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PREDATOR BASED APPROACH FOR WIRELESS SENSOR NETWORKS

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Abstract: Today's world is bustling with activity. We can collect all of current information at our fingertips. Information technology has become a great tool for us to easily access today's information. Iinformation technology has gained a lot of popularity in all fields as well. With today's information technology, we can do all things very easily and very quickly. Computer technology provides us with a great service to easily solve all problems that arise in all fields. Today's communication is easy and accessible to us. Computer technology has been very helpful in helping us to easily access all of today's information and find the best way to do so. It is very good in this era to find solutions and easy methods to all kinds of problems using mathematical technology and systematization. Using wireless sensor technology has helped us to easily transmit and receive any information. This version makes some efforts to make wireless sensor technology much easier and more advanced.

1.Introduction: In today's world, all services are very fast and very easy. All departments operate very fast and with very accurate calculations. Computer usage is considered to be the most important factor for all high-speed operations. With the help of the computer world, we can do all our tasks easily, quickly, and accurately. Nowadays, the use of computers is becoming essential for all activities in the world. Computers are essential for all sectors and activities. Computer functions fulfill the most important human needs. The development of the computer industry is growing at a rapid pace every day. Send any data from one place to another place in a minute through wireless sensor networking. This article helps us to further improve wireless sensor technology in both cluster and IP address methods. We can also make some of the technologies of the computer industry to easily access the information we send through wireless sensor network technology. In this way, WSN technology can be further improved very easily by using cluster head technology and IP address in IP B6 technology.

2.Review Literature: With the rapid growth of the current computer industry, we are faced with some unwanted obstacles and costs. By using our computer technology in all sectors, we greatly increase the amount of unnecessary carbon dioxide. Electronic waste used in the computer industry is having a major impact on the world. Addressing the vulnerabilities caused by the computer industry is one of our essential needs.

2.1 Green computing: Green computing, or sustainable computing, focuses on minimizing the environmental impact of technology by promoting energy efficiency, reducing e-waste, and using renewable energy sources. Some breakdown of key aspects and strategies

- **Energy Efficiency:** Prioritizing hardware and software that consume less power.
- **Renewable Energy:** Utilizing solar, wind, and other renewable sources to power data centres and devices.
- **Waste Reduction:** Implementing strategies to minimize e-waste through recycling, reuse, and responsible disposal.
- **Carbon Footprint Reduction:** Minimizing greenhouse gas emissions associated with IT infrastructure and operations.
- **Sustainable Practices:** Adopting environmentally friendly practices throughout the lifecycle of technology, from design to disposal.

2.2 Carbon Footprint: It is important to understand that using the internet has its carbon emission issues. Browsing online is not 100% green and the 'Cloud' is large data centres that require a great deal of energy to power and cool down. The carbon footprint of a data centre is affected by three factors:

1. electricity consumption (to run the servers)
2. water consumption (to cool the servers)
3. and the lifetime of the equipment (which impacts the frequency of replacements).

All three variables have unique features that need to be considered when doing any form of calculations.

2.2.1 Starting with electricity consumption: A key metric to consider when calculating energy usage is the Power Usage Effectiveness (PUE) value. A PUE value of 1.0 indicates that all energy consumed by a data centre is used to power actual computing devices, IT infrastructure. The best data centres in the world achieve a PUE of 1.2. Many calculators out there ignore this variable. Climatiq's cloud computing emission factors take PUE into account when estimating the emissions of cloud services.

2.2.2 On the water consumption front: It's important to consider that data centres are among the top-ten water-consuming industries, according to credible research. However, cloud providers usually do not report water consumption (and corresponding water stress levels), which is frightening, to say the least. Calculates the median water footprint at no less than 0.74 litres per GB of internet use (for networking), which suggests that water consumption impact is relevant and urgently needs to be considered when calculating emissions.

2.2.3 Server lifetime: Companies face similar challenges with existing cloud provider reports. Most of them neither share nor consider respective server lifetimes. However, servers usually get replaced every 3 to 5 years (longer for local data centres), leading to spikes in emissions, which urgently need to be incorporated

3.Methodology: Predator based approach for WSN algorithm refers to a routing algorithm used in a wireless sensor network (WSN) where each sensor node is aware of its geographic position (like latitude and longitude) and uses this information to direct data packets towards the intended destination, typically selecting the neighboring node that is geographically closest to the target location, a technique often called "geographic routing.".

