International Journal of Research in Advent Technology (IJRAT) Special Issue
E-ISSN: 2321-9637
Available online at www.ijrat.org
National Conference on "Role of Information Technology in Social Innovations"
26th & 27th February 2019

Underwater Sensor Network

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Abstract-Underwater wireless device networks (UWSNs) are showed as a promising technology to observe and explore the oceans in lieu of ancient undersea wire line instruments. withal, the info gathering of UWSNs remains severely restricted thanks to the acoustic channel communication characteristics. a way to boost the info assortment in UWSNs is thru the planning of routing protocols considering the distinctive characteristics of the underwater acoustic communication and therefore the extremely dynamic topology. during this paper, we have a tendency to propose the GEDAR routing protocol for UWSNs. GEDAR is associate any forged, geographic and expedient routing protocol that routes knowledge packets from device nodes to multiple sonobuoys (sinks) at the sea's surface. once the node is in a very communication void region, GEDAR switches to the recovery mode procedure that is predicated on topology management through the depth adjustment of the void nodes, rather than the standard approaches victimization management messages to find and maintain routing ways on void regions. Simulation results show that GEDAR considerably improves the network performance when put next with the baseline solutions, even in laborious and tough mobile situations of terribly distributed and extremely dense networks and for top network traffic hundreds.

Keywords-Local minimum problem, Topology control, Underwater sensor networks

I. INTRODUCTION

In our earth twenty fifth coated by individual and remaining area is roofed by water that would be stream and oceans additionally. In underwater wireless sensing element network a lot of little water physical object like fish, crocodilian reptile and plenty of a lot of. Suppose a individual work on explicit a specific factor therefore some special devices ought to be in underwater wireless sensing element network which will add underwater wireless sensing element network system that ought to be ready to move at intervals underwater. these days increasing the demand some special routing protocol which might work into underwater wireless sensing element network. For this purpose of analysis situation underwater sensing element network with some totally different routing protocol out there that play some specific role within the underwater wireless sensing element network that why some scientists area unit operating for developing algorithmic program. Underwater routing sensing element network not solely useful for giving high dependability that ought to be ready to management high dependability of data sent to the SINK node however additionally its delay comparatively low.

Underwater sensing element network ready to perform operation into long terms non time important aquatic watching applications wherever GPS support isn't need. The design of routing protocols simply adapt to dynamical topology. scale back energy consumption and therefore the network nodes network conflicts the maximum amount as attainable. Some main challenges {are also| also area unit| are} as well as for routing protocol underwater sensing element network that challenges are High propagation delays, Node quality, Error prone acoustic underwater channels, Error prone acoustic underwater channels, Error prone acoustic underwater channels. in keeping with this paper it's not solely helpful for giving data regarding routing protocol for underwater sensing element networks however additionally useful for operating individual and people folks that area unit involving in analysis activities and is additionally helpful for giving correct method that one is correct routing protocol underwater sensing element network and that one is ideal for project which will be simply determine by this paper.

II. LITERATURE SURVEY

According to literature survey after studying different IEEE paper, collected some related papers and documents some of the point discussed here:

1.**Underwater sensor networks: applications, advances and challenges**
Authors: J. Heideman, M. Stojanovic, and M. Zorzi
Description: The main approaches and challenges within the style and implementation of underwater wireless sensing element networks. we have a tendency to summarize key applications and the most phenomena associated with acoustic propagation, and discuss however they affect the style and operation of communication systems and networking protocols at various layers. we have a tendency to conjointly offer an summary of communications hardware, testbeds and simulation tools on the market to the analysis community.

2. Multi-objectivization-based localization of underwater sensors using magnetometers
Authors: Z. Yu, C. Xiao, and G. Zhou
Description: Underwater sensing element networks as necessary to detect and track unknown targets within the maritime setting. Localization of sensors becomes a vital drawback. This paper presents a new methodology supported multi-objectification to localize the sensors victimization triaxial magnetometers. during this localization system. a DC current-carrying magnet coil is a magnetic source and the mechanical phenomenon gauss meter live the three-component of magnetic flux intensity.

