ISSN:0975-9646

Survey On Sleep And Awake Method Using Geographic Opportunistic Routing In Wireless Sensor Networks

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***Abstract*— IEQGOR integrates awake and sleep schedules, MAC, routing, traffic load balancing, and back-to-back packet transmissions. A promising routing scheme in wireless sensor networks (WSNs), is shifting toward duty-cycled WSNs in which sensors are sleep scheduled to reduce energy consumption. Nodes alternate between awake/asleep modes according to independent wake-up schedules with fixed duty cycle d. Packet forwarding is implemented by having the sender polling. The availability of awake neighbours by broadcasting an RTS packet for jointly performing channel access and communicating relevant routing information. Available neighbouring nodes respond with a clear-to-send (CTS) packet carrying information through which the sender can choose the best relay.Every prospective relay is characterized by two parameters: the queue priority index (QPI), and the geographic priority index (GPI).**

Keywords*— Efficient QoS aware Geographic Opportunistic routing ,Multipath routing,Opportunistic Routing, Sleep and awake method, Wireless sensor networks.

I. INTRODUCTION

A wireless sensor networks(WSNs) consists of the spatially distributed autonomous sensors to monitor the physical or environmental conditions, such as temperature, sound, pressure, etc. and to cooperatively pass their data through the network to a main location. The development of wireless sensor networks was motivated by military applications such as battlefield surveillance; today such networks are used in many industrial and consumer applications, such as industrial process monitoring and control, machine health monitoring.The WSN is built of "nodes" from a few to several hundreds or even thousands, where each node is connected to one sensors thousands, where each node is connected to one sensors. Each such sensor network node has typically several parts: a radio transceiver with an internal antenna or connection to an external antenna, a microcontroller, an electronic circuit for interfacing with the sensors and an energy source, usually a battery or an embedded form of energy harvesting. A sensor node might vary in size from that of a shoebox down to the size of a grain of dust, although functioning "motes" of genuine microscopic dimensions have yet to be created. The cost of sensor nodes is similarly variable, ranging from a few to hundreds of dollars, depending on the complexity of the individual sensor nodes.Size and cost constraints on sensor nodes result in corresponding constraints on resources such as energy, memory, computational speed and communications bandwidth

1.1 GEOGRAPHIC OPPORTUNISTIC ROUTING

ExOR is valuable because it can operate available digital radios to use some previously impractical algorithmic optimizations.The starting radio, the source, broadcasts a batch of packets. As timers in intermediate radios expire, radios further from the destination retransmit the packets that no closer radio has yet retransmitted. The estimate is calculated based on the number of packets in the batch, and the probabilities of a correct transmission probability of a successful transmission between each pair of digital radios in the network.ExOR uses a conventional routing protocol to collect information transmission between each pair of digital radios in the network.

II. LITERATURE SURVEY

2.1 ENERGY CONSTRAINTS MULTI-PATH ROUTING

The issue of using multi-path routing in wireless sensor networks and proposed the Energy-constrained Multi-Path routing (ECMP), an improvement to the MCMP model. The main idea driving the ECMP model is that in the context of wireless sensor networks, efficient resource usage should reflect not only efficient bandwidth utilization but also a minimal usage of energy in its strict term.The strength of the ECMP model lies in the fact that it trades between minimum number of hops and minimum energy by selecting a path with minimum number of hops only when it is the path with minimum energy or a longer path with minimum energy satisfying the constraints.

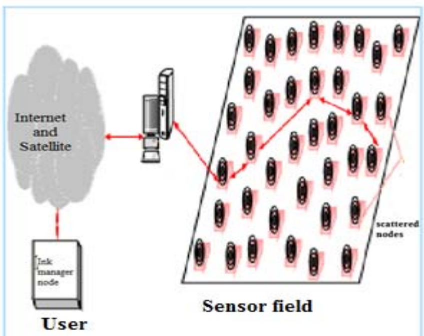

Fig 2.1 Sensor Nodes Scattered in a Sensor Field

2.2 Multipath Multi-Speed Protocol QoS Guarantee Of Reliability And Timeliness

A novel packet delivery mechanism called Multi-Path and Multi-SPEED Routing Protocol (MMSPEED) for probabilistic QoS guarantee in wireless sensor networks. The QoS provisioning is performed in two quality domains, namely, timeliness and reliability. Multiple QoS levels are provided in the timeliness domain by guaranteeing multiple packet delivery speed options. These mechanisms for the QoS provisioning are realized in a localized way without global network information by employing localized geographic packet forwarding augmented with dynamic compensation, which compensates for local decision inaccuracies as a packet travels towards its destination. MMSPEED can guarantee end-to-end requirements in a localized way, which is desirable for scalability and adaptability to large scale dynamic sensor networks.