Hunting is a dangerous endeavor. A variety of methods are used in hunting; there are many different types of animals that hunt in the forests. The sole purpose of all hunting animals is to easily spot prey. Different type of approaches followed upon by the predator animals. Predators hunt by examining various factors of the prey animals.

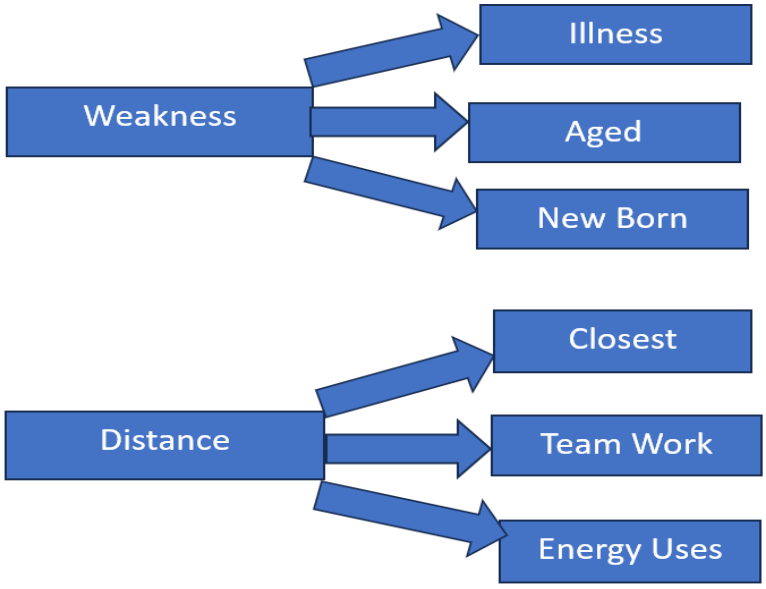


Figure-1 Predator Tasks

Same way we are Considering IP address based wireless Sensor Networking using very efficiently and effective. The following IP addresses as few samples

