INFORMATION CONTENT BASED NODE IN WIRELESS SENSOR NETWORK

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ABSTRACT

The Information Content BasedNode In Wireless Sensor Network is very challenging because the network topology can be highly dynamic, the network may not be always connected, and the resources are limited. we take a probabilistic approach and propose two node failure detection schemes that systematically combine localized monitoring, location estimation and node collaboration. Extensive simulation results in both connected and disconnected networks demonstrate that our schemes achieve high failure detection rates (close to an upper bound) and low false positive rates, and incur low communication overhead. Compared to approaches that use centralized monitoring, our approach has up to 80% lower communication overhead, and only slightly lower detection rates and slightly higher false positive rates.

1.Introduction

Wireless sensor networks (WSNs) is a collection of nodes, which are deliberately or stochastically distributed in the environment for sensing and monitoring purposes. Many studies in the field of wireless sensor network made it possible to sense the environment and perform processing over the recorded data. Such networks perform data-centric activities, including aggregation or summarization of results before communicating within same or different networks. The battery-operated sensors incurs minor installation and maintenance cost. Owing to limited energy, the sensor nodes have restricted processing and communication capabilities. Sensors draw power from the batteries for communication and computation activities, however, in most of the cases power cannot be renewed or replaced. Therefore, power is a limited resource in sensor nodes. Different mechanisms are adopted for sending or receiving data in the network for minimizing the use of power of nodes. With limited power, a node is the monitored area. So a large number of nodes sense their area and collect datagroups, then communicate with other nodes before in capable of sensing only a small portion oftransmission to the base station orsink. During packettransmission, wireless network faces problem of congestion.Congestion often leads to data loss, making retransmissionof the lost data

inevitable.Hence, the senders transmit lost datarepeatedly to the sink, there by causing rapid dissipation of sensor power. Frequent losses during packet transmissions makes the highly unreliable. Therefore, in order to improvenetwork services, the reliability factor needs to be re enforced.To achieve this goal, it becomes necessary to understand theinternet traffic attributes along with analyzing the pattern ontraffic generation rate. For designing a reliable network, thetraffic characteristics of source nodes requires to be examined.Previous research establishes the fact that frequent transmissionfrom large number of sensors exhibit self similarity in thegenerated traffic pattern. In other words, network with hightransmission rate leads to recognition of self similar process.

Objectives

- Input Design is the process of converting a user-oriented description of the input into a computer-based system. This design is important to avoid errors in the data inputprocess and show the correct direction to themanagement for getting correct information from the computerized system.
- It is achieved by creating user-friendly screens for the data entry to handle large volume of data. The goal of designing input is to make data entry easier and to be free from errors. The data entry screen is designed in such a way that all the data manipulates can be performed. It also provides record viewing facilities.

2. Existing System

This approach assumes that there always exists a path from a node to the central monitor, and hence is only applicable to networks with persistent connectivity. In addition, since a node can be multiple hops away from the central monitor, this approach can lead to a large amount of network-wide traffic, in conflict with the constrained resources in mobile wireless networks. Another approach is based on localized monitoring, where nodes broadcast heartbeat messages to their one-hop neighbors and nodes in a neighborhood monitor each other through heartbeat messages. Localized monitoring only generates localized traffic and has been used successfully for node failure detection in static networks.

drawbacks:

- Therefore, techniques that are designed for static networks are not applicable.
- The network may not always be connected.
- Therefore, approaches that rely on network connectivity have limited applicability

3.Proposed System

we propose a novel probabilistic approach that judiciously combines localized monitoring, location estimation and node collaboration to detect node failures in wire-less sensor networks. Specifically, we propose two schemes. In the first

scheme, when a node A cannot hear from a neighboring node B, it uses its own information about B and binary feedback from its neighbors to decide whether B has failed or not. In the second scheme, A gathers information from its neighbors, and uses the information jointly to make the decision.

The objectives of proposed system are:

- In addition, since a node can be multiple hops away from the central monitor, this approach can lead to a large amount of network-wide traffic, in conflict with the constrained resources in mobile wireless networks.
- Another approach is based on localized monitoring, where nodes broadcast heartbeat messages to their one-hop neighbors and nodes in a neighborhood monitor each other through heartbeat messages.

4.Methodology

Modules Used:

1. Node initialization
2. Key pre-distribution
3. Secure routing
4. Optimal path finder
5. Data Transmission

ModuleDescription:

NODE INITIALIZATION

Sensor network is composed of a large number of sensor nodes. Sensor nodes are small, low-cost, low-power devices that have following functionality: communicate on short distances, sense environmental data and perform limited data processing. Many applications in wireless sensor networks (WSN) typically initialize themselves by self-organizing after deployment.

