



Reconstruction of Compressed Signal Using SDMMDA Protocol in WSN

KEYWORDS

Compressive Sensing, Wireless sensor network, cReconstruction, energy consumption.

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ABSTRACT *Wireless sensor network is network containing many sensor nodes and a base node or called as a sink node. The energy is consumed by every sensor network and each node in sensor network. So by using hybrid compressive sensing the energy consumption can be reduced. Wireless sensor networks consists of spatially distributed sensor nodes. These sensor nodes communicates with each other for transferring data from one node to another. Energy is consumed by the sensor nodes while transfer of data. So the energy consumption is high in wireless sensor networks. Here we are trying to combine the simple deterministic measurement matrix design algorithm with hybrid CS to get the accurate signal reconstructed at base station.*

Introduction

A wireless sensor networks is a network consisting of group of nodes called as sensor nodes and one sink node or also known as base node. In wireless sensor networks sensor nodes needs to send the data to the base node or called as sensor nodes. This energy is consumed by the sensor nodes to send the data and receiving the data.

To transmit data from one sensor to another by multi-hop routing the traditional data gathering and processing method is used. Finally the data will be transmitted to the sink node respectively to the route. Disadvantage of traditional method lies in the unbalanced energy consumption for each sensor and redundant data transmissions. The sensor closer to the sink will consume more energy than other sensors.

To avoid the redundant data transmissions, some researches introduce methods of data fusion to process data in Wireless sensor networks. More completed routing protocols and much higher computation ability will be needed for each sensor. Data fusion methods cannot solve unbalanced energy consumption problems. A novel method named compressive sampling theory (CS) has received more attentions at present. In this paper, we investigate compressive data gathering and original signal reconstruction in wireless sensor networks (WSNs). By using the Compressive Sampling theory, the energy consumption can be balanced and the redundant data transmissions can also be avoided.

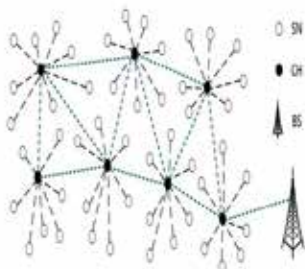


Fig 1. Wireless sensor network

Related Work

There are many clustering methods available and many are proposed for better clustering in sensor network. Now spatial correlation is based on locations of sensor nodes in the network.

Reference no.	Description	Drawback
1.	Fei Yuan, Yiju Zhan, and Yonghua Wang in 2014 proposed a Data Density Correlation Degree Clustering Method for data aggregation for representative data to be accurate when compared to real data.	The work here done can also be conducted on real sampled data. They didn't done it yet.
2.	Jennifer Yick, Biswanath Mukherjee, Dipak Ghosal in 2008 surveyed wireless sensor network on internal platform and underlying operating System, communication protocol stack and network Services and compared different designs and algorithm	Only survey of various data collection techniques is given.
3.	Luís M. L. Oliveira, Joel J. P. C. Rodrigues in 2011 surveyed on environmental monitoring and analysis was done on their real deployments	only survey is done on environmental monitoring and no method is proposed
4.	BANG WANG in 2011 surveyed on coverage problems in wireless sensor network and also provided comments and discussions on coverage problems	They currently only focuses on two dimensional coverage problems.
5.	Samuel Madden, Michael J. Franklin Joseph M. Hellerstein in 2002. proposes a tiny aggregation service for sensor networks which causes magnitude reduction in bandwidth consumption.	They do not focus on data collection needs of wireless sensor network.

6.	Jun Zheng, Pu Wang and Cheng Li in 2010 studied the problems in applying Slepian-Wolf coding for data aggregation in wireless sensor network and proposed a joint coding scheme with low complexity	The only focus is on data aggregation.
7.	Mehmet C. Vuran, Ozgur B. Akan in 2004 introduces a theoretical framework for energy efficient communication protocols in wireless sensor networks.	Only a theoretical concept is given not an implementation.
8.	Jinhui yuan, hong Chen in 2009 proposed a optimized clustering technique on spatial-correlation which collects data and reduces the messages in WSN and avoids the impact of unpredicted data	They didn't focus on number of transmissions in wireless sensor network.

Proposed Method

Here we are proposing a method to reduce energy consumption in wireless sensor network. In our proposed method we are using hybrid compressive sensing approach to reduce the energy consumption. Along with we are using the SDDMA protocol which is simple deterministic measurement matrix design algorithm. When compressed data is sent to base station at the base station we need to reconstruct the signal to its original signal. So the reconstruction of signal should accurate. The algorithm which we will be using is as follows.

The given algorithm is very easy and can be implemented easily. So when this algorithm is used with the compressive sensing approach we are trying to get the best recovered signal at the sink node or base node.

This is not a iterative algorithm, So the algorithm runs very fast. What is more important, SDMMDA is much more application oriented than other deterministic measurement matrix design algorithms.

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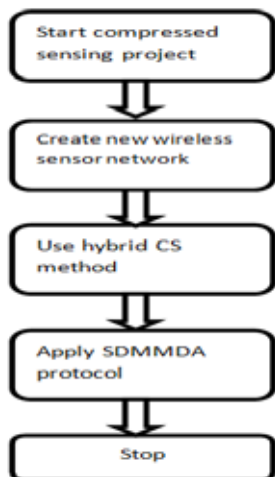


Fig. 1. Proposed System

The proposed method is as shown above. After applying hybrid CS approach we are using simple deterministic measurement matrix design algorithm protocol to reconstruct the accurate signal at the base station or sink node.

conclusion

In existing system energy consumption is reduced by reducing number of transmission in wireless sensor network. Here we are proposing a method in which by combining the simple deterministic measurement matrix design algorithm protocol with existing system we are trying to get the original signal in most accurate form in wireless sensor network.

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