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Location Based Power Reduction Cloud Integrated Social Sensor Network

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Abstract—It is great to hear about the advancements in wireless sensor networks and their applications, as well as the integration of cloud computing to enhance data analysis and storage capabilities. Indeed, these technologies have opened up numerous possibilities across various fields, including infrastructure tracking, environmental monitoring, healthcare, and more. The concept of a social sensor cloud, as you mentioned, brings an interesting dimension to this technology landscape by focusing on knowledge-sharing and connecting like-minded individuals or organizations. This could potentially lead to more collaborative and efficient solutions across a wide range of domains. Energy efficiency is a critical consideration in the design and operation of wireless sensor networks and the cloud infrastructure that supports them. The limited battery life of sensors necessitates careful management of energy consumption to ensure optimal functionality and longevity. Sleep scheduling methods are a common technique used to manage energy consumption in these networks. By coordinating when sensors are active and when they are in a low-power sleep mode, energy consumption can be significantly reduced without compromising the network's overall effectiveness. In the context of the Social Sensor Cloud, managing energy efficiency becomes even more crucial due to the shorter battery life of the sensors involved. This is particularly relevant given the growing concerns about environmental sustainability and the need to reduce energy consumption across technological systems. It's clear that your research paper addresses these challenges head-on, by exploring energy-efficient techniques for the Social Sensor Cloud. Sleep scheduling is just one of the many strategies that researchers and engineers are working on to strike a balance between functionality and energy consumption. Other methods might include optimizing data transfer protocols, developing energy-harvesting mechanisms, and enhancing sensor hardware efficiency. As technology continues to evolve, the integration of wireless sensor networks, cloud computing, and social networks will likely pave the way for innovative solutions and transformative applications. Addressing energy efficiency concerns will undoubtedly play a crucial role in ensuring the long-term viability and positive impact of these technologies.

Keywords- Wireless Sensor Network, Cloud Computing, Social Network, Energy Efficient Technique, Research, Virtual Sensor, Physical Sensor, Social Sensor Cloud

I. INTRODUCTION

In various application the data are collected by sensors. These Sensors are grouped together to establish WSN. In order to perform a specific task, the sensor communicates with one another Using a transceiver and a wireless communication media [5]. Because the sensors are battery-operated and have a limited life span, developing the research challenge includes developing an energy-efficient network model to optimize network longevity. End-user services such as platform, infrastructure, and software support are provided via cloud computing technologies. Sensor cloud- This integration WSN and cloud computing model allow the user to access the sensor and avail the facility of the acquired data will be stored, shared and processed on the cloud from various sensors. More over the end user are not aware of the cloud sensor's detailed design, position, and infrastructures. A virtual Environment is created which groups the physical sensor virtually to provide service an answer to a user's request [7].

Sensor-cloud architecture provides an interface for registering users, deleting actual sensors and monitoring and manipulating virtual sensors. Sensing as a service is provided by

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the sensor cloud, which leverages in Virtualization technology for wireless sensor nodes and gives users with on-demand sensing [6]. The sensor is owned by owners which are available to the user on the basis of rent there are each WSN has a separate owner. The physical Sensors are registered by their owner to the sensor-cloud infrastructure. The owner has the privilege when you no longer want to share the physical sensor, you may set the sensor parameters and cancel the registration. Physical sensors are handled on computational infrastructure to establish a sensor-cloud system. The data is transmitted to the cloud using WSN nodes connected to a cloud infrastructure, where it is stored, processed, and analyzed before being delivered to various customers.

The social sensor cloud (SSC), which links social networks, sensor networks, and the cloud as an IoT paradigm, is gaining a lot of attention from both academic and industry circles. On the one hand, the SSC proposal is motivated by the IoT concept, which is to connect all "things." The emergence of SSC, on the other hand, is prompted by merging social networks, sensor networks, and the cloud to investigate the possible advantages. The foundation for a social sensor cloud is shown in Figure 1 [14].

Sensors are used to gather data in a variety of applications. A WSN is formed when sensors are clustered together. For a given purpose, a transceiver is used to connect with other sensors [5]. Developing a network model that saves energy, in order to increase network lifespan, is a critical part of the research issue. Users of cloud computing may take use of a variety of platform, infrastructure, and software services. Cloud-based sensor Users may access sensors and utilize the cloud to store, distribute, and analyze data from many sensors using the WSN and cloud computing architecture. A cloud sensor infrastructure's design, location, and kinds of sensors are unknown to the end user. The physical sensors are virtualized and grouped together to produce a service response to a user request [7].