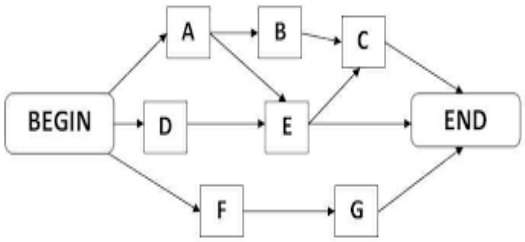


Fig:1 node initialization

KEY PRE-DISTRIBUTION

Key distribution is an important issue in wireless sensor network (WSN) design. Key pre-distribution schemes suggest storing a small number of keys, say k, at each node from a key pool containing all keys. Such set of keys is named a key ring and is pre-loaded to a node at the initialization phase but there are several others that attempt at choosing keys in smarter ways

SEURE ROUTING

Secure message exchange by means of probabilistic asymmetric key management introduces an overlay network in which an overlay layer rides onC top of the underlay layer. The overlay layer also referred to as the cryptographic layer is formed by the key pre-distribution scheme. It can be modeled with a directed k-

regular graph in which each vertex represents a node in the network and each directed edge.

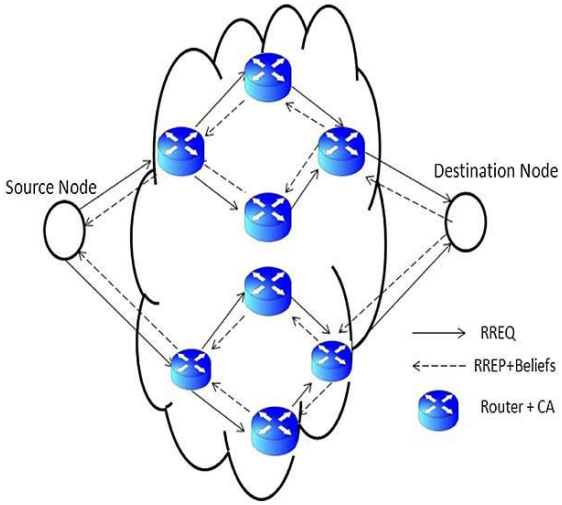


Fig:2 secure routing

OPTIMAL PATH FINDER

The goal is then to find the best path from a source node s to a destination node d. The best path is the path on which both security and performance are optimally measured. The security measure in this context is the number of intermediate decryption-encryption steps that are to be minimized. The performance metric is the shortest underlay path between the source node and the destination node i.e., a shorter overlay path length, is chosen as the optimal path.

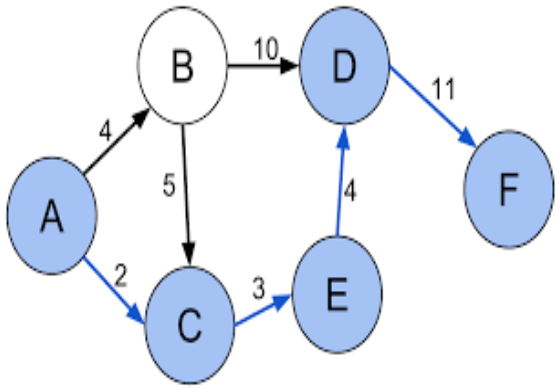


Fig:3 optimal path

DATA TRANSMISSION

Data transmission, Sending and receiving data via cables or wireless relay systems. Data transmitted may be digital messages originating from a data source, for example a computer or a keyboard. On transmission to one node to other node.

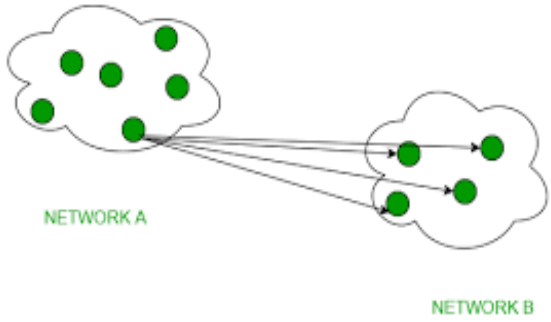


Fig:4 data transmition

5. Applications

- Military Applications
- Health Applications
- Environmental Applications
- Home Applications
- Commercial Applications
- Area monitoring

