

# A STEERING PRIORITY SCHEDULING ALGORITHM FOR MAC LAYER IN WIRELESS SENSOR NETWORKS

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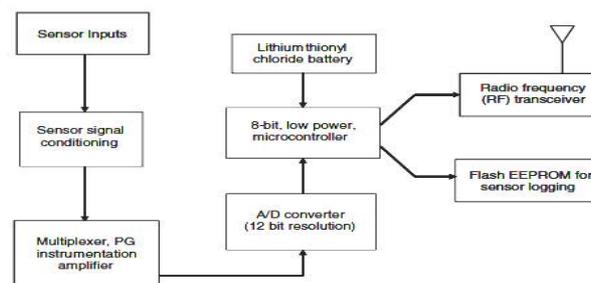
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## ABSTRACT

*Based on the ideas of conflict-free transmission, priority to ensure transmission quality for communication between the various clusters, this text proposes a programming formula suited the mack theme of WSNs, that has created it doable for the polling service capable of differentiating services of the cluster head node of 2 priority levels. The high-priority service of the cluster head is liable for routing between the various clusters, via thoroughgoing service policy, whereas the low-priority services of the cluster head node, for communication inside the cluster through restricted service policy with smart fairness. The theoretical model of this theme is established through Markov chain and likelihood generating perform. Mathematical analysis is created on the mean queue length, the mean inquiry cyclic time and also the mean delay time. It seems that the findings from theoretical analysis correspond well with those from simulated experiments.*

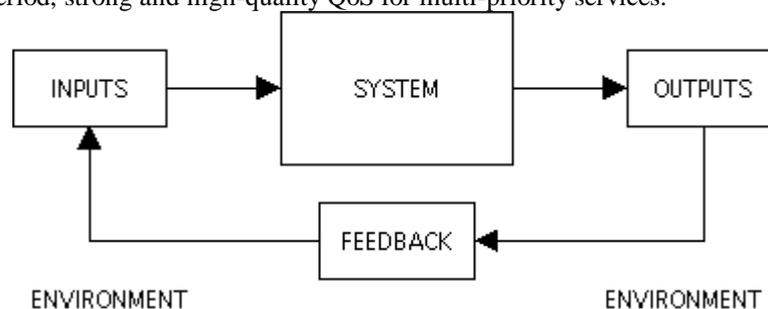
## I. INTRODUCTION

With the rapid development of chips, communication and sensing technologies, sensing technology are entering a new era of wireless sensor networks [1]. The tiny sensing nodes, which consist of sensing, data processing and wireless communication components in WSNs, are deployed densely and randomly in large numbers [2]. The tiny nodes form the network in a self-organization manner. Based on the diverse onboard sensors, the WSNs can sense the field and communicate information to the remote sink in an efficient and timely manner. The sensing performance and reliability have been improved significantly in WSNs. So the WSNs can be widely used in military sensing, security, environmental monitoring, traffic police investigation, medical treatment, building and structures observation, even anti-terrorism, etc. However, since the detector nodes ar battery driven and it's impractical to recharge the battery for therefore several nodes when readying, energy potency has been a key concern within the analysis work of WSNs [3-7]. In several WSNs applications, the information gathering has the standard of Services (QoS) needs in terms of BER performance, end-to-end timeliness and responsibility, etc. Therefore, to style the theme with low energy consumption and versatile QoS provisioning is that the guarantee for the economical military operation in WSNs [8]. per the analysis of detector nodes, the most sources of energy consumption ar sensing, wireless transmission and processing. and also the energy consumption caused by wireless transmission is far quite sensing and processing. On the opposite hand, since most technologies in WSNs, like information routing, distributed information science that has the wants for wireless transmission. Wireless transmission technologies are known because the key technologies deciding the energy consumption and QoS, that also are the premise for alternative technologies [9]. Generally, distance between Cluster head and alternative cluster head is farther, as illustrated within the Fig.1. Wireless transmission between the various clusters additionally would like a lot of power of radio. Therefore, the high-efficient communication between the various clusters applicable for low energy consumption system remains the key and hot stock in WSNs researches.



