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Geographic Routing In WSN for Measuring Coverage Constraints and Energy Consumption in Cloud Environments

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Abstract: ***This paper investigates the problem of energy efficient and consumption process in wireless sensor networks. The fundamental problem in WSN has handled the energy constraints and avoiding end-to-end delay networks. We introduce encoding technique for handling transmission data, network delays, content aware service and energy expenditure problems. The end-to-end delay varies depending up on nodes and sensor life time. We apply hamming encoding technique for estimating energy constraints with life time of buffer capacity factor. This paper proposes the novel based approach to handle group communication, senor node status, network transmission and optimal encoded behaviors. Each cluster group values are sensed by node reference time and calculate hamming code weight for each node counts. The quality of services can be achieved by energy saving measurements and data loss can be varies up on incoming packet request. We compare the encoded result with code word situation and hazard environment. We reduce the amount of data transmission factor and life time of sensor values and longer network delays. We show the simulating results with encoding scheme and reduced energy consumption. The performance can be monitored by coverage constraints and optimal transmission behaviors.***

Keywords: Coverage Constraints, Data Loss, Energy Consumption, Hamming Encoding, Wireless Sensor Networks

I. INTRODUCTION

In WSN, the source node can sense the information and calculate the network performance characteristics. In recent decades many of researchers are contributed to handle the sensor, sensing techniques and life time of the WSN. The sensor network has following decision factors like perception, scheduling, accessing and controlling information. Many routing protocol also used to handle selecting best path and handle the problem in critical situations [2]. The significant problem in content based and reliable communication the sink based information processing system are used. The sink can varies number of incoming requests and energy level. According to the survey of wireless sensor and spectrum the WSN handle huge request and processing are difficult task With limited coverage constraints and propagation delays [1, 2]. Signals and Systems are important possible solutions measurements and sink based signal processing are aggregated the codeword processing. The advantage of communication processing system is handle huge network operations and cost maintenance. Sensor node may charges unbalanced conditions and environment aware and end-to-end delay services [3] . The following challenges are consolidated to handle combined solutions, i. The routing can be obtained by route table and select shortest path to get solutions, ii. The network delays and propagation delay work together to get optimal solutions. The unbalanced supervised route mechanism are used to fix internal or each node values. The theoretical promotions of distributed and parallel networks are implements by cooperating energy and saving services [4]. The data and compression strategies are applied to solve redundant message processing and alternating traffic based solutions.

The diversity of network delays and communication processing operates optimal network delays and energy saving. The energy reduction and energy awareness processing are needed to solve orthogonal distance processing and sampling process in different discovery services [5, 6] .

Each instance calculation the forming of WSN with energy aware based networks delays are recorded by table based reference. We introduce hamming based encoding scheme for handling request in WSN with low cost energy and limited network capacity. The data and sampled techniques are implemented by compression techniques and reduced network delays [7]. The sampling and quantization are needed to calculate encode scheme mode based redundant input processing. The statistical method applied for calculating input code words which is the input of request or order processing. Distributed source coding methods are applied to helpful for measuring loss and mitigating traffic delays. The observations of above approach the network delays and network configuration is the important part in handling multiple messages with minimum loss. In case the data will lose means we will find the solution using random based optimization procedure. This paper describes following sections, section II describes different related works, section III describes system model procedures, section iv describes implementation plan and conclusion.

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II. RELATED WORK

The survey of Fasith et al, the number of inputs nodes receive the messages and cooperate multiple input ranges. For example, distributed transmission based protocol provider diversity between independent message passing services. In wireless sensor networks has on efficient network transmission by capturing inputs and assign link cost to each node values [3]. The value of incoming packet requests and limited computational capacity factors are calculated by routing metrics. Lai et al, the selfish behavior of senor nodes are identified based on routing path scenario. The exchange of incoming requests and calculation of weighted function are measured based on link quality, expenditure delays and link validation [6].

The various routing algorithms are used to find high quality metrics with reduced traffic delays and packet loss characteristics. Zuo et al explained the layer based protocol formations are depended with link quality and link level services. Geographical based routing schemes are designed to find neighbor nodes and uses face routing scheme for guaranteeing the delivery. In this case the main problems is the packet dropping ratio is high because unable to locate next node [2]. The authors are used timer based delay variation table for synchronization and deployment factors in low energy consumption. The energy level varies depending up on input constraints and limitation factors on critical level validation [8].