6. System Architecture

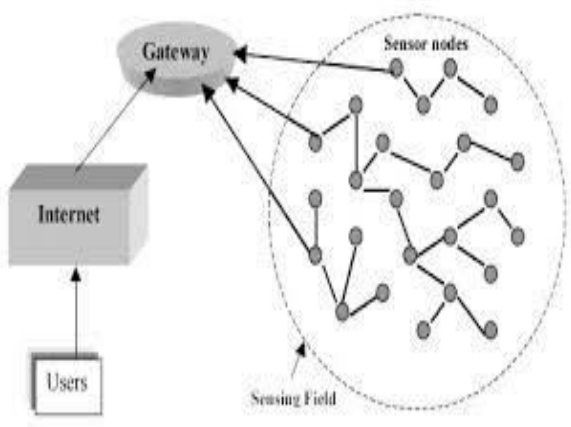
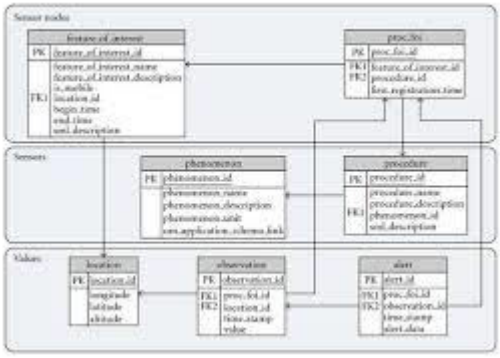


Fig:5 system flow

7.Relation Schema



8.Advantages

- Flexible if there is a casual situation when an additional workstation is required.
- Execution pricing is inexpensive.
- It avoids plenty of wiring.
- It might provide accommodations for the new devices at any time.
- It can be opened by using a centralized monitoring.
- Implementation of **wireless sensor network** pricing is very cheap because, in these wires are not used.
- It is important because **WSN** are scale able.

9. Implementation

Microsoft .NET is a set of Microsoft software technologies for rapidly building and integrating XML Web services, Microsoft Windows-based applications, and Web solutions. The .NET Framework is a language-neutral platform for writing programs that can easily and securely interoperate. There's no language barrier with .NET: there are numerous languages available to the developer including Managed C++, C#, Visual Basic and Java Script. The .NET framework provides the foundation for components to interact seamlessly, whether locally or remotely on different platforms. It standardizes common data types and communications protocols so thatcomponents created in different languages can easily interoperate.

".NET" is also the collective name given to various software components built upon the .NET platform. These will be bothproducts (Visual Studio.NET and Windows.NET Server, forinstance) andservices (like Passport, .NET My Services, and so on).

10.Conclusion

In this paper, we presented a probabilistic approach and designed two node failure detection schemes that combine localized monitoring, location estimation and node collaboration for mobile wireless networks. Extensive simulation results demonstrate that our schemes achieve high failure detection rates, low false positive rates, and low communication overhead. We further demonstrated the tradeoffs of the binary and non-binary feedback schemes.

11.References

Ghanavati, S.; Abawajy, J.; Izadi, D., "A fuzzy technique to controlcongestion in WSN," Neural Networks (IJCNN), The 2013 InternationalJoint Conference on, vol., no., pp.1,5, 4-9 Aug. 2013

[2] Kim, Y.G.; Shiravi, A.; Min, P.S., "Congestion Prediction of Self-Similar Network through Parameter Estimation," Network Operationsand Management Symposium, 2006. NOMS 2006. 10th IEEE/IFIP ,vol., no., pp.1,4, 3-7 April 2006.

[3] Xiaoyan Yin; Xingshe Zhou; Rongsheng Huang; Yuguang Fang;Shining Li, "A Fairness-Aware Congestion Control Scheme in WirelessSensor Networks," Vehicular Technology, IEEE Transactions on ,vol.58, no.9, pp.5225,5234, Nov. 2009.

[4] Patil, D.; Dhage, S.N., "Priority-based Congestion Control Protocol(PCCP) for controlling upstream congestion in Wireless SensorNetwork," Communication, Information & Computing Technology(ICCICT), 2012 International Conference on , vol., no., pp.1,6, 19-20Oct. 2012.

[5] Kihong Park and Walter Willinger, “Self similar network traffic: AnOverview”, Wiley Interscience, 2000.

[6] Kihong Park and Walter Willinger, “Self-Similar Network Traffic andPerformance Evaluation”, Wiley Interscience, 2000

[7] Jeongyeup Paek and Ramesh Govindan, “RCRT: Rate-controlledreliable transport protocol for wireless sensor networks”. ACMTransaction of Sensor Network 7, Article 20, 45 pages ,October 2010.

[8] Cheng Tien Ee and Ruzena Bajcsy. 2004. “Congestion control andfairness for many-to-one routing in sensor networks”. In Proceedings ofthe 2nd international conference on Embedded networked sensor
systems (SenSys '04). ACM, New York, NY, USA, 148-161..

[9] Sergiou, C.; Vassiliou, V., "HRTC: A Hybrid Algorithm for EfficientCongestion Control in Wireless Sensor Networks," New Technologies,Mobility and Security (NTMS), 2014 6th International Conference on ,vol., no., pp.1,5, March 30 2014-April 2 2014.