Weighted Crowdsourcing Approach For Network Measurement In Wireless Network

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Abstract- *A channel allocation can have a significant impact on the performance of multi-channel communication. This paper proposes a set of distributed protocols for channel allocation in WSNs with theoretical bounds. We first consider the problem of minimizing the number of channels needed to remove interference in a WSN, and propose both receiver-based and link- based distributed channel allocation protocols. Then, for WSNs with an insufficient number of channels, we formulate a fair channel allocation problem whose objective is to minimize the maximum interference (MinMax) experienced by any transmission link in the network.*

I. INTRODUCTION

Mobile wireless networks have been used for many mission critical applications, including search and rescue [17], environment monitoring, disaster relief, and military operations. Such mobile networks are typically formed in an ad-hoc manner, with either persistent or intermittent network connectivity we first consider the problem of minimizing the number of channels needed to remove interference in a WSN, and propose both receiver-based and link-based distributed channel allocation protocols. Nodes in such networks are vulnerable to failures due to battery drainage, hardware defects or a harsh environment. Detecting node failures is important for keeping tabs on the network**.** Node failure detection in mobile wireless networks is very challenging because the network topology can be highly dynamic due to node movements .However, when being applied to mobile networks, this approach suffers from inherent ambiguities — when a node A stops hearing heartbeat messages from another node B, A cannot conclude that B has failed because the lack of heartbeat messages might be caused by node B having moved out of range instead of node failure. We have evaluated our schemes using extensive simulation in both connected and disconnected networks (i.e., networks that lack contemporaneous end-to- end paths) demonstrate that both). The network is typically disconnected. When a node meets a sink, it dumps all the witness information to the sink . The s i n k t h e n r e l a y s the information to the manager node, which can be used for rescue purpose (e.g., determine the last location of a missing person). In this application, it is also valuable to keep track of node failures so that the manager node can schemes achieve highfailure detection rates, low false positive rates.when a node A stops hearing heartbeat messages from another node B, A cannot conclude that B has failed because the lack of heartbeat messages might be caused by node B having moved out of range instead of node failure.

II. LITERATURE REVIEW

Under this topic we are using different kind of paper for improving our project result. The newly added traits on here is, Different from one sink scenario, a sender ID field, mgs .sID, is added to each trail message to distinguish them from different senders[2][3][6][10]. The impact of several design factors of Sink Trail is investigated and analyzed [15] [25] [26]. The node can choose the neighbor closest to a mobile sink in any coordinate [5] [21] [20].

III. EXISTING SYSTEM

The habitat monitoring precision agriculture and forest fire detection. In these applications, the sensor network will operate under few human interventions either because of the hostile environment or high management complexity for manual maintenance. Since sensor nodes have limited battery life, energy saving is of paramount importance in the design of sensor network protocols. Recent research on data collection reveals that, rather than reporting data through long, multi hop, and error prone routes to a static sink using tree or cluster network structure, allowing and leveraging sink mobility is more promising for energy efficient data gathering .Mobile sinks, such as animals or vehicles equipped with radio devices, are sent into a field and communicate directly with sensor nodes, resulting in shorter data transmission paths and reduced energy consumption. However, data gathering using mobile sinks introduces new challenges to sensor network applications. To better benefit from the sink's mobility, many research efforts have been focused on studying or scheduling movement patterns of a mobile sink to visit some special places in a deployed area, in order to minimize data gathering time. In such approaches a mobile sink moves to predetermined sojourn points and query each sensor node individually.

Disadvantages

The protocols have been proposed to achieve efficient data collection via controlled sink mobility determining an optimal moving trajectory for a mobile sink is itself an NP-hard problem , and may not be able to adapt to constrained access areas and changing field situations.

A data gathering protocol using mobile sinks suggests that a mobile sink announce its location information frequently throughout the network.

IV. PROPOSED SYSTEM

The proposed Sink Trail protocol can be readily extended to multi sink scenario with small modifications. When there is more than one sink in a network, each mobile sink broadcasts trail messages following Algorithm 1. Different from one sink scenario, a sender ID field, mgs. ID, is added to each trail message to distinguish them from different senders. Algorithms executed on the sensor node side should be modified to accommodate multi sink scenario as well. Instead of using only one trail reference, a sensor node maintains multiple trail references that each corresponds to a different mobile sink at the same time. Example of two mobile sinks. Two trail references, colored in black and red, coexist in the same sensor node. In this way, multiple logical coordinate spaces are constructed concurrently, one for each mobile sink. When a trail message arrives, a sensor node checks the mobile sink's ID in the message to determine if it is necessary to create a new trail reference. The procedure is summarized in Algorithm 4. In Sink Trail references of each node represent node locations in different logical coordinate spaces, when it comes to data forwarding, because reporting to any mobile sink is valid, the node can choose the neighbor closest to a mobile sink in any coordinate.

Advantages

The results and demonstrates the advantages of SinkTrail algorithms over previous approaches. The impact of several design factors of SinkTrail is investigated and analyzed.

One advantage of SinkTrail is that the logical coordinate of a mobile sink keeps invariant at each trail point, given the continuous update of trail references.

The advantage of incorporating sink location tracking, we compare the overall energy consumption of Sink Trail with these protocols. Simulation results for Sink Trail-S are also presented to show further improved performance.

