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Survey on Fault Categorization on Wireless Sensor Network by Using Data Validation and Round Trip Delay and Paths

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ABSTRACT

In recent years, the applications of the wireless sensors networks (WSN) have increased tremendously due to its huge potential of connecting the physical world and the virtual world. Also, advancement in Microelectronic Fabrication Technology (MFT) decreases the cost of manufacturing portable wireless sensor nodes. It is a trend to deploy large number of wireless portable sensors in the WSNs to have an increased quality of service (QoS). The QoS of WSNs is hugely affected by the failure of the sensor nodes. The portability of failures in sensor nodes is directly proportional to increase in the number of sensors. In order to keep up better QoS under failure conditions, identifying and removing such faults are important. Faulty sensor node is recognized by estimating the round trip delay (RTD) time of discrete round trip paths and comparing them with threshold value. The RTD time results derived in hardware and software implementations are almost equal, justifying the real time applicability of the investigated method is used. In proposed approach we have added one more technique to identify the faulty node with RTD and RTP which is data verification techniques. In this schema Sink node will verify the data to ensure the defect is present in sensor node or not. This paper focus on the survey of fault categorization system established by different authors, in this paper, we discussed the different techniques implemented fault categorization in wireless network system.

Keywords : Faulty sensor node, round trip delay, round trip paths, WSNs, data validation.

I. INTRODUCTION

Wireless Sensor Network (WSN) is a wireless network, which consists of hundreds and hundreds of sensor nodes that are deployed in any area to monitor the status of military applications, weather, forest surveillance etc. there is a huge advantage of using sensor nodes in many applications, we also find some disadvantages since, the sensor nodes are small in size and contains non-rechargeable batteries. This leads to battery constraint and reduces the lifetime of the network.

RTD times of discrete RTPs are compared with threshold value which is based on time unit and data verified and checked by BS to determine failed or malfunctioning sensor node. Initially this method is tested and verified on six wireless sensor nodes, implemented by using microcontroller and Zigbee. Generalized model to determine the fault detection analysis time and data for WSNs by using discrete RTPs and data verification technique is suggested. Various experiments are performed in hardware and software based on RTD time measurements. Analysis time in all cases of fault detection is determined with the help of generalized model. Result analysis in hardware and software indicate that RTD time measurement results in both cases are quite equal,

validating the real time applicability of this method

1.In wireless sensor networks wireless communication medium is used, which are accessible by everyone and it has a radio interface set at the same frequency. Due to this sensor node can be faulty node.
2.For the detection of the faulty node we are using the round trip delay (RTD) time of discrete round trip paths (RTPs) techniques by adding one more parameter checking in it i.e. data of the sensor node. We can detect faulty node using time factor and data of the sensor node.
3.In the large networks of sensor nodes it is difficult to find out faulty or defective sensor node. Proposed system is able to detect faulty not efficiently.

II. RELATED WORK

[1] In this paper, Multipath routing protocol is proposed based on three categories infrastructure based, non-infrastructure based and coding based, based on the special techniques used in building multiple paths and delivering sensing data. For each design we overview a new technique for better results in that criteria.

[2] In this paper, fault management system for wireless sensor networks is proposed; this system detects the faulty nodes from the network of sensor nodes. Network is divided in parts to support scalability and to perform fault detection and recovery locally with very less energy consumption. For every parts cell manager and gateway nodes are selected to find out faulty node in the network.

[3] In this paper, there is identification of various objectives and enumerate the different models and formulations. Here given that categories of the placement strategies into static and dynamic depend upon if the optimization is performed at the time of deployment or when the network is optimal respectively. Then the published technics are classified on the basis of the role of node plays in the network and the initial performance objective is considered.

[4] In this paper, Distributed fault detection is used to find out faulty nodes by data exchange and manually checking surrounding nodes and also is effective in finding out more no of faulty nodes in the sensor network. DFD is also able to detect soft fault i.e. sensor node is working but data sensed by it is not correct.

[5] In this paper, to insure the QoS there is designed hop by hop QoS control algorithm utilization based on source path redundancy. Using this technique we can enhance network lifetime. We discover that there exists optimal “source” and “path” redundancy under which the lifetime of the system is maximized while satisfying application Quality of Service requirements. Numerical data are presented and validated through extensive simulation, with physical interpretations given, to demonstrate the feasibility of our algorithm design.

[6]This paper is based on TDOA technique (Time Differential Of Arrival). This method is used to measure the energy consumption of sensor node while data sending. This method is also based on the context of mobility characterization in transport domain and compares their results with localized sensor nodes.

[7]This paper is based on sensor deployment in large Wireless sensor networks. This paper is based on three techniques a uniform random, a square grid, and a pattern-based Tri-Hexagon Tiling (THT) node deployment. Using basic geometry we propose a novel strategy for calculating the relative frequency of exactly k-covered points, which uses k-coverage maps, for both a square grid and THT.

III. CONCULSION

The proposed method helps to increases the network lifetime of the wireless sensor network also introduced the method by which classifies the faulty sensor nodes. In this network we set different threshold value for base station depend on the distance factor of sensor node. The propose system also enhance the system performance.

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