticates communications between two parties. Data confidentiality is the significant parameter used for measuring the ability of the system to protect the data. In the previous works, the system has two types of routing protocols, namely, single path routing and multi path routing. The function of a single path routing protocols is to make wise decision for the cost minimizing path, along the packets are send from source node to destination node, but it has failed to enable the security in it. In this article, we review methods adopted for wireless sensor network (WSN) and outline different method proposed in the literature. We compare the method based on the accuracy and we conclude this review with possible future directions.
Keywords: Routing, Packets, Multi path, Wireless sensor network

1. Introduction

All Wireless sensor network (WSN) is a significant area in communication network. The applications help an adaptable model that summarizes the sensed data of both physical environment and make use of the information to achieve the power. This kind of resource constraints makes advancements in communication sectors to delve into the study of sensor distribution. Most of the WSN applications are constrained by different resources. WSNs are Adhoc medium which are defined by low power, low processing that gathers the data from different environments. The sensor nodes act as routing element from source to destination. Most Gateway or sensor nodes are deciding the destination nodes. Gateway is defined as the group of aggregation process where the information is gathered and computed. It helps to gather the information from different commands and control units for processing and dissemination. The potentialities of the WSNs node make us to achieve their goals. It can also acts as replacement of the nodes, in case of failure. WSNs follow simple and efficient communications system. The lifetime of the sensor node is limited under certain assumptions. The transceiving antenna requires high demanding power which indirectly reduces the transmission power from the sensor node that forwards the demanded information.

Generally, WSN consists of set of nodes ranges from hundreds to thousands which are used for transmission and migration of the collected data. This helps to reduce the delay occurs in delivering the data. It also helps to prevent the interference between the nodes. Based on the demands of the sensor nodes, the requested data is transmitted over the wireless sensor networks. Each node initiates unique routing protocols

with restricted battery time. It also helps to free out the low power consumption via lessened interference rate. By the use of variant routing protocols, a high end–to–end throughput is achieved. The remaining part of this article is organized as follows: sections 2 describe the review of various techniques for wireless sensor network, section 3 gives the conclusion.

2. Literature Survey

Y.Yang et al. in [1] studied about the real time video streaming process in specific to bandwidth and energy constrained analysis. First, the single part of video is segmented into multiple parts and then transmitted to the sub-stream process. They introduced Directional Geographical Routing (DGR) which devised the load balance and the bandwidth.

Z.Zhai et al. in [2] presented a multipath routing scheme (Ad hoc on-demand multipath routing) that seeks a better quality of service in terms of bandwidth; hop count and end-to-end delay in mobile ad-hoc networks. Due to node mobility, the primary path breaks without initiating route discovery. In this case, the proposed scheme provided an alternative path to continue the data transmission. The multipath routing scheme provided QOS support with high reliability and low overloaded in simulation manner. The prior work depicted the network performance when using diverse path routing in wireless network has been studied. To improve the reliability of packets delivery by providing many alternate loop-free paths to destination, they have shown that multipath routing design.

J.Zhang et al. in [3] studied a way to improve the end-to-end throughput in wireless networks by the use of diverse paths with less interference. The author proposed a routing scheme that used multiple node-disjoint paths in indoor environments. They explored the route recovery and message control overhead. Similarly, S.Zhao et al. in [4] studied about the multipath routing that helps to increase the throughput rate. Another study X.Zhao et al. in [5] for detecting and resolving for dynamic path deterioration in wireless networks, they presented interference-aware multi-radio routing protocol. When radical link deterioration happens, this proposed protocol dynamically reconstructs a source initiated path. Another approach for the multipath design was studied Z.Zhong et al. in [6]. In wireless ad-hoc network, they studied the problem of finding the minimum energy disjoint paths. They have concentrated in static ad-hoc networks. They used all nodes along the primary paths named common nodes after finding a primary path in each request. To form disjoint paths, they shared those common nodes to find a path.

X.Zhou et al. in [7] proposed a multipath routing protocol named AODV-DM that assisted to find multiple paths with less interference. An insulating region is formed around the primary path after finding a primary path. It contains all the edges in the primary path within the interference range of each node. To reduce the potential network interference with the found primary path, a protection path must be selected and established outside the insulating region. By the use of insulating region, most of the network links would be eliminated.

A.Adya et al. in [8] studied about power delay, substantially longer network file as well as better received video quality. For better protection performance, our aim is to embrace the network interference. S.Biswas et al. in [9] suggested the interference will reduce the bandwidth of primary path, if any two of the primary path use the interfered links by avoiding the use of interfered path to improve the paths bandwidth. The users cannot send or receive the large bandwidth request with the low bandwidth. In this case, they need to split the request in multiple parts. Through the multiple sends, it consumes more energy from their devices.

J.Broch et al. in [10] displayed connection layer protocols using multi-radio connection protocols. On a single node, MUP arranges those operation of various remote network cards tuned to non-covering frequency channels. The objective of MUP was to upgrade neighborhood range utilization by means of canny operation in multihop environment. MUP worked with standard-consistent IEEE 802.11 equipment which didn't change the applications or more elevated amount conventions, and can be conveyed incrementally. The essential use situation for MUP is a multihop group wireless lattice system, where expense of the radios and battery utilization are not restricting factors. They described the execution of MUP, and investigate its execution. Their

result shows that MUP chances both TCP throughput and latency for reasonable workloads comparision of different techniques based on accuracy for WSN are given in Table 1.

