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Modified Ant Colony Algorithm for Path Detection Optimization of Wireless Network Sensor

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Abstract: **At present in wireless networks, the consumption of renewable energy and sensor node energy are great challenges. This makes the sensor network more vulnerable and more important to consider the node access problem; it is proposed to modify the ant colony optimization technology to improve. The proposed technique is used to search for estimation solutions for various and infinite optimization problems, as well as for various communication issues such as routing and load balancing. The proposed technology offers promising arrangements for improvements. Discuss the work of the modified ACO algorithm to find the best path**

Keyword: **ACO, WSN**

I. INTRODUCTION

Wireless network sensor is a wireless network. These networks are used to monitor physical or environmental conditions such as sound, pressure, temperature and the synergy of the data over the web to the main locations. Wireless network sensor applications involve national security, surveillance, home and office applications, habitat monitoring, health applications, environmental and military forecasts. The text also helps intrusion detection and identification in the military era of tracking targets and surveillance. Examples of this are the space and coordination of forces and tanks. With natural disasters, the sensor nodes can also reflect and predict environmental changes to predict the disaster before it occurs. In biomedical applications, a sensor's surgical implant can help monitor the patient's health. For seismic sensing, the configuration of volcanic area sensors can reveal the development of earthquakes and explosions. Although Sun is used in many applications, they have many limitations, including limited power supply and limited account and communication capabilities [1]. These limitations should be considered when designing the WPS protocol. [4]. Networks have many applications, such as aiming and monitoring, greenhouse monitoring, pollution monitoring, seismic sensing, industrial applications, health monitoring and other military applications. In addition to these applications, it is subject to many limitations such

as customer privacy, DOS attacks, attack pinholes, runway attacks, limited memory and limited sensor power security issues [10]. The power in a sensor contract needs to be handled, collected and transmitted to collect the data. In order to deal with energy constraints, bio-inspired technology is implemented in the sun. These bio-inspired techniques are commonly referred to as smart clusters. Intelligence group is a group of smart people [2]. Intelligent techniques are known to improve ant colonies (ACOs), improve particle swarms (PSU), and artificial bees (APEC) [4]Ant colony optimization techniques are used to find the best path from source to target. The best trajectory is the lowest cost path in terms of power consumption, link quality and reliability.ACO is a probabilistic or metaphorical technique for finding the best path and energy efficiency in steering. The algorithm is a member of ant colony algorithm. There are many reasons to use ACO algorithm in WSN routing because it is based on real ant and decentralized behavior. Wireless LANs have low data rates and low power consumption, so the key issue in the global space network is the lifetime of the network, with the main limitation being energy consumption rather than congestion control. The other is central instructions using probabilistic or optimization strategies, [5] such as improved ant colony, linear programming or implicit methods to find a balanced energy path based on the global topology and energy consumption of the global information [3].

AntNet :- With Ant Net, nodes in the network usually send ant agents to randomly selected destinations in the network. After arriving at the destination, the ant agent returns the same path to the original source node. On the way back to the source node, the ant agent updates the node's routing table. The release of ant agents increases its overhead control. In a dynamic network such as WSN, an ant node's source agent may be changed by the routing information [7].

In ACO, there are basically two types of ants, called ants and anterior ants. Ants forward broadcast from the source to the data transfer path available [11]. Ants recede in the opposite direction, from destination to source, and update pheromone information [9]. Ants gather information from behind the ants. Ants are small packages of Ed that have source nodes, destination nodes, and intermediate nodes. Both ants update the routing tables held by nodes in the grid [6]. Contract selection is based on the probability formula, and the pheromone path update is also based on the Pheromone update formula in wireless sensor networks for

load balancing and shorter route selection based on preferences, better route identification, energy efficiency coverage, sensor deployment, traffic avoidance, maximization of heterogeneous network life [8].

