Wireless Sensor Based optimization Dynamic Networks

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Abstract: In this paper we will discuss the modern wireless sensor networks optimization technique. Wireless sensor networks are made up of a large number of inexpensive devices that are networked via low power wireless communications topologies. It is the networking capability that fundamentally differentiates a sensor network from a mere collection of sensor networks, by enabling cooperation, coordination, and collaboration among sensor assets and devices. Harvesting advances in the past decade in microelectronics, sensing, analog and digital signal processing, wireless communications, and networking, wireless sensor network technology is expected to have a significant impact on our lives in the twenty-first century. Here we implement the application of sensor networks include environmental monitoring system, natural disaster prediction and relief, homeland security, healthcare, manufacturing, transportation, and home appliances and entertainment.

Keywords: wireless networks, sensor networks, wireless devices, sensor assets.

Introduction

Wireless sensor networks ensure a wide range of applications [**1**], it is starting for security surveillance in military and battlefields, monitoring previously unobserved environmental phenomena, smart homes and offices, improved healthcare, industrial diagnosis, and many more. For instance, a sensor network can be deployed in a remote island for monitoring wildlife habitat and animal behavior [**2**], or near the crater of a volcano to measure temperature, pressure, and seismic activities. Wireless sensor networks very useful network protocols which can provide the security services. Which wireless sensor network is used in many applications, the success of the network is highly dependent on the sensors' positions, referred to as the deployment of the network. Deciding the positions of the sensors is the main subject of sensor network deployment, and in turn it depends on the desired coverage of the area of interest. Sensor is the most useful and powerful device which can implement on the wireless networks. With regard to the dynamic deployment problem, initially sensors are located in the area in random positions and the sensors change their positions by using the knowledge of others positions, if they are mobile. These movements attempt to increase the coverage rate of the sensors. However, if the sensors are static, they do not have the ability to change their positions. [3]
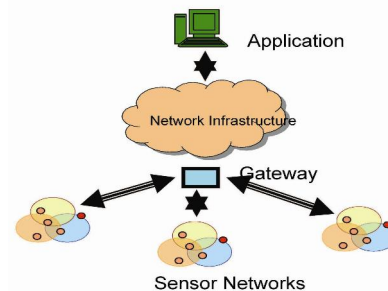
Wireless Sensor Networks Deployment Problem

In wireless sensor approach we have some limitation and we can say that some problems are there. Firstly, problems in the sensor network also affect the monitoring mechanism, thus reducing the desired benefit. Secondly, scarce sensor network resources are used for inspection. In Sympathy [4], for example, up to 30% of the network bandwidth is used for monitoring traffic. Thirdly, the monitoring infrastructure is tightly interwoven with the application. Hence, adding/removing instrumentation may change the application behavior in subtle ways, causing probe effects. Also, it is non-trivial to adopt the instrumentation mechanism to different applications. [5]

Current scenario on Wireless Sensor Networks

Current research in sensor based research areas of wireless communications networks, micro-electromechanical systems and low power design is progressively leading to the development of cost effective, energy efficient, multifunctional sensor nodes. Here we can implement the remote sensing functions and many more typical ideas of using the sensor networks. Sensing, communication,

processing and battery units are the primary components of a sensor node. Individual sensors have the capacity to detect events occurring in their area of deployment.

Wireless sensor networks in Security field

Many wireless sensor networks collect sensitive information and do not provide the any other person. The remote and unattended operation of sensor nodes increases their exposure to malicious intrusions and attacks. Further, wireless communications make it easy for an adversary to eavesdrop on sensor transmissions. For example, one of the most challenging security threats is a *denial-of-service* attack, whose goal is to disrupt the correct operation of a sensor network.

Deployment Problems of wireless sensor networks

In this paper we contain a classification of the problems typically found during deployment according to our own experience. Here, a problem is essentially defined as a behavior of a set of nodes that is not compliant with the specification. We classify problems according to the number of nodes involved into four classes: node problems that involve only a single node, link problems that involve two neighboring nodes and the wireless link between them, path problems that involve three or more nodes and a multi-hop path formed by them, and global problems that are properties of the network as a whole. [5]

Wireless sensor networks Application

There are many applications of wireless sensor networks. But few applications are as follows:

Military Application

Today era is very beautiful because most of the elemental knowledge of sensor networks is basic on the defense application at the beginning, especially two important programs the Distributed Sensor Networks (DSN) and the Sensor Information Technology form the Defense Advanced Research Project Agency (DARPA), sensor networks are applied very successfully in the military sensing. [6] Now wireless sensor networks can be an integral part of military command, control, communications, computing, intelligence, surveillance, reconnaissance and targeting systems.

Environment Application

Nowadays sensor networks are also widely applied in habitat monitoring, agriculture research, fire detection and traffic control. [7] Because there is no interruption to the environment, sensor networks in environmental area is not that strict as in battlefield.

Proposed wireless sensor based Framework model

A wireless network is modeled as a directed to other network topologies. Which can use in wireless devices. Where the set nodes are represented as vertexes V and the set of links between the nodes are represented as edges E. The following are some basic assumptions related to the work are stated.

(i) Nodes Distribution: Nodes are wireless sensor in nature and are distributed in a geographical location.

(ii) Nodes Representation: Wireless network is represented in terms of graph. Let $G = (V,E)$ represent a wireless sensor networks.

Conclusion

In this paper we can discuss the all about the wireless sensor based devices which can used in security areas and many more places like banks, security borders, traffic signals, ATM machines, etc… this is the very important part of the security because it has uses we can create a secure nature and environment. It is provide the full securities.

References

[1]. Akyildiz, I. F., Su, W., Sankarasubramaniam, Y., and Cayirci, E., A Survey on Sensor Networks," in *IEEE Communications Magazine*, Aug. 2002.

[2]. Mainwaring, J. Polastre, R. Szewczyk, D. Culler, and J. Anderson, Wireless sensor networks for habitat monitoring, Proc. 1st ACM Int. Workshop on Wireless Sensor Networks and Applications (WSNA'02), Atlanta, GA, Sept. 2002, pp. 88–97.

[3]. Gaige Wang, Lihong Guo, Hong Duan, Luo Liu, Heqi Wang, Dynamic Deployment of Wireless Sensor Networks by Biogeography Based Optimization Algorithm, *J. Sens. Actuator Netw.* 2012,

[4]. N. Ramanathan, K. Chang, R. Kapur, L. Girod, E. Kohler, and D. Estrin. Sympathy for the Sensor Network Debugger. In SenSys 2005

[5]. Matthias Ringwald, Kay Romer, Deployment of Sensor Networks: Problems and Passive Inspection.

[6]. Chee-Yee Chong; Kumar, S.P., "Sensor networks: Evolution, opportunities, and challenges,"Proc IEEE, August 2003.

[7]. Akyildiz, I.F., W. Su, Y. Sankarasubramaniam, E. Cayirci, "A Survey on Sensor Networks",IEEE Communications Magazine, August, 102-114(2002).

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