Chen et al proposed the closest pair destination calculation methods are found the group of senor nodes are connected by a cluster and each node can act cluster heads to gather data. It determines the size of network configuration and hop distance calculation [9]. The relay packet transmission and limited computational capabilities are involved to measure duplicate packets and found poor link quality. Particle Swarm Optimization technique used for traditional development and energy constraints in WSN environment [3].

Elimination of weaker node or affected node is difficult task and handling signal processing also tedious one. The mathematical measurement of individual or group node processing handles the multiple requests at any time and numbers of iterations are involved for setting node routing configuration. The following figure 1 shows that hop to hop processing with code word policies.

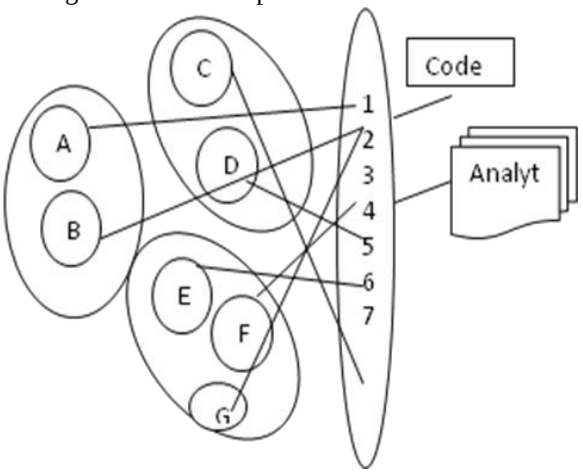
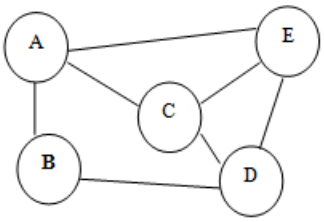


Fig. 1 Code word Processor for Data Analytics Process

The observations of various surveys the different encoding techniques are used to measure data loss and energy constraints. But the handling of data loss, reason for failures, energy consumption and coverage constraints are tedious process. We propose hamming code based encoding scheme for handling delays, energy and coverage problems [10–12]. The data and sampling techniques operates simulation environments. For this instance the cooperative optimal solutions implementing multiple sensors based energy saving procedures.

System Model and Implementations

The following figure 2 shows that code word processing with single network configuration items.



Node	Delay	Energy
A	21	2.1
B	22	1.7
C	24	1.8
D	26	1.5
E	21	1.4

Fig. 2 Code Work Process For Delay And Energy Table Measurement

The following constraints and implementation plan is applied for energy calculation, packet loss factor and end-to-end delay

i. We implement and evaluate performance of packet delivery factor and energy measurement processing using following method

n is the set of hop nodes and P is the performance indicator in each hop stage with respect to x and y delivery factor.

The Dijikstra's algorithm is applied for calculating suitable path and applying following formula for codeword processing syntax as C.

$C(P) = \sum_{x=0,y=0}^{n-1} (P(i,j) + ETXY$ ---------- (1)

Where ETXY – Energy conservation process in x and y stage

$$ETXY = \begin{cases} Einput + \text{ Packet Rate \% if Distance}>0 \\ Einput - \text{ Packet Rate \% if Distance}<0 \\ Einput = \text{Packet Rate \% if Distance=orgin} \end{cases}$$

ii. We introduce Distributed Distance based codeword delivery function for link and content aware delivery factor. In this case the sensor node has ability to change minimum residual delay

The $DDB_{codeword}$ calculated by following inputs

$DDB_{codeword} = \alpha.C(P) + (1-\alpha)C(P)+$ ----------**(2)**

Where $\alpha \in (x,y)$ coordinate position

iv. We analyze the property of light paths, loop conditions, consistent node deliveries and hop-by-hop routing stages.

The energy base function (EBF) is calculated based on codeword outputs and number of iteration process among the senor nodes

$EBF = e^{(2\sigma xy)/N} + ETXY$ ----------**(3)**

So the code word measurement are needed to set input and output calculation based on σ time varying factor.

iv. The coding diversity function is needed to set following index interval M is 0,1,2,…..,n-1 and Hamming code word minimum distance combination mechanism applied for sampling

where M[ETXY] = 0 at initial stage and apply iteration based codeword processing methods to calculate power exponential value

$C(P) = M_0(ETXY) = EBF + constant$ ---------- **(4)**

A sensor node can various according input condition and coverage values so the following distribution are applied

a. The node can make alternative path based solutions for active and inactive node processing delays

b. Node can transmit multiple access message by M and ETXY table values

c. The sink can generate weak or malicious output measurement in C.

