AN OVERVIEW ON THE APPROACH OF WIRELESS MOBILE SENSOR UNDER CERTIAN ROUTING CIRCUMSTANCES

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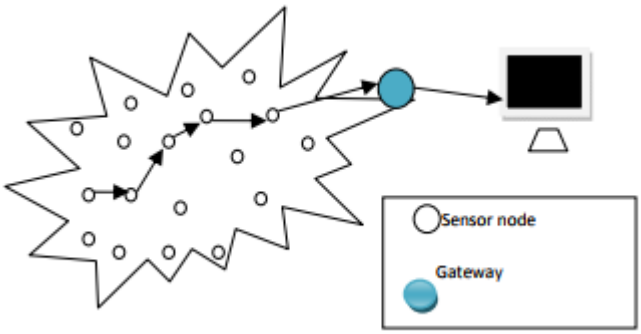
Abstract:
Wireless Sensor Networks (WSNs) has foreseen big changes in data gathering, processing and disseminating for monitoring specific applications such as emergency services, disaster management, and military applications etc. Wireless sensor networks (WSN's) are application dependent. Wireless sensor network can be classified into Static Sensor Network (SSN) & Mobile Sensor Network (MSN). In Static Sensor Network, the sensor nodes localize only first time during deployment. In case of Mobile Sensor Network, nodes collect the data by moving from one place to another place hence localization is needed. In this paper we propose an algorithm for energy efficient node discovery in sparsely connected mobile wireless sensor networks. The work takes advantage of the fact that nodes have temporal patterns of encounters and exploits these patterns to drive the duty cycling. Duty cycling is seen as a sampling process and is formulated as an optimization problem

Keywords: *Mobile sensor network, Localization algorithms*

1.0 Introduction:

Wireless sensor network comprises of countless sensor hubs that can gather and disperse information in regions where customary systems are inadmissible for natural as well as vital reasons. Every sensor hub contains detecting, preparing, transmission, activate, position discovering framework (Such as GPS) and power units. The framework engineering of remote sensor arranges is appeared in Figure. Every hub has the capacity to detect the information from the earth play out some calculation and speak with alternate hubs in the system. Once a sensor hub is sent, the system can continue working just until the point that the battery control is adequate. Wireless sensor network (WSN) has an extensive variety of utilizations, for example, ecological observing, biomedical research, human imaging and following, and military applications. Wireless sensor network (WSNs) are chiefly utilized as a part of the crisis administrations. It can likewise be called Emergency Services Networks (ESNs). Miniaturized scale Electro Mechanical Systems innovation, remote correspondences, and computerized hardware have empowered the advancement of ease, low-control, multifunctional sensor hubs that are little in measure and convey unfazed in short separations. An extensive variety of utilizations using low-end sensor hubs to community oriented cooperate is imagined for sensor systems. A portion of the application regions are wellbeing, military, and security.



Architecture of Wireless Sensor Network

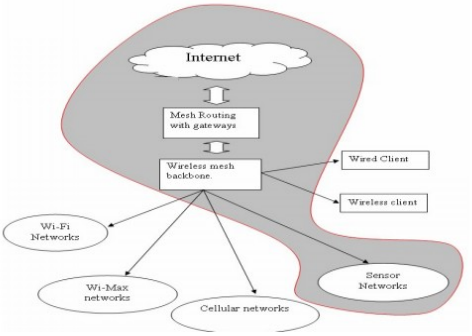
PROBLEM DEFINITION AND ISSUES:

Routing is exceedingly identified with arrange design. Additionally for DWMSN there has not yet a very much characterized structural model with versatility, strength. Moreover, there is an absence of proficient directing conventions for DWMSN considering different mobile sink hubs adjusting to versatility. This paper addresses the above testing issues concentrating on these parts:

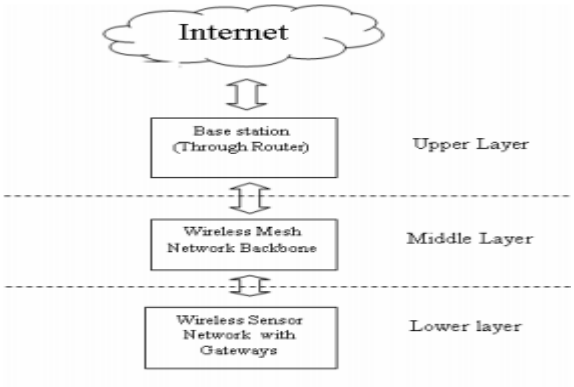
1) The proposed conventions underpins versatility selection for progressively changing topology because of solid portability of hubs and requirements synchronization of hubs.

