Multi Host Data Collection In Wireless Sensor Network Using Gang Scheduling Algorithm

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Abstract:

In recent years there has been an increased focus on the use of sensor networks. The Wireless sensor network consisting of spatially distributed autonomous device using sensor to monitor physical or environmental conditions. In existing system focus on fair data delivery with maximum schedule length, maximum delay and high energy consumption. In future systems focus on maximizing fairness of data and minimizing schedule length, minimizing latency, minimizing energy consumption for data collection. In our future system the data be supposed to be collected as quickly and reduces the time slots and data collection with in the short period of time using Gang scheduling in multi host environment.

Keyword: sensor networks, maximizing fairness of data and minimizing schedule length, minimizing latency, data collection.

Introduction:

The Data is the collection of facts or even just descriptions of things. Data is the information that has been translated into a form that is more convenient to move or process. Data is the information converted in binary form to digital form. Data can be qualitative or quantitative. Qualitative data is description of information. Quantitative data is numerical information. Data collection is the process of gathering and measuring information on variables of interest. Generally there are three types of data collection and they are Surveys Interviews and Focus Group Data collection is a systematic approach to gathering information from variety of sources to get a complete picture. Wireless is term used to describe telecommunication in which electromagnetic in which waves (rather than some form wire) carry the signal over part or the entire communication path. Sensor is a device that detects or responds to some type of input from the physical environment. The output is a signal that is converted to human-readable display at the sensor location or transmitted electronically over a network for reading or further processing. Network is a group of two or more systems linked together. A computer network contains many types they are: LAN, WAN, CANs, MANs, HANs.

A wireless sensor network (WSN) is a wireless network consisting of spatially distributed autonomous devices using sensors to monitor physical conditions. A WSN incorporates a gateway that provides wireless connectivity back to the wired world and distributed nodes. The wireless protocol to select depends on application requirements. The WSN supports observing and scheming of physical environments from remote locations with good accuracy of data. The challenges of WSNs are to meet the end-to-end delay requirement of control applications under wireless interferences and the severely limited resource constraints of WSNs. The number of protocols has been proposed in the literature for data collection in WSNs that balance the communication cost, delay, and reliability.

Scheduling algorithm the method used to determine which of several processes, each of which can safely have a resource allocated to it, will actually be granted use of the resource.

Gang scheduling is a scheduling algorithm for more system that schedules related threads or process to run simultaneously on different processor. Gang scheduling is used so that if two or more threads or processes communicate with each other they will be ready to communicate at the same time. In gang scheduling a job are grouped together and scheduled concurrently in a set of processes.

Algorithm:

Gang Scheduling is scheduling algorithm for parallel systems that schedules related threads or processes to run simultaneously on different processors. Using Gang Scheduling Algorithm to collect various types of data distributes and receives the information to the various resources. Gang scheduling avoids the problem of inefficient resources and scheduling length and unfairness data collection. Gang scheduling is stricter than Co scheduling. It requires all threads of the same process to run concurrently at the same time. Gang scheduling is a scheduling algorithm for parallel system that schedules related threads or process to run simultaneously on different processor. Gang scheduling is used so that if two or more threads or processes communicate with each other they will be ready to communicate at the same time.

In gang scheduling a job are grouped together and scheduled concurrently in a set of processes. In future system, the number of sensor nodes are grouped together which is helpful for collecting the data. The data collection process will be done in fast manner for minimizing the scheduling length and maximizing the fairness of data. In gang scheduling, a set of tasks are grouped together into a gang and scheduled simultaneously in a set of processors. The following steps are involved in Gang Scheduling algorithm:

Step 1: Identify the activate node from several nodes in Wireless Sensor Network (No. of Nodes).

Step 2: Find the various Path through Gateway

Step 3: Using fitness function to reduce Scheduling length & maximize the fairness of Data collection. $\{A\ N\ I\} < \sum N\ I\ req$

Step 4: Rescheduling sensor node for data collection

Step 5: Repeat the steps from 1 through 4 for further transfer of data collection.

Where (ANI) = Activate Node Identification. (NI) = Node Identification.

Req=Required
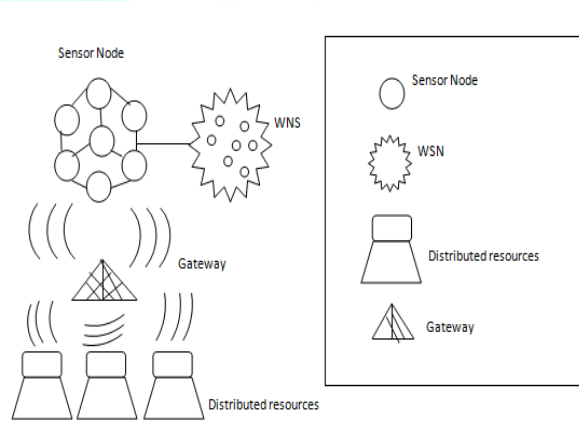
In this above architecture diagram, it contains distributed network, Gateway and sensor node. Sensor Nodes are connected each other by using gateway. The no of gateways connected to be various topologies. Gateway distributes the resources to many resources In Wireless Sensor Network, it contains the several sensor nodes and it distributes the information in fast manner using gang scheduling.

Conclusion:

In this scheme it overcomes the problem of maximizing the scheduling length and clear fairness of data. In existing system they consider only the high energy consumption and did not consider the scheduling length using TDMA scheduling. Using node identification and path identification, data collection process will occur through the gateway. Here the data collection will occur within the short

period of time using the gang scheduling algorithm. The main objective of the systems focus on maximizing fairness of data and minimizing schedule length, minimizing latency, minimizing energy consumption for data collection.

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