II. RELATED WORK

Rashmi A. Mahale and Prof. S.D. Chavan (2012) studied the ACO algorithm for data-network networks .The basic mechanism of the typical ACO routing algorithm is to create an ant-like agent on a node to automatically find and verify the path to the destination. According to the strategy of exploratory guidance based on local guidance, the ants move hop-by-hop. After reaching the destination, the ants retrieve the track again and update the routing node information according to the track quality. Routing information is a statistical estimate of the time to maintain the destination in a pheromone group. According to the estimated quality stored in the pheromone variable, potential data is distributed on the path [11].

Selcuk Okdem and Dervis Karaboga (2014) examined the possibility of using aggregate ant colony technology to direct multimedia content through wireless sensor networks. The proposed technology has an energy perception and quality of service awareness. The colony algorithm is used to find an optimized routing path. Optimization means that power consumption is minimized and the quality and reliability of the link is improved. The proposed method reduces energy consumption to a minimum and extends the useful life of the network. In addition, the best track with high link quality and reliability enhances the quality of video frames and ensures the high probability of successful video frames. The importance of power consumption, link quality, and link reliability metrics can vary depending on the needs of the multimedia application [12].

Chiara Buratti and Andrea Conti (2015) studied wireless sensor networks as a wireless network. This article includes an overview of wireless sensor networks and how they differ from the network traditions, challenges, and capabilities (protocol stacks for sensor networks). The paper provides a comprehensive review of modern literature on all aspects of social networking and discussed how wireless sensor networks work and the advantages and disadvantages of traditional networks[13].

III PROPOSED METHOD

This work mainly focuses on enhancing the discover of finest route in WSNs from the sources node to the Base Station the optimal route path is found by intelligent ants those have some information regarding nodes in route path the modified Ant Colony optimization is used for optimal path.

A) Random Best Path Discovery

Find the best path from all possible routes from source to base station. First, the parent node sends ants to all its neighbors, and then tries each ant to find the way to the base station. Ant counts the amount of knowledge from neighbors and chooses the next hop according to the amount of knowledge. The move will continue until the ant can find the way to the base station. If ants cannot find this route within a certain period, they will commit suicide. After that, the base station took the final decision and decided the winner. The winning ant returns its track and updates the routing table and more information for all nodes on their way.

ALOGRITHM: Optimal path discovery

1: time = 1 to simulate the time

2: i = 1: N, where N is the number of ants

3: l Antide = 1: Antide ant edge

Search for nearby ants

5: If the Ant (i) is on the ANt (counter);

6: Add i (Adjusted amount); Calculate the adjusted amount over a period of time

7: another one

8: Antide killed himself

9: Path Found

10: End

11: End

12: End

IV. RESULT AND ANALYSIS

S. No.	Parameter	Value(s)
1	Simulator used	NS 2.35
2	Simulation Time	10 Secs
3	Simulation Area	500 X 500
4	MAC	802.11
5	Number of nodes	60
6	Speed of Nodes	2 to 16 (m/sec)
7	Mobility Model	Random Waypoint

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Figure 1 shows the optimal detection of path paths using ACO's productivity analysis and ACO rates. It shows that ACO rates are more productive than ACOs. Our technical result is better and our technical advice provides the best path for higher throughput