2) Efficient steering conventions embracing portability and going for augmenting the lifetime of the sensor systems.

3) Design of a model to WSN building model for natural checking



Integration of WSN



Proposed layered architectural model

2.0 Literature review:

1. O.Younis, S. Fahmy.: HEED: A Hybrid,EnergyEfficient, Distributed Clustering Approach For Ad Hoc Sensor Networks, In: IEEE Transactions on Mobile Computing 3 (4), pp. 366–379 (2004). In this paper, Heterogeneous - Hybrid Energy Efficient Distributed Protocol (H-HEED) for Wireless Sensor This paper proposes the impact of heterogeneity in terms of node energy in wireless sensor networks have been mentioned. Finally the simulation result demonstrates that H-HEED achieves longer lifetime and more effective data packets in comparison with the HEED protocol.
2. Kemal Akkaya, Mohamed Younis, "A Survey On Routing Protocols For Wireless Sensor Networks ", Ad Hoc Networks 3, pp. 325-349 (2005). This paper surveys recent routing protocols for sensor networks and presents a classification for the various approaches pursued. Data-centric, hierarchical and location-based are three main classifications that are examined in this paper. Network flow and QoS modeling are also discussed.
3. Fikret Sivrikaya and B¨ulent Yener wrote a paper about "Time Synchronization in Sensor Networks: A Survey". This paper reviews the time synchronization problem and the need for synchronization in sensor networks, then presents in detail the basic synchronization methods explicitly designed and proposed for sensor networks.
4. Gomez, J., A. T. Campbell, M. Naghshineh and C. Bisdikian wrote a paper about "Conserving Transmission Power In Wireless Ad Hoc Networks" in 2001. In this paper, the detailed design of

PARO and evaluate the protocol using simulation and experimentation is presented. Through simulation that PARO is capable of outperforming traditional broadcast-based routing protocols (e.g., MANET routing protocols) due to its power conserving pointto-point on-demand design. Some initial experiences from an early implementation of the protocol in an experimental wireless test bed using off-the-shelf radio technology is also discussed.

5. Bara'a A.Attea and Enan A.Khalil "A New Evolutionary Based Routing Protocol For Clustered Heterogeneous Wireless Sensor Networks" volume 12, Issue 7, July 2012. This paper propose the undesirable behavior of the EA when dealing with clustered routing problem in WSN by formulating a new fitness function that incorporates two clustering aspects, viz. cohesion and separation error.

6. Wei Ye, John Heidemann, Deborah Estrin paper "An Energy-Efficient MAC Protocol for Wireless Sensor Networks" was published in 2002. This paper proposes S-MAC, a medium-access control (MAC) protocol designed for wireless sensor networks. Wireless sensor networks use battery-operated computing and sensing devices. A network of these devices will collaborate for a common application such as environmental monitoring. This paper presents sensor-MAC (S-MAC), a new MAC protocol explicitly designed for wireless sensor networks. While reducing energy consumption is the primary goal in our design, our protocol also has good scalability and collision avoidance capability. It achieves good scalability and collision avoidance by utilizing a combined scheduling and contention scheme. To achieve the primary goal of energy efficiency, we need to identify what are the main sources that cause inefficient use of energy as well as what trade-offs we can make to reduce energy consumption.

7.Jennifer Yick, Biswanath Mukherjee, Dipak Ghosal "Wireless Sensor Network Survey". This paper was published in 2008. This paper gives an overview of several new applications and then reviews the literature on various aspects of WSNs. This paper classifies the problems into three different categories: • Internal platform and underlying operating system • Communication protocol stack and • Network services, provisioning, and deployment. This paper reviews the major development in these three categories and outline new challenges.