3. A survey of architectures and localization techniques for underwater acoustic sensing element networks
Authors: Y. Ren, W. K. G. Seah, and P. D. Teal
Description: The widespread adoption of the Wireless Sensor Networks (WSNs) in varied applications within the terrestrial environment and therefore the fast advancement of the WSN technology have intended the event of Underwater Acoustic Sensor Networks (UASNs). UASNs and terrestrial WSNs have many common properties whereas there are several challenges particular to UASNs that ar principally because of acoustic communications, and inherent quality.

4. DCR: depth-controlled routing protocol for underwater sensor Networks
Authors: R. W. L. Coutinho, L. F. M. Vieira, and A. A. F. Loureiro
Description: The planned protocol is that the initial geographic routing protocol for underwater sensing element networks that considers the sensing element node vertical movement ability to maneuver it for topology management purpose. The simulation results show that, with the topology management, the fraction of disconnected nodes and nodes placed into communication void regions.

5. GEDAR: geographic and timeserving routing protocol with depth adjustment for mobile underwater sensing element networks
Authors: R. W. L. Coutinho, A. Boukerche, L. F. M. Vieira, and A. A. Loureiro
Description: Efficient protocols for knowledge packet delivery in mobile underwater sensing element networks (UWSNs) as crucial to the effective use of this new powerful technology for observance lakes, rivers, seas, and oceans. However, communication in UWSNs is a challenging task owing to the characteristics of the acoustic channel. during this work, we have a tendency to gift a possible answer for improving the knowledge packet delivery quantitative relation in mobile UWSN.

III. PROPOSED SYSTEM

- GEDAR is associate degree any cast, geographic and opportunistic protocol that tries to deliver a packet from a supply node to some sonobuoys. throughout the course, GEDAR uses the greedy forwarding strategy to advance the packet, at every hop, towards the surface sonobuoys.
- A recovery mode procedure supported the depth adjustment of the void node is employed to route knowledge packet once it get stuck at a void node. The projected routing protocol employs the greedy for-warding strategy by means that of the position info of this forwarder node, its neighbors, and also the proverbial sonobuoys, to see the qualified neighbors to continue forwarding the packet towards some sonobuoys.
- Despite greedy forwarding strategy being a well-known and used next-hop forwarder choice strategy, GEDAR considers the any forged nature of underwater routing once multiple surface sonobuoys are used as sink nodes.

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IV. EXISTING SYSTEM

- Depth-based routing (DBR) routing protocol is the first underwater sensor network routing protocol that uses node depth information to route data packets. The basic idea of DBR is to forward data packets greedily towards the water surface. Thus, packets can reach multiple data sinks deployed at the water surface. During the forwarding, the current sender broadcasts the packet. After receiving it, if the receiver is closer to the water surface, it becomes qualified as a candidate to forward the packet. Otherwise, it will discard the packet.

- Each qualified candidate will forward the packet in a prioritized manner if its distance to the current forwarder is at least d_{th} and it has not previously sent this packet previously. Node priority is given by means of the holding time. The farther the candidate node is on the current forwarder, the lower is its holding time.

- After the holding time, the packet is broadcast if the node has not received the same data from a neighbor.

V: SYSTEM DESIGN

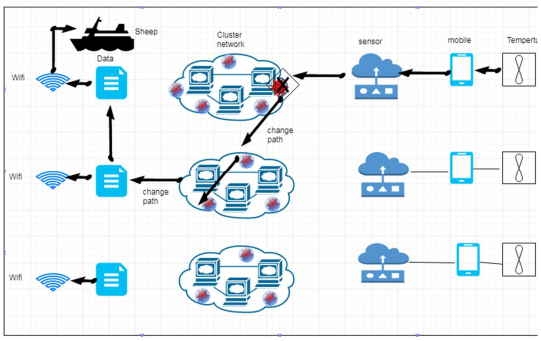

Fig1. System architecture

System Specification

Hardware Requirements

- Processor: Pentium IV 2.4 GHz.
- Speed: 1.1GHz.
- Monitor: 15 VGA Colour.
- Mouse: Logitech.
- Ram: 256 Mb.