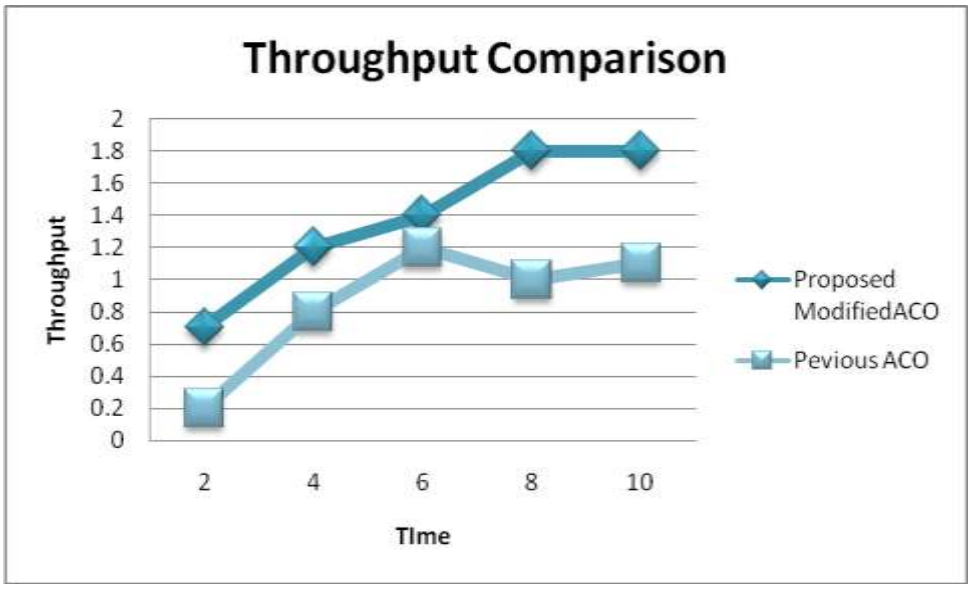

Fig1. Comparison of Throughput

	Throughput	
Time	Modified ACO	ACO
2	0.7	0.2
4	1.0	0.8
6	1.4	1.9
8	1.8	1.0
10	1.8	1.1

Table 1. Throughput Comparison

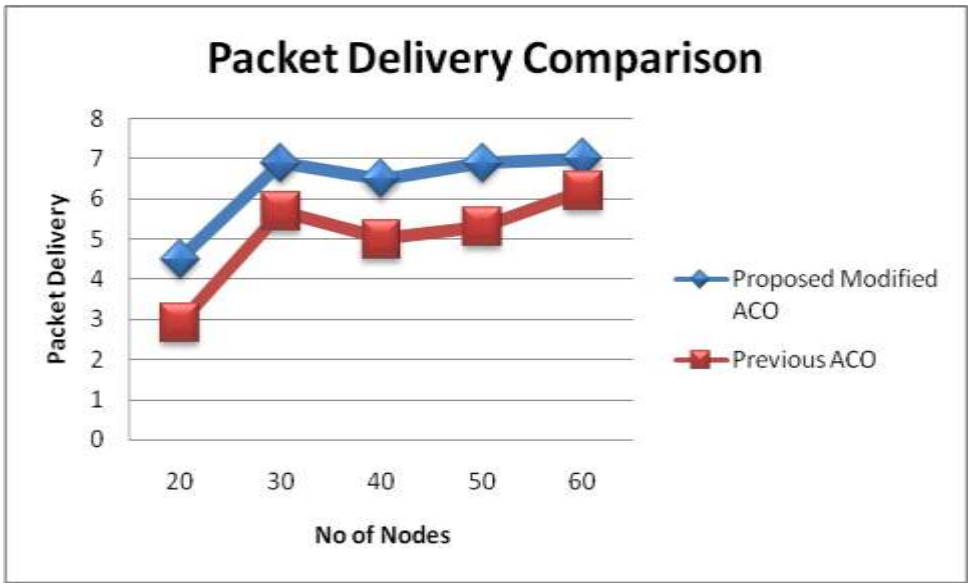

Figure 2 . Comparison of packet Delivery ratio

	Packet Delivery Ratio	
No nodes	Modified ACO	ACO
20	4.5	2.9
30	6.9	5.7
40	6.5	5.0
50	6.9	5.3
60	7.0	6.2

Table2. Packet Delivery Comparison

Figure 2 shows the analysis of packet transfer rates between modified ACO and ACO. As shown in Table 2, without increasing the node, the packet delivery ratio at the technically recommended average is higher than the ACO. This indicates the efficient course pathway in our proposed technique because in our proposed technique, with an improved colony of ants.

V. CONCLUSION

The modified ACO routing algorithm is proposed for wireless sensor networks to optimize routing efficiency and provide reliable paths. The proposed technique is being used from the modified ACO to provide a selection of suitable transmission paths from the comparison, the modified ACO method to determine performance, productivity correction in terms of packet transmission rate better than ACO.

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