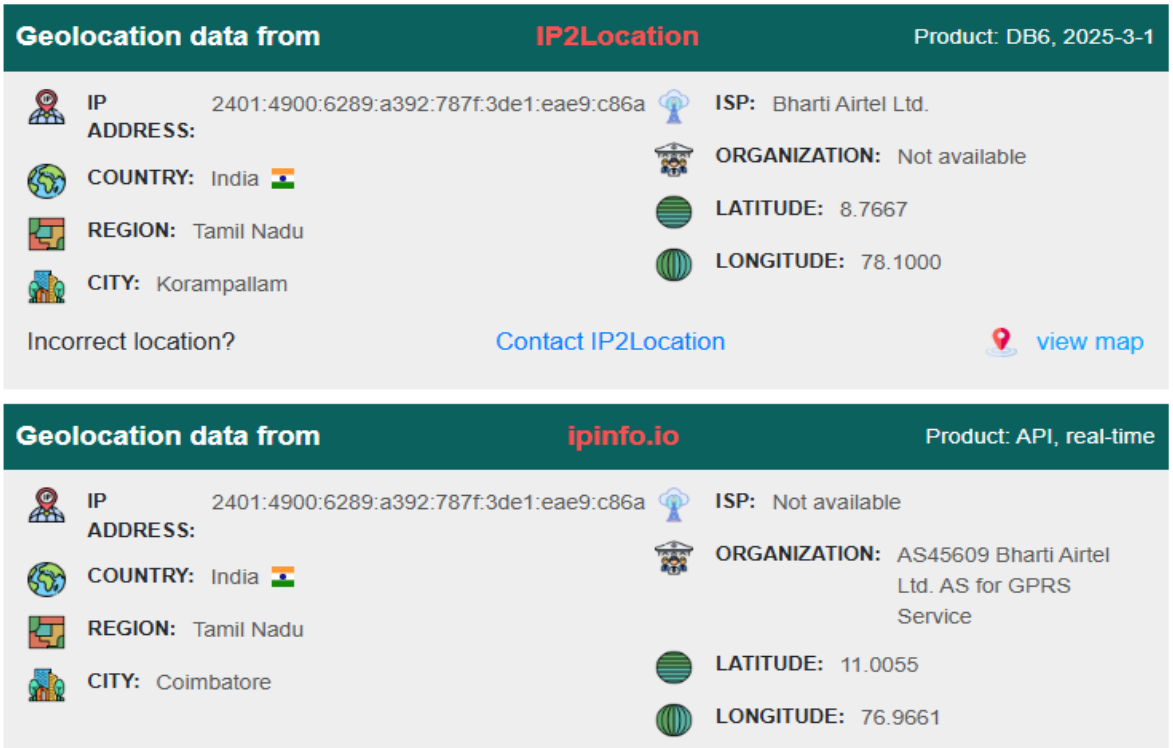


Figure-2 Geo Location Data