Sensor-cloud architecture provides two services: user registration or removal of the real sensor, and monitoring and maintenance of the virtual sensor. It is possible for clients to access sensors anytime they want in the sensor cloud since sensors are virtualized and supplied as a service [6]. Each WSN has its own owner, who rents out their sensor to others. Owners of physical sensors are registered in the sensor-cloud architecture. The sensor owner has the ability to adjust the sensor characteristics and to cancel the registration when he or she no longer wants to share the sensor. Sensor-cloud architecture is the result of physical sensors being handled on a computational platform. Nodes in a cloud architecture that are linked to the WSN transfer data to a central location where the data is stored, processed by other nodes, then delivered to customers. Present difficulties to current technological solutions are discussed, as well as potential research directions for sensor-cloud infrastructure. Because sensors' battery life is limited and data centers need a significant amount of energy to power servers and provide storage, the sensor cloud must be energy efficient [2].

IoT is emerging as a third wave of the information industry's growth after the computer and the Internet, with several established applications such as smart health care, smart homes and intelligent monitoring across a wide range of fields (e.g. civil society, industry, agriculture). "Things" integrated with network connection, sensors, devices, and programming make up the Internet of Things (IoT). "Things" in the IoT (ranging from everyday goods to man-made antiques, complicated frameworks to simple machines) are all connected and communicate with one other, allowing them to communicate with each other (i.e., gather and exchange data).

Academic and corporate groups alike are paying attention to the concept of the "social sensor cloud" (SSC), which integrates social networks with sensors and the cloud. In particular, the idea of IoT, that is, connecting every "thing," is the driving force behind the SSC proposal. Social networks and sensor networks, as well as the cloud, are used to examine the possible advantages of SSC's appearance.

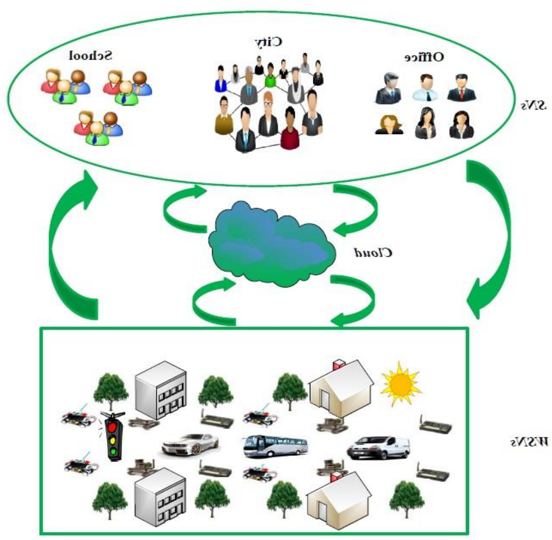

Figure 1. Social Sensor Cloud

II. RELATED WORK

We have studied so many papers related to the sensor cloud integration. According to the survey, we found that generally sensor cloud phenomenon is totally focused on four parameters namely energy, security, sensory data transmission and quality of services. This entire portion related to Literature Review based on some energy related parameter. Table 1 Indicate Literature Review based on Survey Paper & Parameter Based Paper.