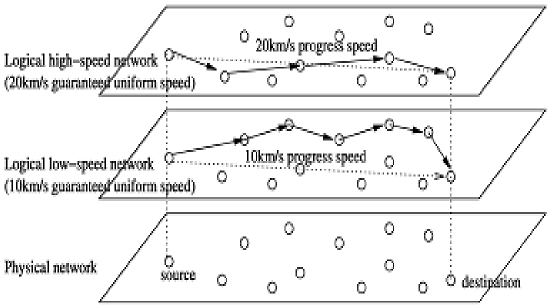

Fig 2.2 Virtual overlay of multiple speed layers.

2.3Reliable Reactive Routing Enhancement For Wireless Sensor Networks

Providing reliable and efficient communication under fading channels is one of the major technical challenges in wireless sensor networks with dynamic and harsh environments. Reliable Reactive Routing Enhancement (R3E) to increase the resilience to link dynamics for WSNs/IWSNs. R3E is designed to enhance existing reactive routing protocols to provide reliable and energy-efficient packet delivery against the unreliable wireless links by utilizing the local path diversity. R3E remarkably improves the packet delivery ratio, while maintaining high energy efficiency and low delivery latency.

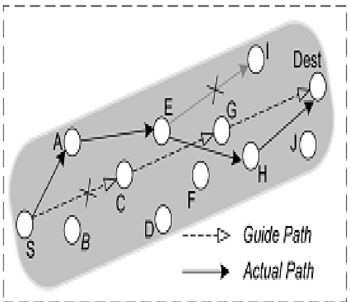

Fig 2.3 Example of the guide path.

2.4 Wireless Sensor Networks: A Survey

The concept of sensor networks which has been made viable by the convergence of micro- electro-mechanical systems technology, wireless communications and digital electronics. First, the sensing tasks and the potential sensor networks applications are explored, and a review of factors influencing the design of sensor networks is provided. Then, the communication architecture for sensor networks is outlined, and the algorithms and protocols developed for each layer has been explored. I have survey on wireless sensor networks by analysing this paper.

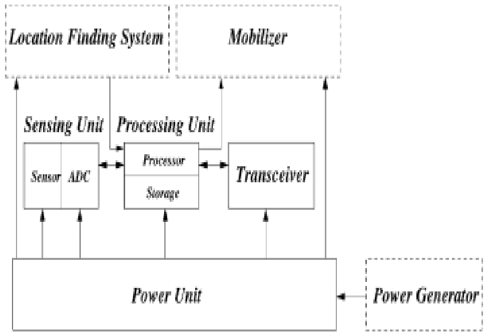

Fig 2.4 Components of a sensor node.

2.5 Energy Efficient Collision Aware Multipath Routing For Wireless Sensor Networks

Multipath routing can reduce the need for route updates, balance the traffic load and increase the data transfer rate in a wireless sensor network, improving the utilization of the limited energy of sensor nodes. However, previous multiple path routing methods use flooding for route discovery and transmit data with maximum power regardless of need, which results in waste of energy. Moreover, often a serious problem of collisions among multiple paths arises. An energy efficient and collision aware (EECA) node-disjoint multipath routing algorithm for wireless sensor networks. With the aid of node position information, the EECA algorithm attempts to find two collision- free routes using constrained and power adjusted flooding and then transmits the data with minimum power needed through power control component of the protocol. Our preliminary simulation results show that ECCA algorithm results in good overall performance, saving energy and transferring data efficiently.

The gaining neighbor knowledge information with "hello" packets is not a trivial protocol. Author describes localized position-based routing protocols that aim to minimize the expected hop count (in case of hop-by-hop acknowledgments and fixed bit rate) or maximize the probability of delivery (when acknowledgments are not sent). This paper proposed a guideline for the design of greedy position-based routing protocols with known destination locations. The node currently holding the message will forward it to a neighbor (closer to the destination than itself) that minimizes the ratio of cost over progress, where the cost measure depends on the assumptions and metrics used, while the progress measures the difference in distances to the destination. Author considers two basic medium access layer approaches, with fixed and variable packet lengths. This will serve as a preliminary contribution toward the development of network layer protocols that will match the assumptions and criteria already used in simulators and ultimately in real equipment.