S.Chachulski et al. in [11] suggested an enhanced Destination Sequenced Distance Vector Routing (DSDV) for every mobile host environment. It is a kind of host which periodically broadcasts the network topology with the mobile hosts inside the system. It's a MAC layer with different Adhoc system. The fundamental thought of the configuration is to work every Mobile Host as a specific switch, which periodically advertises its perspective of the interconnection topology with other Mobile Hosts inside the system. This adds up to another kind of routing protocol.

R.Cohen et al. in [12] discussed about the randomness of the wireless sensor networks via opportunistic routing systems. Opportunistic routing is a late strategy that accomplishes high throughput connections. The current pioneering routing protocol, ExOR, ties the MAC with directing, forcing a strict calendar on routers' access to the medium. In spite of the fact that the scheduler delivers artful gains, it misses a portion of the innate components of the 802.11 MAC. For instance, it counteracts spatial reuse and in this manner may underutilize the remote medium. It additionally takes out the layering abstraction, making the protocol less amiable to expansions to interchange traffic types, for example, multicast.

Table1 Comparision of various methodologies used for WSN

Name	Method	Performance	Disadvantages
A Truthful and Cost-Efficient Routing Protocol for Mobile Ad hoc Networks with Selfish Agents	Game-theoretic setting for the routing layer of mobile ad hoc networks	Ad hoc-VCG as a reactive protocol, a proactive version could be proposed as well.	Ad hoc-VCG works well for settings of ad hoc networks where communication sessions between two nodes are generally long and the routing path does not change dramatically during a session.
A Charging And Rewarding Scheme For Packet Forwarding In Multi-Hop Cellular Networks	A set of protocols that rely exclusively on symmetric cryptography techniques, and are therefore compliant with the limited resources of most mobile stations.	The usage of our charging and rewarding scheme indeed stimulates cooperation in multi-hop cellular networks.	Problem in Cooperation for packet forwarding in multi-hop cellular networks.
Nodes Bearing Grudges: Towards Routing Security, Fairness, and Robustness in Mobile Ad Hoc Networks	Introduces Node rating and Path manager methods to cope with retaliating for malicious behavior and warning affiliated nodes to avoid bad experiences.	Observable attacks on forwarding and routing can be thwarted by the suggested scheme of detection, alerting and reaction.	When designing protocols for mobile ad hoc networks, special care has to be taken to include security mechanisms for the increased requirements in this environment.

Performance Analysis of the CONFIDANT Protocol	Method on detection of misbehavior, followed by a reaction.	A network with CONFIDANT and up to 60% of misbehaving nodes behaves almost as well as a benign network, in sharp contrast to a defenseless network.	When designing protocols for these networks, care has to be taken to Include fairness mechanisms for the increased requirements in this environment.
Reputation Propagation and Agreement in Mobile Ad-Hoc Networks	Methods of reputation propagation and Reputation agreement	Present a formal specification and analysis of a general class of mechanisms to locally update the reputation of mobile nodes.	Given an initial assessment of the reputation of other mobile nodes, the mobile nodes can agree on the reputation of other mobile nodes using only local propagation, without any special nodes.
A Distributed Truthful Routing Protocol for Mobile Ad Hoc Networks	Presented a distributed truthful routing protocol for mobile ad hoc networks	Proposed protocol is that it incurs only n+d-1 control packets for a route discovery. It can achieve more than 90% packet delivery ratio that is close to packet delivery ratio of TMRP.	Nodes belonging to independent authorities may behave selfishly, and not cooperate in network activities. Such selfish behavior poses a real threat to the proper functioning of MANETs.
A BGP-based Mechanism for Lowest-Cost Routing	The algorithmic-mechanism-design approach to handle more general routing policies.	Achieving this goal without having to add public-key infrastructure (or any other substantial new infrastructure or computational capability).	Problem of inter domain routing from a mechanism-design point of view.
Ad hoc-VCG: A Truthful and Cost-Efficient Routing Protocol for Mobile Ad hoc Networks with Selfish Agents	Introduced a game-theoretic setting for the routing layer of mobile ad hoc networks, in which the communication nodes are assumed to be selfish.	Game theory and mechanism design are excellent tools to study other network layer functions (such as topology control or MAC layer) and also other optimization functions as well.	As soon as this is not guaranteed, an omniscient adversary node can exploit its knowledge to its advantage and make the protocol untruthful.
Wireless networking security: open issues in trust, management, interoperation and	Propose an authentication protocol, and assess it in terms of network response time, request preparation time, total handshake time,	A contribution of this approach is that it combines trust and confidence metrics and derives a new value called	Open issues in trust includes developing efficient evidence collection mechanisms to support techniques that

measurement	total call set-up, memory utilisation and power consumption.	'trustworthiness', which can be integrated into various security protocols such as routing mechanisms.	infer trust, constructing context-aware trust assessment schemes and understanding and implementing techniques for embedding trust information into data.

3. Conclusion

To enhance secure data transmission using hop-by-hop routing algorithm, various spatial reusability algorithm that dynamically optimizes for routing, scheduling, and simple network coding for wireless networks were available. A generalization of pair- wise network coding and provided enhanced spatial reusability, in which throughput is optimal with subject to the k-tuple coding constraint. It also provides simulation results for complex scenarios. For all possible scenarios, it gave an upper bond on k-tuple coding gain. Most of the benefits of k-tuple coding for the scenarios considered of that pair-wise coding. To overcome the issues in WSN, we propose a method in near future.

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A Brief Author Biography

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