The above methods are applied in each network configuration items by following algorithms

Algorithm for node mobility and Energy conservation measurement C and M
Input: Sensor node inputs – Discovery factor
Output: Code word results with minimum energy and delay component factor
1. M <- 0
2. ETXY <- codeword(p)
3. At each node add node values and input parameter constant factor C
4. while M>0 do
5. codeword(p) = {x,y}
6. M<- ETXY +codeword(p)
7. Merge M and ETXY

Above algorithm measures the coverage constraints and input codeword processing outputs. The following section gives the of delivery factor and performance.

Performance Evaluation

We evaluate the transmission input factor and node change values by set conditional intervals. The following scheme applied for energy efficiency and accuracy of successful communications. The distance based source function for calculating coverage problems and geographic routing. Cooperative based transmission scheme for sampling and quantization results. The following table shows that input parameters and values for simulation using NS-2.

Table 1 Sample Simulation Inputs

Parameter	Values
Sensor Nodes	256
Coverage Area	5-10
Sink	256
ACK	128
Initial Energy	1
Counts	20

- **Packet delivery ratio:** The fraction of the data packets delivered to the destination to those generated by the sources.
- **Average End-To-End Delay:** This includes retransmission delays at the MAC, propagation and transfer times.

$$EBF = (1/N)(\sum_{x=0}^{C(p)-1} ETXY \text{ ----------(5)}$$

Whereas the packet length will increase means the routing path will determines poor link or delayed service.

- **Throughput:** The throughput of the protocols can be defined as percentage of the packets received by the destination among the packets sent by the source. It is the amount of data per time unit that is delivered from one node to another via a communication link. The throughput is measured in bits per second (bit/s or bps).

$T_{throughput} = EBF/ (N*ETXY) – C(P)$ ---------- **(6)**

The energy consumption evaluated by sensor node coverage values and number poor quality factors with the distance d.

- **Packet Loss/Drop:** Packet loss describes an error condition in which data packets appear to be transmitted correctly at one end of a connection, but never arrive at the other. There might be different reasons like corrupted packets will be dropped by nodes; the link/route between nodes is not working, insufficient bandwidth, etc.

Packet Loss (P) = $\sum_{x=0}^{M}(C(P) + EPF$ ----------**(7)**

The below figure shows that the various geographic routing protocol compared with energy and packet loss factor

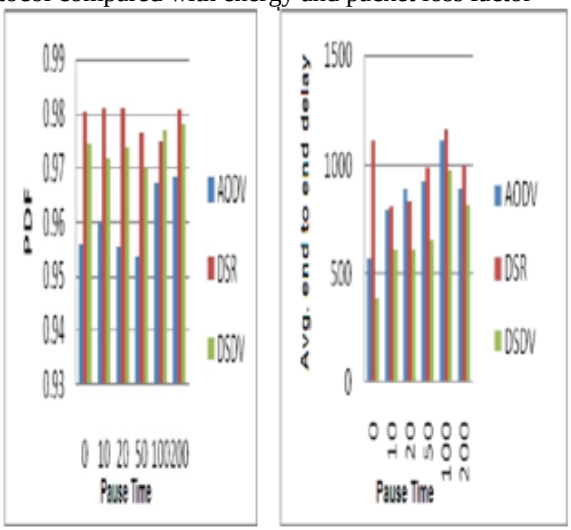


Fig. 3 Packet Delivery and End to End delay factor with Low Energy constraints

III. CONCLUSION

This paper proposes a novel approach for calculating coverage constraint and effective energy consumption processing using hamming codeword and geographic based routing strategies. The unbalanced are removed automatically and predicable nodes are added coverage regions. Each node reflects their input conditions, end-to-end delay, propagation delay and packet loss behaviors. The main purpose of effective energy constraints methods are derived from Distributed distance function and energy base function. The performances of packet delivery ratio and energy conservation factors are verified by varying incoming packets inputs and locations. The result indicates the various formulas and simulations are encountered to deploy WSN environments. The balance factor can be set for evaluating network life time and high packet delivery ratio. The performance compared by coverage constraints factor and optimal results solutions. The output recorded by performance indicator values and simulation results are verified various delays including energy limitations.

We concluded that the proposed methods gave various metric results and future optimization based input behaviors will be applied for geographic inactive and active presence in WSN.

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Myself K.V.Nithya ,pursuing Ph.D in Computer Science ,I have more than 9 years of working experience in Teaching professional. I have been working as Head, department of Computer Science in prominent Institute. I have acted as Dean for Research,Planning and Development Committee .I played role as an AISHE nodal officer, RRC Program Officer, Women's cell coordinator, Anti-Ragging Committee Member.

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