8.Christian C. Enz Amre El-Hoiydi Jean Dominique Decotignie Vincent Peiris published a paper about "Wisenet: An Ultra Low-Power Wireless Sensor Network Solution" in 2004. This paper helps us to learn that the WiseNET platform uses a codesign approach that combines a dedicated duty-cycled radio with WiseMAC, a low-power media access control protocol, and a complex system-on-chip sensor node to exploit the intimate relationship between MAC-layer performance and radio transceiver parameters.

9. X. Du, Y. Xiao, H.-H. Chen, Q. Wu presented their findings in 2006 about "Secure Cell Relay Routing Protocol For Sensor Networks". In this paper, authors have present a novel secure cell relay (SCR) routing protocol for sensor networks. SCR routing protocol is

resistant to several kinds of attacks on sensor networks, including selective forwarding, sinkhole, wormhole, Sybil, hello flooding attacks, etc. SCR is also an energy efficient routing protocol with acceptable security overhead. SCR routing utilizes the fact that sensor nodes (in most sensor networks) are dense, static and location-aware, to achieve good security, high delivery ratio and low energy consumption, which is confirmed by writers simulations.

10. J. Zhao, R. Govindan published their paper about "Understanding Packet Delivery Performance In Dense Wireless Sensor Networks" in 2003. This paper shows that wireless sensor networks promise fine-grain monitoring in a wide variety of environments. Many of these environments (e.g., indoor environments or habitats) can be harsh for wireless communication.

3.0 Work and methodology:

Because of restricted assets of sensor hubs, essential plan objectives for WSNs contain: (a) limiting the aggregate vitality utilization inside the system (b) limiting the overhead of control messages, (c) accomplishing adaptation to non-critical failure, and (d) adjusting vitality dispersal among the sensor hubs to maintain a strategic distance from disengaged systems

Geographical Energy Aware Routing (GEAR):

GEAR uses energy aware metrics for neighbor selection, and balances the energy consumption among neighbors by maintaining a cost function for each neighbor. The cost function facilitates in finding the cost for reaching a neighbor that is based on the location and required energy

Geographical Adaptive Fidelity (GAF):

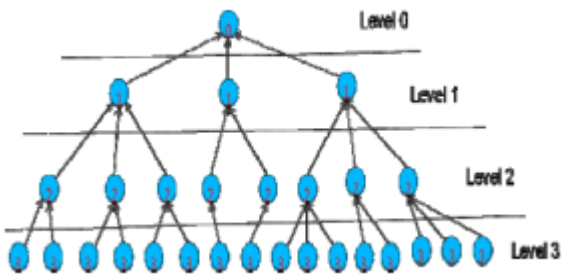
GAF extends the network lifetime by reducing the energy consumption for which it builds a geographical grid that consists of cells. Each cell contains multiple nodes, but only a single node is active at a time

Distance Routing Effect Algorithm for Mobility (DREAM):

DREAM is based on a directional forwarding approach that floods the data in a particular direction (using a certain angle) towards the sink node.

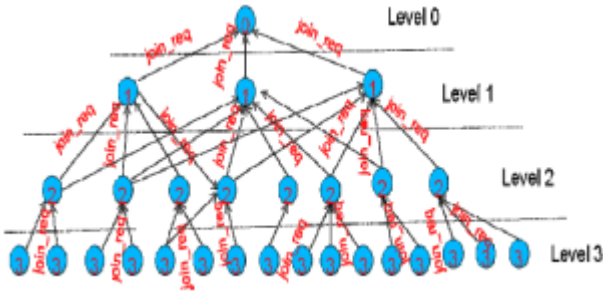
The routing protocols proposed for WSNs are classified considering several architectural factors. Routing protocols for Wireless Sensor Networks, Network Structure Based protocols and Protocol Operation Based protocols, The network structure based protocols depend on the system architecture of the network. These protocols are classified into three categories: Data centric or flat routing protocols, Hierarchical routing protocols, and Location based routing protocols. Protocol operation based protocols are classified into five categories: Negotiation based routing protocol; Multi-path based routing protocol, Query-based routing protocol, Qos-based routing protocol, and Coherent-based routing protocol.