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TABLE 1. LITERATURE REVIEW

Author Name & Year	Source	Summary of Contribution	Drawback/limitation	Features of Research
Rajendra kumar Singh et al. 2019	IEEE 2019	Cloud integrated sensor network with Virtualization	Scalability, Security, QoS , Energy Consumption	Scalability, Security, QoS , Energy Consumption
Saed Abed et al. 2019	Elsevier 2019	Secure & Energy Effiecient Platform for WSN & MCC	Security, Energy Consumption	Security, Energy Consumption
Rajendra Kumar Dwivedi et al. 2019	IEEE 2019	Sensor Cloud Security	Secure Data Transmission	Secure Data Transmission
Syed Arshad Ali et al. 2019	IEEE 2019	Energy Effimcient Algorit	Power Consumption	Power Consumption
Babur Hayat Malik et al. 2019	IJACSA 2019	Energy Utilization in Cloud Fog IoT Architecture	Reduce Energy Consumption	Reduce Energy Consumption
Patricia Arroyo et al. 2019	Sensors 2019	Sensor Cloud Integration	Improve Air Quality in Sensor Cloud	Improve Air Quality in Sensor Cloud
Mardiana binti Mohamad Noor et al. 2019	Elsevier 2019	IoT Security	Secure Internet of Things	Secure Internet of Things
P Namratha et al. 2019	IJRET 2019	Privacy and Security of Cloud Data	Computation Costs, Framework Design	Computation Costs, Framework Design
Mohammad Farhan Khan et al. 2019	IEEE 2019	Execute Multiple Applications through VSNs	Sensor Cloud Parameters	Sensor Cloud Parameters
NGOC-THANH DINH et al. 2019	IEEE 2019	Energy Efficinet Model	Energy Reduction in Sensor Cloud	Energy Reduction in Sensor Cloud
Chunsheng Zhu et al. 2018	IEEE 2018	Concepts of Social Sensor Cloud : framework, greenness, issues, and outlook	Diagnostic Mechanism, Fault-Tolerant Method, Adjustable Sleep Scheduling, Job cheduling, Robust Data Sharing	Diagnostic Mechanism , Fault-Tolerant Method , Adjustable Sleep cheduling, Job Scheduling, Robust Data Sharing
Kalyan Das et al. 2018	Journal of Sensors 2018	Sensor Cloud Energy Efficiency	Network Lifetime, QoS, Scalability, Energy	Network Lifetime, QoS, Scalability, Energy
J Saravana Kumar et al. 2018	IJESI 2018	Green IoT	Green Internet of Things Parameter	Green Internet of Things Parameter
Rajendra Kumar Dwivedi et al. 2018	IEEE 2018	Virtualization Concept	Energy efficiency, security, QoS	Energy efficiency, security, QoS
Sanjay Madria et al. 2018	IEEE 2018	How Efficiently Use Resource Constraint	QoS Related Parameter	QoS Related Parameter
Rashi Srivastava et al. 2018	IJARCS 2018	Cloud Integrated Sensor network	Resource Management	Resource Management
Lei Hang et al. 2018	MDPI 2018	Design and Implementation of Sensor Cloud	Physical Sensor Management	Physical Sensor Management
Walid K A Hasan et al. 2018	ICCSCS 2018	Energy Efficient IoT Network	Reduce Energy Consumption	Reduce Energy Consumption
D. S. Park et al. 2018	Springer 2018	IoT with Cloud Computing	IoT Parameter	IoT Parameter
Vennila Santhanam et al. 2018	IRJET 2018	Sensor Cloud Platform	Middleware Service Utilization	Middleware Service Utilization
Filip Tsvetanov et al. 2018	European Union 2018	Cloud Integrated Sensor Platform	Resource Management	Resource Management
Nahla F. Omran et al. 2018	IEEE 2018	IoT Health Care Projects	IoT Related Parameters	IoT Related Parameters
Falguni Jindal et al. 2018	IJCSIT 2018	IoT	IoT Characteristics	IoT Characteristics

Subarna Chatterjee et al. 2018	IEEE 2018	Big-Sensor-Cloud Infrastructure	Large Scale Deployment	Pricing of Se-aaS within BSCI
Hany F. Atlam et al. 2017	IEEE 2017	IoT with Cloud	Reserch and Challenges of Cloud and IoT	Reserch and Challenges of Cloud and IoT
Sudip Misra et al. 2017	IEEE 2017	Sensor Cloud Paradigm	Issue and Challenges of Sensor Cloud	Issue and Challenges of Sensor Cloud
Kalyan Das et al. 2017	IEEE 2017	Sensor Cloud Energy Efficient Model	Network Lifetime, QoS, Scalability, Energy	Network Lifetime, QoS, Scalability, Energy
RUSHAN ARSHAD et al. 2017	IEEE 2017	Green IOT Principle	Energy Efficient Mechanism	ICT Principle
Tanupriya Choudhury et al. 2017	IEEE 2017	Privacy & Security of IoT	Huge Storage Systems	Huge Storage Systems

Based on the Literature Review, we identified several energy efficient techniques for Sensor Cloud in Fig. 2.