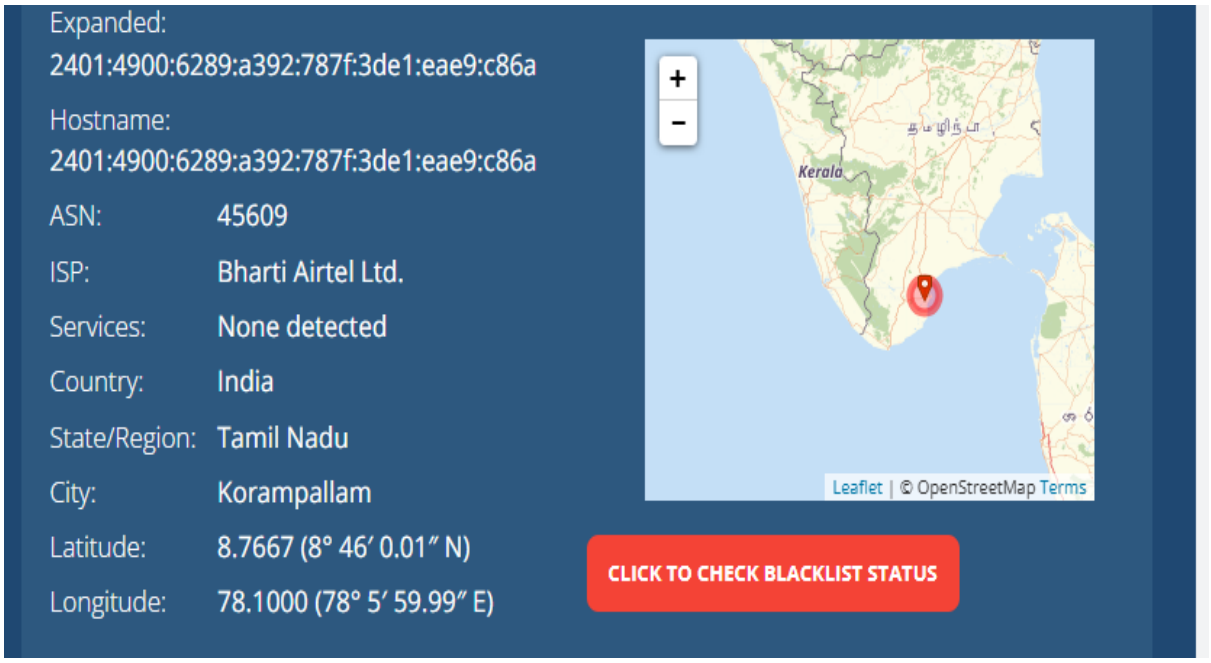
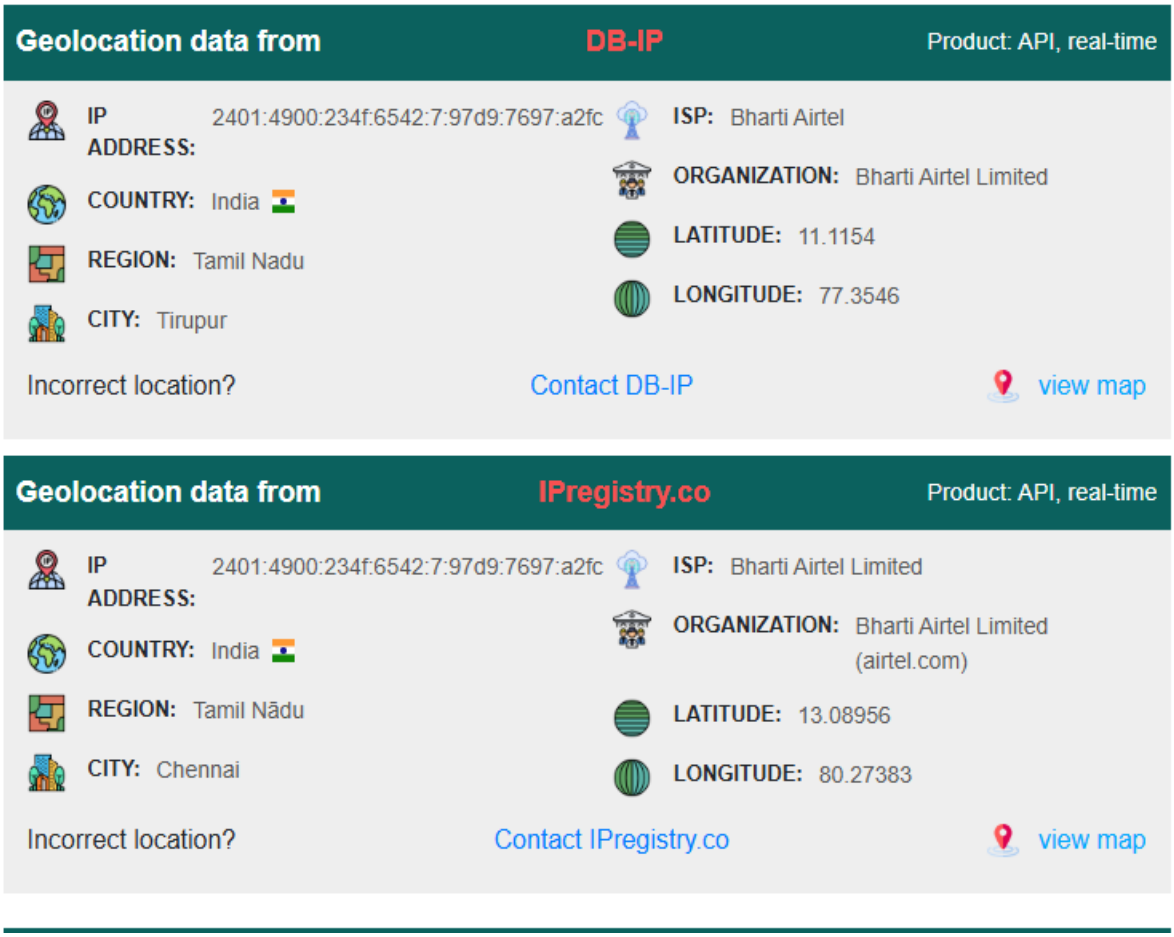