Tree Based Routing Protocol (TRBP) as shown in figure

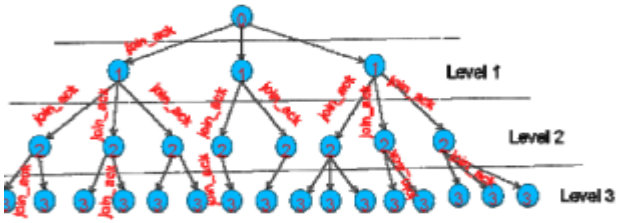


System architecture

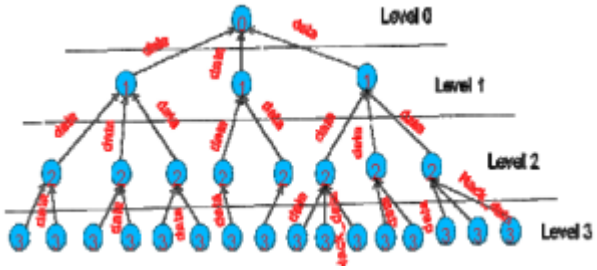
The entire nodes in the network form a tree with different level. And the node of the tree has some degree constrain which is depend on the level of the node



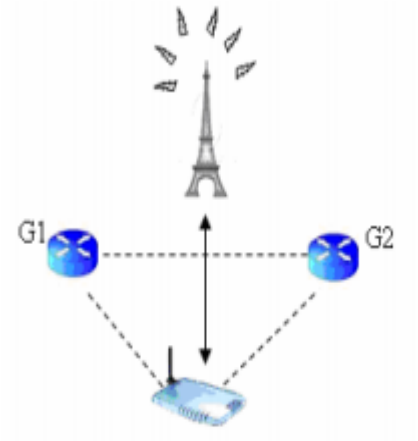
Join request is broadcasted



Join Acknowledgement by higher



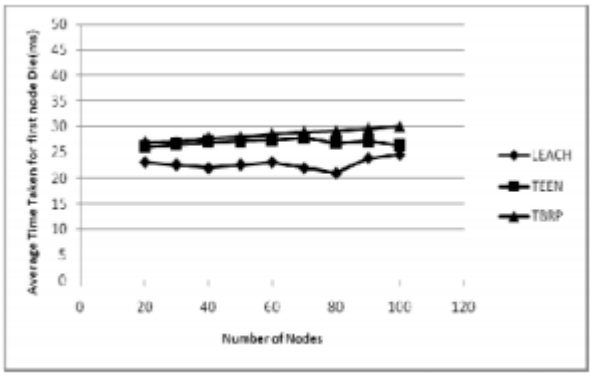
Child node sends its data to parent node