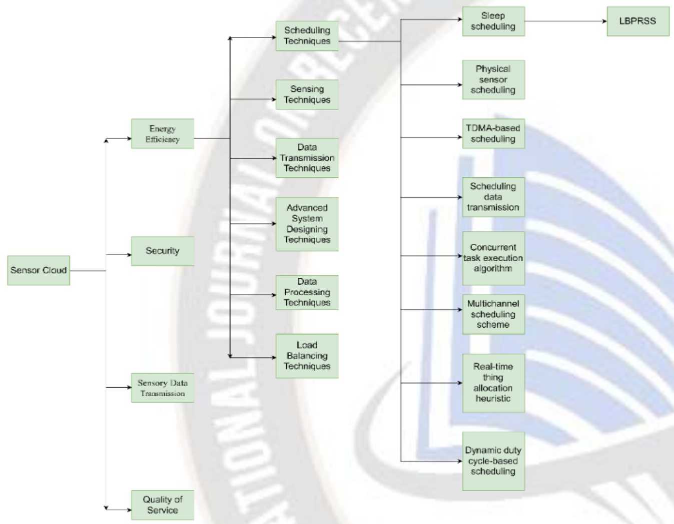

Figure 2. Energy efficient techniques for sensor cloud

III. ENERGY-EFFICIENT TECHNIQUES

A. Techniques for Scheduling

The E2DAWCS (energy-efficient and delay-aware computing system) regulates network connectivity and sleep schedule within an allowable delay to reduce power usage. To reduce the number of detected packets sent for transmission, aggregation of data, sensor planning with physical sensors, as well as less-powered listening methods were utilized. As a result, energy usage is reduced even more. For fine granularity jobs, code - division multiple accesses (TDMA) based scheduling has been used to save energy while delivering a fast reaction time and high throughput. The concept of optimizing communication scheduling and adjusting the clock frequency has been utilized to decrease the usage of energy in mobile resource limitation devices. A task execution framework has been presented that picks the built - in sensors with lower energy use and eliminates redundant job execution. The clustered multichannel scheduler system collects data from several sections at once and transmits it all to the sink, so lowering energy usage while boosting throughput. and also, the delivery ratio A real-time item allocation heuristic approach was devised to minimize overall energy utilization In IoT-based cloud systems, the QoS-aware service selection problem is used. In the sensor cloud, a scheduling strategy based on adaptive duty cycle has been created to reduce energy consumption and costs. [13].

B. Techniques of Sensing

Query processing and cloud sensing strategy optimization were employed to reduce energy overhead and increase scalability. Energy, storage, and data processing requirements are reduced by using Selective sensing based on the location, environment, and

activity. The energy-saving cloud-offloaded global positioning system (CO-GPS) employs sensing devices to assure the GPS receiver tool's duty cycle and logs millisecond raw data from the GPS signal for processing. The use of trustworthy middleware for collaborative sensing and data aggregation leads in energy savings. Sensing as a carrier mechanism helps the inducement mechanism by improving energy efficiency, allowing numerous programmes to load on multiple platforms in a flexible and secure manner, and assisting the enticement process [13].

C. Techniques for Data Transfer

By picking the suitable bridge node, an optimum judgment rule approach is employed to lower each node's transmission energy use. To make it energy-efficient, a configurable Model of the sensor information system is used to modify the frequency of data collection and transmission of information. technology also minimizes Emissions of CO2. Under the constraints of cut-off dates and deadlines, a framework for wirelessly powered computing that is entirely based on cellular computing. Energy harvesting is described as a method of lowering local computing's energy consumption while maximizing offloading's energy savings computing. The sensor-cloud integrated platform is used to perform push pull communication across the three layers of the system architecture for energy-efficient information

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transfer. This method consumes less bandwidth while collecting a large quantity of data from the user. The Send compression technique is used to remove duplicated data caused by high transmission energy consumption, and it is especially appropriate for huge volumes of numerical data.

D. Techniques for Advanced System Designing

The goal of a cloud orchestration strategy that enables dynamic workflow across service components is to coordinate services purely through cloud computing, resulting in significant energy savings. A sensor-cloud architecture uses a facts prediction model to conserve energy. To automate energy management, event management, fact aggregation, and connection management, as well as deal with key applications, a self-managed sensor-cloud technology is deployed. In the case of an emergency, this strategy also provides for a quick reaction. The sensors are managed by a publishing or subscribing middleware in a cloud architecture. Furthermore, superfluous sensors were eliminated, and energy usage was reduced. Finding a balance between energy efficiency and information quality is suggested by a framework. It strikes a balance between first-class information reception and energy consumption [29]. Green energy mobile cloud (GEM Cloud) is a distributed computing system that uses a network of mobile devices to facilitate complex, parallel tasks while reducing energy consumption by up to 98 percent. The WSN design is essentially cloud-based, with a virtual sink collecting sensed facts and several sink points processing to decrease energy, data size, hop count, and CPU clock frequency [13].