I	D	E	A
INCREASE Security	**DRIVE:**	**EDUCATE :** Safety of credentials	**ACCELERATE :** confidentiality
IMPROVE: Usability, Privacy, authentication	**DELIVER:** efficient work	**EVALUATE :** Privacy, usability	**ASSOCIATE:** Human machine integration
IGNORE : Hacking	**DECREASE :** Security attacks.	**ELIMINATE :** eliminating the time and effort.	**AVOID :** Unauthorized logins and access.

Software Requirements:

- Operating system : Windows XP Professional 7
- Front End : JSP
- Programming Language :JAVA/J2EE
- Database : MYSQL
- IDE : Eclipse

VI: ADVANTAGES

1. The works projected a node's depth adjustment to enhance data packet delivery in static underwater sensing element networks.
2. Differently, our node's depth adjustment algorithm is devoted to the communication void region routing problem in mobile underwater sensor networks, acting in an exceedingly reactive thanks to overcome changes within the network topology.
3. Moreover, we have a tendency to implement associate degree expedient routing mechanism to mitigate the impairments of the underwater acoustic communication.

VII: ALGORITHM

Periodic beaconing

procedure Broadcast Periodic Beacon(node)

- a new beacon message with the next seq num
- if beacon timeout expired then
- *coordinate location(node)*
- if m is from a sonobuoy then
- *update*(Si(node), m)
- *update neighbor(m.seq num, m.id, m.location)*

2. Next-hop forwarder set selection

- GEDAR uses opportunistic routing to deal with underwater acoustic channel characteristics.
- In traditional multihop routing paradigm, only one neighbor is selected to act as a next-hop forwarder.
- If the link to this neighbor is no performing well, a packet may be lost even though other neighbor may have overheard it.
- procedure GetNextHopForwarders(source node ni)
- Calculate the EPA for each cluster according to
- Return the cluster F with the highest EPA

3. 3.Void node recovery algorithm

oid node recovery procedure is used when the node fails to forward data packets using the greedy forwarding strategy.

- Instead of message-based void node recovery procedures

VIII: CONCLUSION

This paper performs major task routing protocol for underwater sensing element network and play major role in analysis. during this paper Routing protocol for underwater sensing element network is major analysis issue, that is useful to determination networking interrupts. the most effective half is that, this paper is absolutely supported for locating correct routing protocol for underwater sensing element network comes and a few difficult analysis comes that ought to be helpful for entire underwater sensing element network system. an entire comparison of assorted routing protocol has conjointly been done. All benefits furthermore as dis-advantages has conjointly been shown that successively would enable the readers to search out the necessity specific details concerning the subject.

VII (A) FINAL REMARK

1. GEDAR: Geographic and Opportunistic Routing Protocol with Depth Adjustment for Mobile Underwater Sensor Network

In this paper, we introduced a novel geographic and opportunistic routing protocol (GEDAR), for underwater mobile sensor networks. GEDAR uses the position information of the nodes to greedily and opportunistically forward data packets to sonobuoy. Instead of message-based procedures to deal with the communication void region problem found in geographic routing for mobile underwater sensor networks, we proposed a depth adjustment-based topology control such that void nodes move to new depths to resume the greedy opportunistic forwarding. Simulation results showed that this new algorithm improves the data packet delivery ratio when compared with the baseline routing protocols. As future work we plan to investigate how the depth adjustment of some nodes can impact the sensing coverage area.

2. DCR: Depth-Controlled Routing Protocol for Underwater Sensor Networks

In this paper, we introduced a novel geographic routing protocol with network topology control for underwater sensor network. The proposed protocol provides two algorithms to control the network topology by means of depth adjustment of disconnected and void nodes to improve the network connectivity and the greedy forwarding data process. Simulation results showed that when the network density is lower and consequently, the number of nodes disconnected is higher, the proposed protocol DCR can improve them and construct a network topology more suitable for greedy geographic routing protocol. The greedy geographic routing protocol showed better results than current state-of-art routing DBR in terms of data delivery ratio, delay and average number of redundant packets with the same energy per packet consumption as DBR. As a future work we are plan to investigate the impact of nodes mobility in the topology and to design distributed algorithm for topology control that can act reactively to changes in topology caused by nodes movement due to oceans currents.