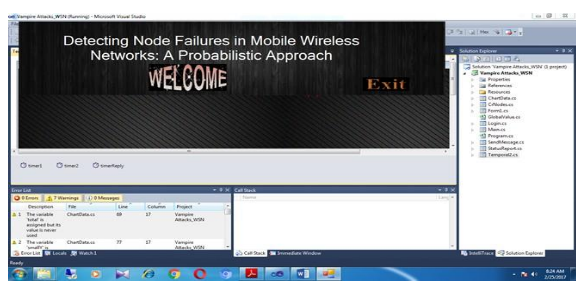
V. MODULE DESCRIPTION

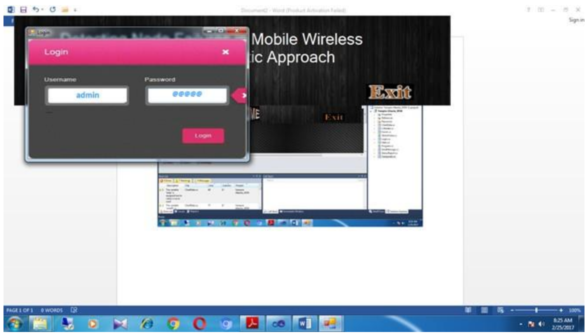
The proposed protocol can allows six modules in this system and description and below.

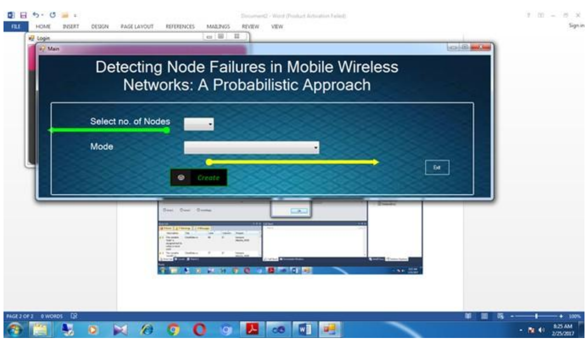
1. Protocol Design
2. Destination Identification
3. Network Maintains Routing
4. Sink Trail Protocol
5. Patterns of a Mobile Sink
6. Broadcasting Frequency

5.1 Protocol Design

We consider a large scale, uniformly distributed sensor network IN deployed in an outdoor area. An example deployment. Nodes in the network communicate with each other via radio links. We assume the whole sensor network is connected, which is achieved by deploying sensors densely. We also assume sensor nodes are awake when data gathering process starts (by synchronized schedule or a short "wake up" message). In order to gather data from IN, we periodically send out a number of mobile sinks into the field. These mobile sinks, such as robots or vehicles with laptops installed, have radios and processors to communication with sensor nodes and processing sensed data. Since energy supply of mobile sinks can be replaced or recharged easily, they are assumed to have unlimited power.







5.2 Destination Identification

Sink Trail facilitates the flexible and convenient construction of a logical coordinate space. Instead of scheduling a mobile sink's movement, it allows a mobile sink to spontaneously stop at convenient locations according to current field situations or desired moving paths. These sojourn places of a mobile sink, named trail points in Sink Trail, are footprints left by a mobile sink, and they provide valuable information for tracing the current location of a mobile sink.

5.3 Network Maintains Routing

Every sensor node in the network maintains a routing table of size Orb consisting of all neighbors' trail references .This routing table is built up by exchanging trail references with neighbors, as described in Algorithm 3; and it is updated whenever the mobile sink arrives at a new trail point. Although trail references may not be global identifiers since route selection is conducted locally, they are good enough for the Sink Trail protocol. Because each trail reference has only three numbers, the size of exchange message is small. When a node has received all it neighbors' trail references, it calculates their distances to the destination reference,
½2; 1; 0_, according to 2-norm vector calculation, then greedily chooses the node with the smallest distance as next hop to relay data. If there is a next hop node can be randomly selected.

5.4 Sink Trail Protocol

The proposed Sink Trail protocol can be readily extended to multi sink scenario with small modifications. When there is more than one sink in a network, each mobile sink broadcasts trail messages following Algorithm 1. Different from one sink scenario, a sender ID field, msg. Sid, is Added to each trail message to distinguish them from different senders. Algorithms executed on the sensor node side should be modified to accommodate multi sink scenario as well. Instead of using only one trail reference, a sensor node maintains multiple trail references that each corresponds to a different mobile sink at the same time. Fig. 5 shows an example of two mobile sinks. Two trail references, colored in black and red, coexist in the same sensor node. In this way, multiple logical coordinate spaces are constructed concurrently, one for each mobile sink. When a trail message arrives, a sensor node checks the mobile sink's ID in the message to determine if it is necessary to create a new trail reference.

5.5 Patterns of a Mobile Sink

The moving pattern of a mobile affect the energy consumption for data collection, as directional change in a mobile sink's movement is unavoidable due to occasional obstacles depicted. To numerically model the moves conducted by a mobile sink, we trace the moving trail of a mobile sink on a plain and measure the directional change at each trail point. Specifically, suppose at some time the mobile sink arrives at trail point we define the angular displacement as the angular variation of moving directions. The Illustrates an example of recorded angular displacements at multiple trail points.

5.6 Broadcasting Frequency

The impact of sink broadcast frequency is two sided. If the mobile sink broadcasts its trail messages more frequently, sensor nodes will get more up-to-date trail references, which is helpful for locating the mobile sink. On the other hand, frequent trail message broadcast results in heavier transmission overheads. Suppose the time duration between two consecutive message broadcasting.

VI. CONCLUSION

We presented a probabilistic approach and designed two node failure detection schemes that combine localized monitoring, location estimation and nodecollabora-tion for mobile wireless networks. Extensive simulation results demonstrate that our schemes achieve high failure detection rates, low false positive rates, and low communication over-head. We further demonstrated the tradeoffs of the binary and non-binary feedback schemes. As future work, we plan to evaluate our schemes using real world mobility traces and in scenarios with irregular transmission ranges. Our approach relies on location estimation and the usage of heartbeat messages for nodes to monitor each other. Therefore, it does not work when location information is not available or there is communication blackouts.

VII. REFERANCES

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