E. Techniques for Data Processing

You can manage and optimize all of your inquiries in the cloud. To save energy, techniques are employed to reduce the cost of sensing, lessen the highest uncertainty, and intelligently communicate the query-evaluated final result. A paradigm for integrating WSN and cloud is presented, with the goal of preventing network disruption, reducing data loss, and extending network lifetime. Sensor data may be retrieved anywhere, at any time, thanks to the internet and this technology. A data storage algorithm is proposed. For wireless sensor networks with a non-uniform node distribution, the retrieval of enormous volumes of data in an energy-efficient manner. Instead of using a GPS device to measure altitude, the route-matching algorithm technique was employed with altitude information using inexpensive and energy-efficient air pressure sensors [13].

F. Techniques for Load Balancing

A unique node selection approach minimizes energy consumption by employing the notion of collaboration, in which tasks are partitioned and completed by sensors in the most efficient way possible. As a result, computer resources are in short supply utilized to their full potential. The service get admission to point approach for QoS assistance under an energy-efficient limitation is chosen using cloud-assisted monitoring of complicated events. This method is dependable, has a shorter response time, and uses less energy. The virtual machine technology is used in a load-balancing mechanism, which distributes processing chores to the appropriate server, resulting in higher performance and decreased energy consumption. The packets are routed by the wireless sensor using a load-balancing approach that ensures that all nodes' energy consumption is balanced. As a result, the network lifespan of the model rises. [13].

G. Analysis

We've covered a lot of factors in this part that are used in six different approaches. Bandwidth, data size, computational energy, total energy, conversation energy, accuracy, dependability, throughput, deadline, availability, and network connectivity are all factors to consider. Longevity, packet delivery, data throughput, CPU clock frequency, querying, packet loss, hop count, turnaround time, total time, storage demands, scalability, and cost were all factors we considered.

According to our classification, the bulk of research for efficient scheduling algorithms employ general energy, general time, cost, data rate, communication energy, data size, hop count, and CPU clock frequency and throughput. There are no accuracy or query processing parameters in any of the research studies on this approach. Scalability, storage requirements, reaction time, and availability are all phrases that are rarely utilized. The vast majority of study studies [13] ignore network longevity and QoS considerations. Figure 3 depicts the energy and remaining parameters for an energy efficient scheduling technique. The percentage of the energy parameter used in energy efficient scheduling technique for the sensor cloud ranges from 36 to 40%.

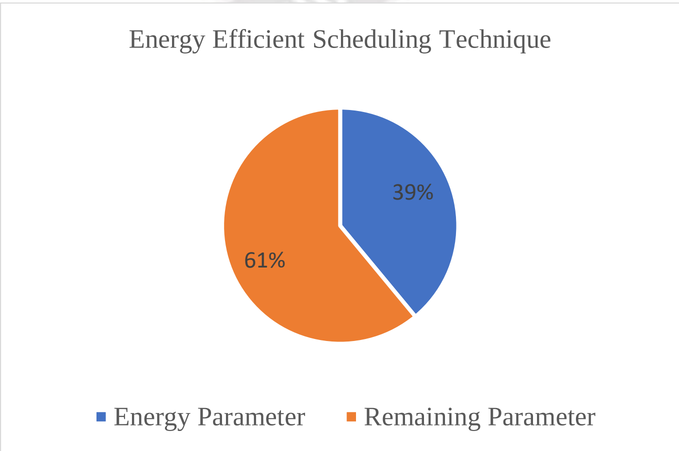

Figure 3. Energy Efficient Scheduing Technique Parameters

Overall energy, overall range, accuracy and scalability are the metrics that have been used in the majority of articles for available energy sensing systems. None of the research articles

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for those techniques use throughput, community lifespan, packet transit ratio, number of hops, or reaction time metrics. The majority of the study articles in those methodologies [13] do not include QoS factors. The energy and remaining parameter for an energy efficient sensing technology are shown in Figure 4. The percentage of the energy parameter used in energy efficient sensing technique for the sensor cloud ranges from 29 to 33%.