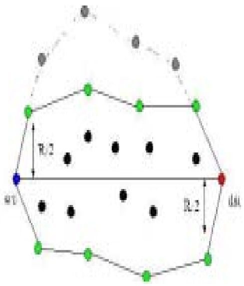

Fig 2.5 An example of collision avoiding routes

2.6 DESIGN GUIDELINES FOR ROUTING PROTOCOLS IN AD HOC AND SENSOR NETWORKS WITH A REALISTIC PHYSICAL LAYER

The Design guidelines on how to design network layer protocols when the unit disk graph (UDG) model is replaced by a more realistic physical layer model. Instead of merely using the transmission radius in the UDG model, physical, MAC, and network layers share the information about a bit and/or packet reception probability as a function of distance between nodes. All nodes use the same transmission power for sending messages, and that a packet is received when all its bits are correctly received. The MAC layer reacts to this probabilistic reception information by adjusting the number of acknowledgments and/or retransmissions. This observe that an optimal route discovery protocol cannot be based on a single retransmission by each node, because such a search may fail to reach the destination or find the optimal path. Next, the gaining neighbor knowledge information with “hello” packets is not a trivial protocol. The node currently holding the message will forward it to a neighbor (closer to the destination than itself) that minimizes the ratio of cost over progress, where the cost measure depends on the assumptions and metrics used, while the progress measures the difference in distances to the destination. This will serve as a preliminary contribution toward the development of network layer protocols that will match the assumptions and criteria already used in simulators and ultimately in real equipment.

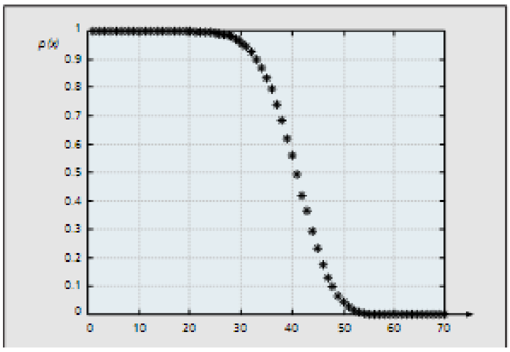

Fig 2.6 Packet reception probability as a function of distance in a typical physical layer model.

III. RELATED WORKS

A.B. Bagula and K.G. Mazandu[1], defined the of energy constraints multipath routing.Here they guided minimal usage of energy in networks and also the band width utilization. The geographic opportunistic routing (GOR) exploits for multi constrained QoS provisioning in WSNs, which is more suitable than the multipath routing approach. I.Stojmenovic, A. Nayak, and J. Kuruvila[6] author founds that existing GOR protocol cannot be directly applied to the QoS provisioning in WSNs. Because the computations delay of a GOR protocol should be also considered in WSNs. The EGQP problem formulated as a multi objective multi constraint optimization problem and analyzed the properties of EGQP’s multiple objectives. Based on the analysis and observations, an Efficient QoS-aware GOR (EQGOR) algorithm proposed for QoS provisioning in WSNs EQGOR achieves a good balance between these multiple objectives, and has a very low time complexity, which is specifically tailored for WSNs considering the resource limitation of sensor devices.

IV. CONCLUSION

The problem of efficient GOR has been studied for multi constrained QoS provisioning EQGOR in WSNs.The proposed system aimed at providing unique sleep scheduling and awake method inorder to reduce energy consumptions and high overhead. To improve the throughput and reduce the chance for energy consumption and high overhead by introducing new algorithm improved efficient QoS aware geographic oppourtunistic routing on energy consumption.

ACKNOWLGMENT

I have taken efforts in this project. However, it would not have been possible without the kind support and help of many individuals and organization. I would like to extend my sincere thanks to all of them.

I am highly indebted to Sri shakthi institute of engineering and technology and Ms.S.P.Kavya for their guidance and constant supervision as well as for providing necessary information regarding the project & also for their support in completing the project. I would like to express my gratitude towards my parents & member of Sri shakthi institute of engineering and technology for their kind co-operation and encouragement which help me in completion of this project. I would like to express my special gratitude and thanks to industry persons for giving me such attention and time. My thanks and appreciations also go to my colleague in developing the project and people who have willingly helped me out with their abilities.

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