3. A Survey of Architectures and Localization Techniques for Underwater Acoustic Sensor Network

In this paper, we introduced a UASNs, localization is a fundamental task where the location of a sensor can be used for data tagging, node tracking and target detection. Traditional oceanographic equipment localization techniques and WSN localization protocols do not meet the requirements of UASNs where the adverse conditions of the underwater medium call for novel techniques. Recently, a large number of localization techniques have been proposed for UASNs. The majority of these studies assume that the localization schemes are coupled with a specific UASN architecture. Therefore, in this paper, we give a comprehensive survey of the UASN architectures and the localization techniques for UASNs.

4. Underwater sensor networks: applications, advances and challenges

In this paper, we introduced While research on underwater sensor networks has significantly advanced in recent years, it is clear that a number of challenges still remain to be solved. With the flurry of new approaches to communication, medium access, networking and applications, effective analysis, integration and testing of these ideas is paramount—the field must develop fundamental insights, as well as understand what stands up in practice. For these reasons, we believe that the development of new theoretical models (both analytical and computational) is very much needed, and that greater use of testbeds and field experiments is essential; such work will support more accurate performance analysis and system characterization, which will feed into the next generation of underwater communications and sensing. In addition, integration and testing of current ideas will stress the seams that are often hidden in more focused laboratory research, such as total system cost, energy requirements and overall robustness in different conditions. In addition, we are encouraged by a broadening of the field to consider different options, spanning from high-performance (and cost) to low-cost (but lower performance), and including mobile (human-supported or autonomous), deployable and stationary configurations.

5. Multi-Objectivization-Based Localization of Underwater Sensors Using Magnetometers

In this paper, we introduced A hybrid algorithm based on multi-objectivization has been proposed to localization the underwater sensor networks. The DC coil serves as a magnetic source, and it follows a predetermined trajectory. Then using the three-component magnetic data measured by the triaxial magnetometer in the sensor, the localization problem is converted into a multi-objective optimization problem. Compared to the explicit integration, the discrete model of magnetic field considerably decreases the time consumption during the optimization. The experiment results show that the proposed localization algorithm using improved Non-dominated Sorting Genetic Algorithm (NSGA-IIb) and linear multi-metering (LMM) is effective. Its high accuracy and strong robustness also has been validated. During the experiment, the imperfect circular shape and the thickness of the coil cause errors in the localization results. In the future, we intend to reduce error by improving magnetic field model and the correction method, and then apply the proposed algorithm in a real localization system.

Acknowledgements

In our earth 25% covered by human being and remaining space is covered by water that could be river and oceans also. In underwater wireless sensor network much small water living thing like fish, crocodile and many more. Suppose a scientist work on particular a particular thing so some special devices should be in underwater wireless sensor network that can work in underwater wireless sensor network system which should be able to interact within underwater. Today increasing the demand some special routing protocol which can work into underwater wireless sensor network. For the current point of research scenario underwater sensor network with some different routing protocol available that play some specific role in the underwater wireless sensor network that why some scientists are working for developing algorithm.

Appendix A: Analysis Models

I) Data Description

a. Describing and documenting data is essential in ensuring that the researcher,and others who may need to use the data, can make sense of the data and understand the processes that have been followed in the collection,
b. processing, and analysis of the data.
c. Research data are any physical and/or digital materials that are collected, observed, or created in research activity for purposes of analysis to produce original research results or creative works.

II) Data objects and Relationships

a. A data object is a part of the repository whose content can be addressed and interpreted by the program. All data objects must be declared in the ABAP program and are not persistent, meaning that they only exist
b. while the program is being executed. Before you can process persistent data (such as data from a database table or from a sequential file), you must read it into data objects first. Conversely, if you want to retain the
c. contents of a data object beyond the end of the program, you must save it in a persistent form

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