Figure-3 Geo Location graph

Same dynamic IP Address and Different Locations



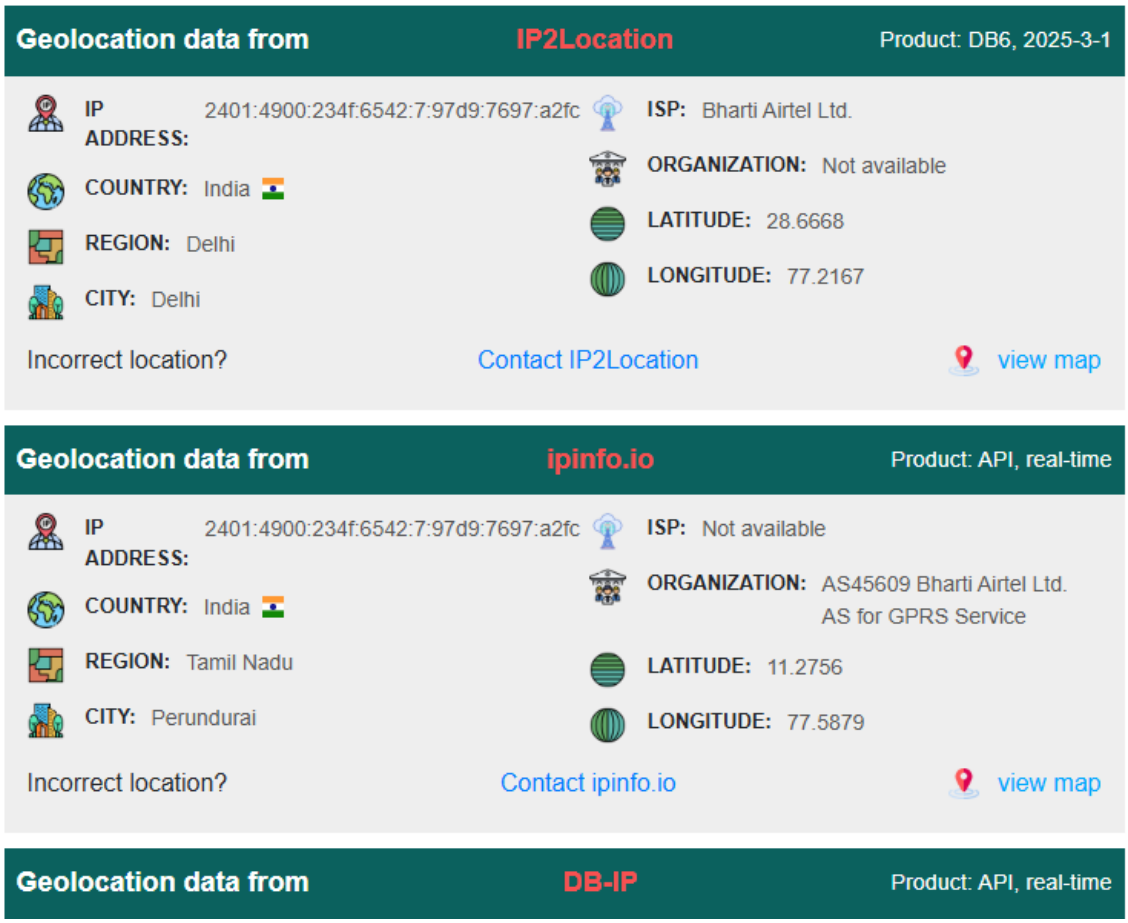


Figure-4 Sample Geo Location Data's

To increase the speed of wireless sensor networking, you can increase its speed by knowing its location using its IP address. wireless sensor network easily accesses a website by knowing which part of the world it is in and which provider it is provided by through an IP address. By knowing its location through the IP address and by knowing which provider it was assigned to, we can easily classify it and record its distance and impact.

$$I= \sum_{min}^{Max} Location \text{ ,} J= \sum_{min}^{max} ISP, \; K= \sum_{min}^{max} Distance$$

$$X = I \; J \; K$$

Using an IP address to easily deploy a wireless sensor network can be done by easily establishing a connection using its used IP address and unused IP address

$$A= \sum_{min}^{max} Used\ address \; B= \sum_{min}^{max} Unused\ Address$$

$$A= \sum_{min}^{max} Used\ address \; B= \sum_{min}^{max} Release\ Address$$

$$A= \sum_{min}^{max} Unused\ address \; B + \sum_{min}^{max} Release\ Address$$

We can easily connect to an unused IP address by knowing its IP address and knowing which Internet it can connect to.