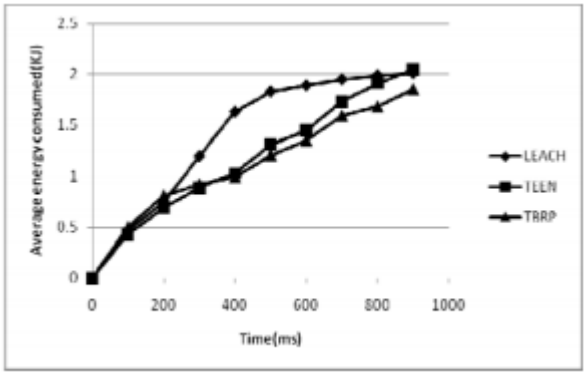
Multiple router gate way stations

4.0 Results:

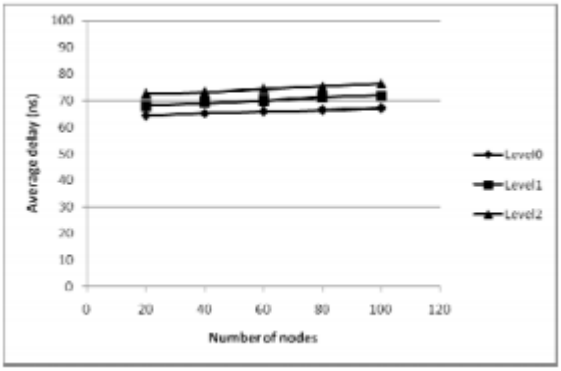
The performance of the TBRP protocol improves. This is because when less nodes are deployed, nodes were scattered very far from each other, so in order to form a tree structure more control messages were required and node had to move in order to be a part of a tree. Because of the mobility and more control messages transmitted by node, more energy was consumed hence the first node in the network with less number of nodes die early in case of TBRP.



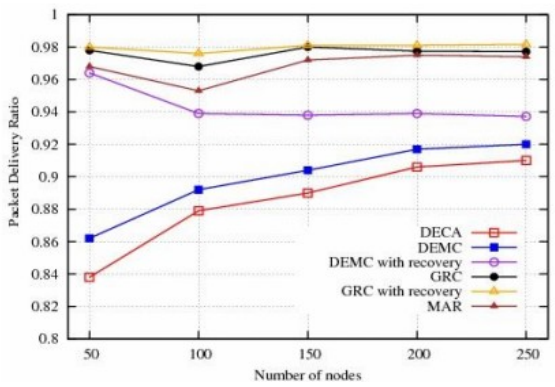
Average Time for first node to die vs. Number of nodes



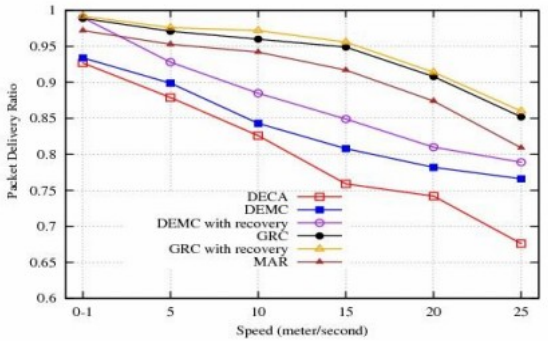
Average Energy Consumed vs. Time



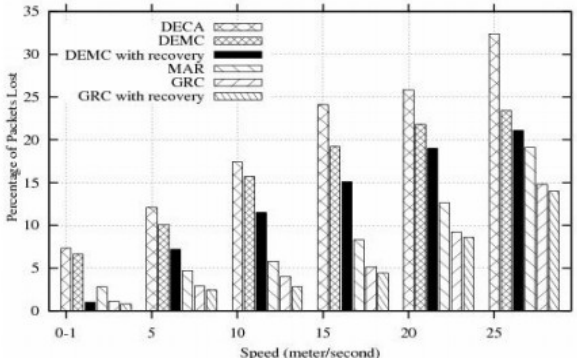
Average delays vs. Number of nodes for TBBRP



Packet delivery ratio with respect to different number of nodes



Packet delivery ratio with respect to different node speeds



Percentage of packets lost with respect to different node speed

The numbers of nodes have increased there is very small change in the delay. This shows that delay will not be much for large number of nodes hence this protocol can be used for more number of nodes and is scalable.

5.0 Conclusions:

Mobile Sensor Networks (MNSs) have upgraded execution over static remote sensor systems due to the versatility of the hubs. In static WSNs, the hubs nearer to the sink dependably lose their vitality to start with, in this manner making the general system "pass on". In this work TBRP has been proposed to manufacture an ideal versatility design for most extreme vitality productivity. The other preferred standpoint of TBRP is that it is better focusing on in light of the fact that sensor hubs are conveyed arbitrarily, accordingly there is regularly a necessity to move the sensor hubs for better sight or for closeness to the physical action**.**There are various possible applications scenarios for traditional wireless sensor networks, which are envisaged at the moment. These applications include environmental monitoring, military surveillance, digitally equipped homes, and health monitoring, manufacturing monitoring, conference, vehicle tracking and detection and monitoring inventory control.

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