**Fig:-1** WSNs network topology structure model

As we have a tendency to all grasp, the standard of WSNs service mechanism determines the standard of network service [10]. Quality of Service (QoS) is usually basic and hot stock in WSNs [11]. However, the present analysis principally focuses on the routing algorithms during a network layer, whereas the end-to-end performance guarantees can't be solely provided by routing or QoS routing, it's required to research the opposite layers that allocates resources. Medium Access management (MAC) protocol is a crucial half within the network protocol stack of WSNs, and it's principally wont to coordinate nodes to access the shared wireless channel. just like the state of affairs within which rivalry conflicts occur once multiple accesses is introduced within the network, many nodes could contend for one or server channels in communication once many nodes at the same time request accesses in shared media. mack protocol will utilize the restricted wireless resource and plays a vital role in WSNs performance at this stage. therefore the analysis of mack protocol and connected techniques in WSNs is important. stratified management is wide applied within the wireless detector networks. It can't solely give versatile, reliable communication, however additionally promotes the expansibility of the network [12-13]. The network is split into clusters, that ar composed of the cluster head node and a few member nodes. These cluster head nodes will any kind the higher-level cluster per the necessity of the applying. The cluster head node is liable for the coordination, the information transfer and also the management of all the nodes within the cluster. Moreover, the cluster head are often pre-assigned or electoral mechanically. similar to these characteristics this thesis proposes Associate in Nursing formula for polling theme supported agglomeration. typically agglomeration is a crucial technique for hierarchy management in WSNs and maps the dynamic topology onto a comparatively fastened design with multi-hop to single-hop communication during a cluster. within the urged formula Cluster Header (CH) polls the active nodes during a polling table that is employed to register node addresses and priorities during a cluster to ensure a QoS theme of differentiated traffic priorities. The polling theme not solely avoids collisions however additionally reduces energy consumption for the sole services to active nodes [4]. what is more, priority-based services will save energy to an outsized extent. Therefore, during this thesis, the author meted out deep and systematic analysis work on the energy potency and QoS guaranteeing by establishing Cluster-based mack theme in WSNs. Polling for the resource allocation within the system service provides a periodic access management mechanisms that may effectively stop access to the location of competition between the conflicts, particularly in high-load conditions are often obtained on higher utilization of shared resources [14, 15]. In recent decades, students reception and abroad theoretical analysis polling system to realize fruitful results. Researchers have flat out analyzed 3 types of basic services strategy of polling system like gated, thoroughgoing and restricted services [14-19]. The analysis polling system is additionally wide utilized in trade management, communication networks, production management and economic development, statement and alternative fields. With the multiplied needs for network service and transmission performance, it's pressing to interrupt faraway from the only polling policy strategy and to develop new management methods for various inquiry service order and mixed service on the premise of cyclic access. during this sense, polling management theories demand any development [20-22]. within the mack management protocol of a communications network, application of the prioritybased polling mechanism below mixed service policy can any optimize the system service, with hanging pertinency and suppleness. Currently, the analysis concentration in polling is that the institution of period, strong and high-quality QoS for multi-priority services.

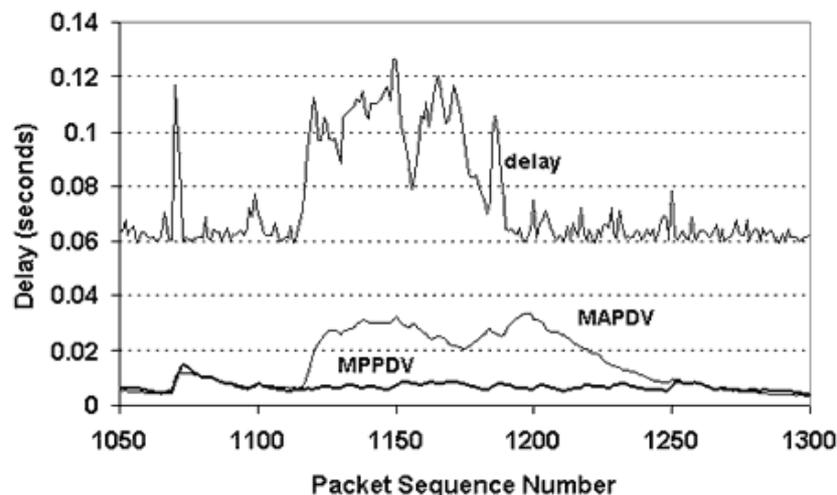


**Fig:-2** System Model

Markov chain and multi-dimensional likelihood generating perform ar applied to provide the systematic mathematical model, from that likelihood generating perform of the system standing variable springs. Mathematical analysis and simulated experiments ar created on the mean queue length and also the mean cyclic time of the key node and also the common nodes.

### III. CONCLUSION

In this paper, analysis work was done on a mack theme in WSNs has been through with concentrate on energy potency and QoS guaranteeing. This economical theme embodies the benefits of thoroughgoing and restricted policy service, and it classifies the system nodes by priority at two levels to boost the fairness and suppleness of the service system. The higher-priority key node applies an exhaustive-service policy with more opportunities for routing so that transmission quality between the different clusters gets better guaranteed. The theoretical model for the scheduling algorithm is established on condition of stability, and by means of Markov chain, multidimensional probability generating function. The findings of theoretical calculation correspond well with those of simulated experiments. The theoretical and simulated findings all reveal that system performance can achieve the optimization effect. It concludes that this scheme enables WSNs to take on the features of good utility, good function.



**Fig:-3** The Mean Delay Time of Information Packets

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