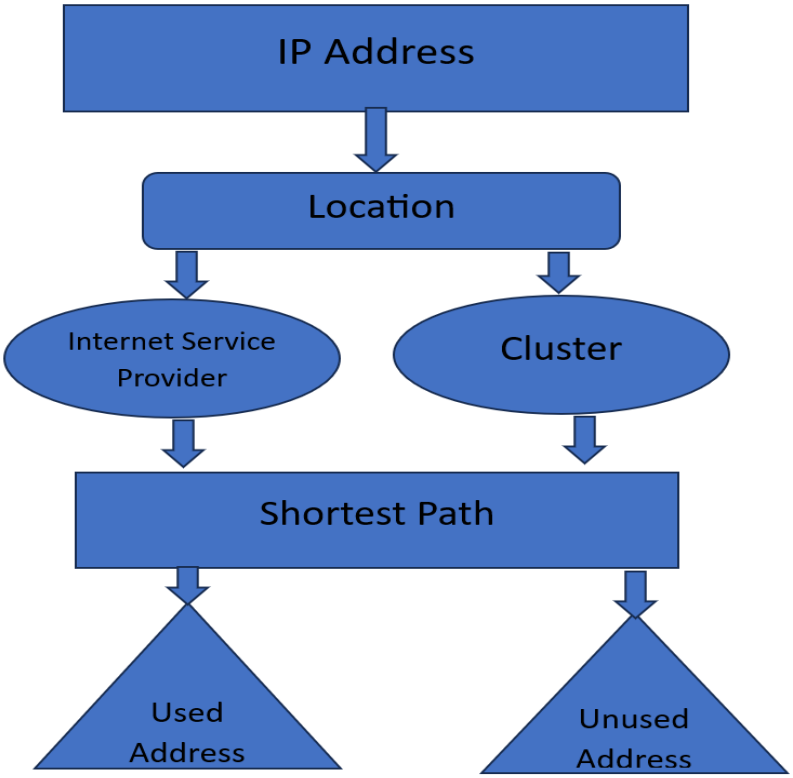


Figure-5 Shortest Path

4.Benefits IP address based WSNs: The following Benefits are applied wireless Sensor Network by using Geo Location and cluster-based algorithm.

- **Standard communication protocol:** By using IP addresses, sensor nodes can utilize existing internet protocols like TCP/UDP for reliable data transfer, eliminating the need for developing custom communication protocols specific to the WSN.
- **Scalability:** IP addressing allows for easy expansion of the sensor network by adding new nodes with unique IP addresses, simplifying network management.
- **Remote access:** With IP addresses, users can access sensor data from anywhere on the internet using standard network tools and applications.
- **Gateway node:** A gateway node within the WSN is typically responsible for translating sensor data from the WSN protocol to IP packets and vice versa, enabling seamless communication with the broader internet.

4.1 Applications of IP based WSNs:

Environmental monitoring: Deploying sensors to collect data like temperature, humidity, air quality, etc., across a wide area and transmitting it to a central server via IP.

Industrial automation: Monitoring critical parameters in industrial processes using sensors connected to an IP network for real-time control and analysis.

Smart homes: Integrating sensors for lighting, temperature, and security within a home network using IP addresses for remote monitoring and control.

5.Result Analysis: New Predator-based algorithm who gives us our time and extensive speed. From the table below, we can see that by classifying the tree algorithms, the algorithm that uses IP addresses increases its lifetime more than the other algorithms.

Server	Single	Double	Five	Ten
Life time - Years	5	5	4	3

Cluster based WSN	6	6	5	5
IP address Based WSN	7	7	6	6

Table 1 Lifespan of server

This graph shows how implementing these three types of features increases the lifespan of a server. Through this process we are implementing, we can increase the server's uptime by at least two years by using IP address and cluster head-based algorithms.

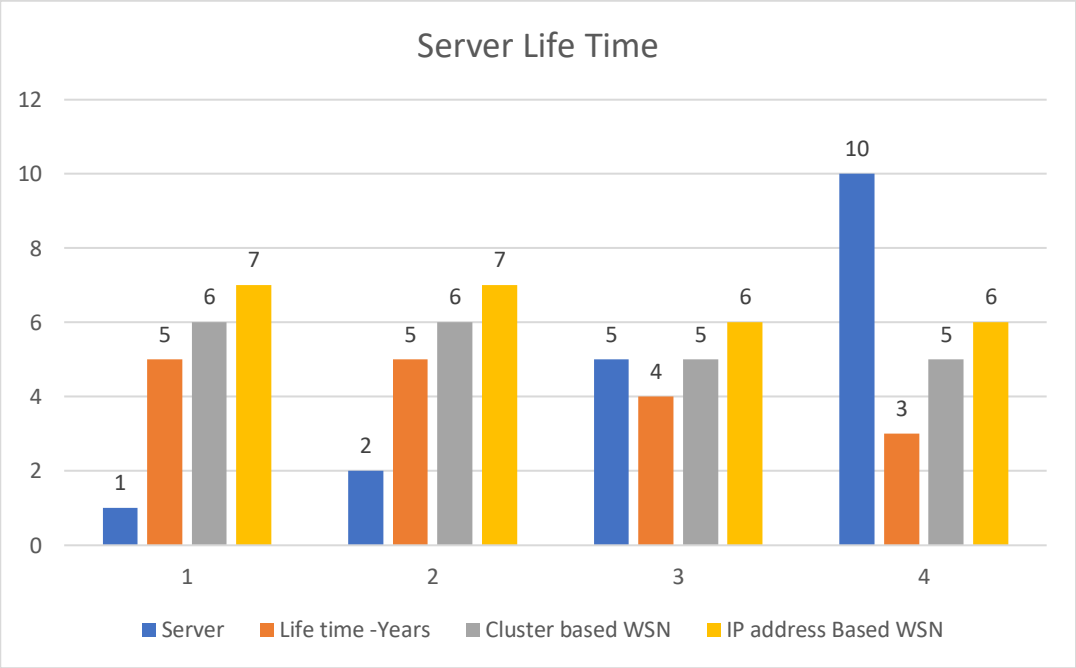


Figure-5 Server Lifetime

Power consumption increases when we receive messages using a wireless sensor network type. Use wireless sensors using cluster head algorithm, the information transfer is very easy and very simple. To further improve the wireless sensor network, we can see that the computer load is reduced when we use cluster head and IP address with it.

Data Centre No	Power Consumption (WSN)/hr	Cluster based WSN	IP address Based WSN
1	0.59	0.54	0.51
2	0.61	0.58	0.54
3	0.72	0.71	0.66
4	0.54	0.53	0.49
5	0.62	0.58	0.52
6	0.66	0.65	0.61
7	0.65	0.62	0.58
8	0.58	0.55	0.51
9	0.64	0.58	0.54
10	0.62	0.58	0.52
11	0.67	0.61	0.53
12	0.66	0.61	0.53

13	0.65	0.61	0.54
14	0.66	0.63	0.52
15	0.67	0.63	0.53
16	0.68	0.64	0.54
17	0.58	0.54	0.48
18	0.56	0.52	0.47
19	0.66	0.61	0.53
20	0.65	0.61	0.55

Table 2 Power Consumption of server

Using the graph below, we can compare the power consumption time measurements of 20 types of servers and the amount of electricity they use. Through this diagram, we can easily classify the algorithms that provide the most utility and the algorithms that use the least power consumption, and easily see which algorithm is created using the IP address and uses the least power.

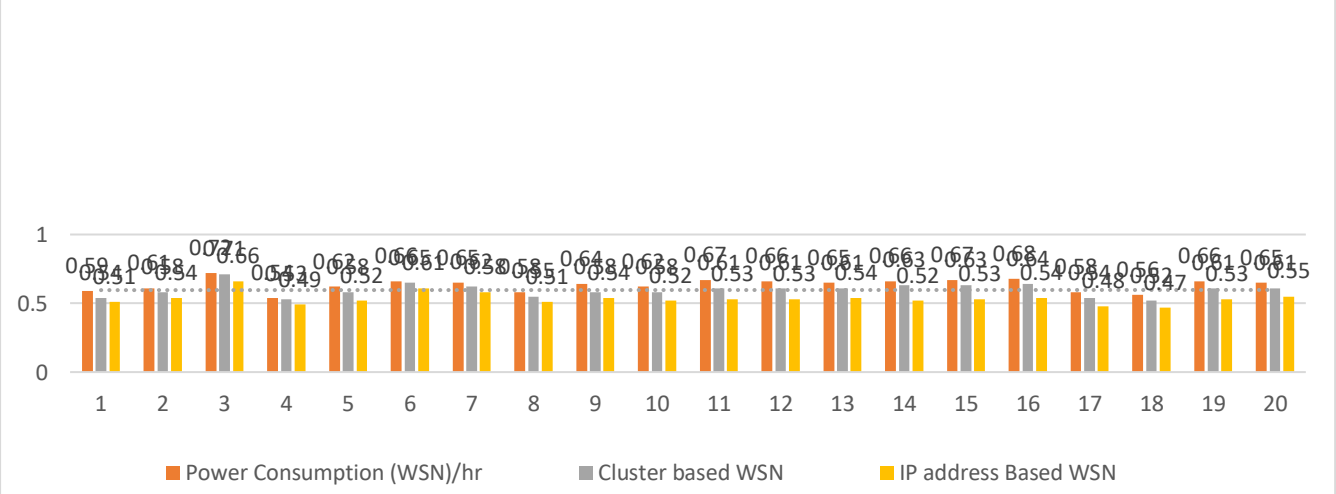


Figure-6 Power Consumption Chart

The table presents a comparison between PAWSN, CIPSO, LEACH, and a Genetic Algorithm (GA) with respect to how many active nodes in the network survive after several rounds.

Number of Rounds	LEACH	Genetic Algorithm	CIPSO	PAWSN
500	100	100	100	100
1000	90	95	98	99
1500	80	90	96	98
2000	60	85	94	96
2500	40	70	90	94
3000	20	50	85	92
3500	10	30	80	90

Table 3 Active Node

The table shows that Genetic Algorithm (GA) performs better than LEACH, with a slower decline in active nodes due to more optimized clustering and routing strategies, and Proposed PAWSN significantly outperforms both LEACH, GA and CIPSO. LEACH shows a rapid decline in the number of active nodes, indicating higher energy consumption and a shorter

network lifetime. Longer durations of higher active node counts suggest improved energy efficiency and longer network lifetimes.

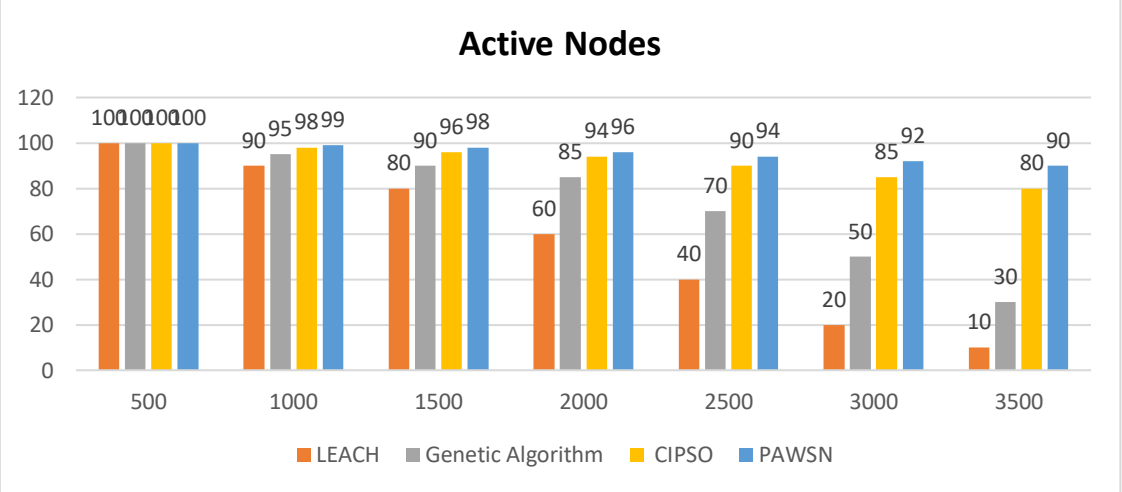


Figure-7 Using Node Comparison

Conclusion: The use of computer technology in our world has led to amazing types of growth. The development of wireless sensor networking has also led to growth in all sectors and has led to advances in the use of all types of information technology. While we are all currently using wireless sensor technology, it is necessary to improve some of its features. In that regard, to improve wireless sensor technology, this guideline is based on the cluster head-based algorithm that uses IP addresses to improve some of its functions and make it easier for us to use. By using this type of IP address allocation, we can easily see the reduction in electricity consumption and the increase in the lifespan of servers through the graphs we see above. By using this type of Algorithms, we can easily handle wireless sensor technology, which is used to get fast connection and exchange information.

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