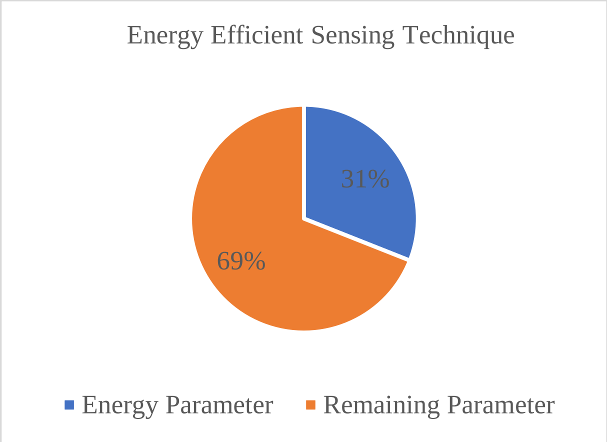

Figure 4. Energy Efficient Sensing Technique Parameters

Computation energy, total time, accuracy, and scalability are the parameters that have been used in the majority of articles for energy-efficient Data Transmission Technique. The majority of study published in such techniques do not examine quality of service factors [13]. The energy and remaining parameter for an energy efficient Data Transmission technology are shown in Fig. 5. The percentage of the energy parameter used in energy efficient data transmission technique for the sensor cloud ranges from 32 to 36%.

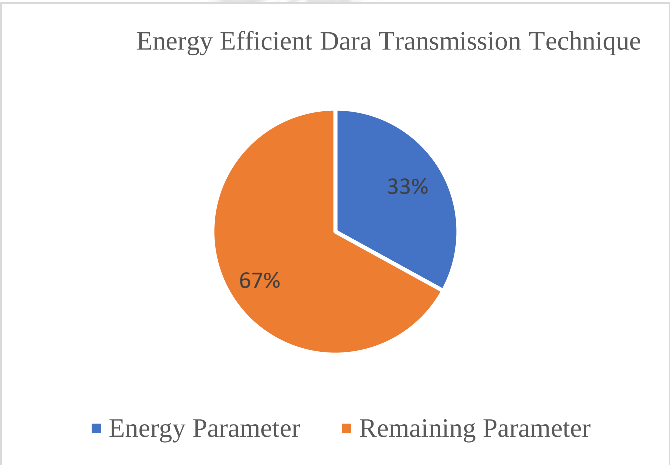

Figure 5. Energy Efficient Data Transmission Technique Parameters

Energy, throughput, and network longevity are the characteristics that are used in the majority of articles for energy-efficient advanced system designing techniques. None of the research articles for those techniques use the packet transit ratio, number of hops, or reaction time characteristics [13]. Figure 6 depicts the energy and remaining parameters for an advanced system design method that is energy efficient. The percentage of the energy parameter used in energy efficient advanced system designing technique for the sensor cloud ranges from 32 to 36%.

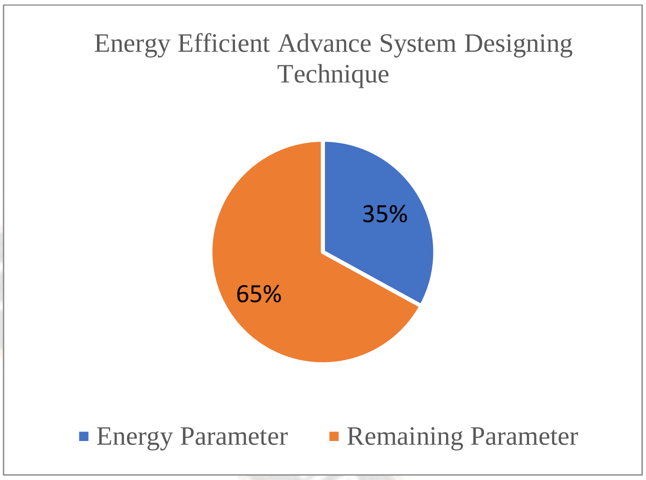

Figure 6. Energy Efficient Advance System Designing Technique Parameters

The bulk of current studies use data size, network lifespan, packet loss, computational energy, total energy, total time, data size, total time, total energy and storage demands as metrics for energy-efficient data processing. None of those research publications for those strategies use bandwidth, throughput, latency, or availability factors. The majority of study studies [13] do not examine QoS factors. The energy and remaining parameter for an energy efficient Data Processing approach are shown in Fig. 7. The percentage of the energy parameter used in energy efficient data processing technique for the sensor cloud ranges from 30 to 35%.

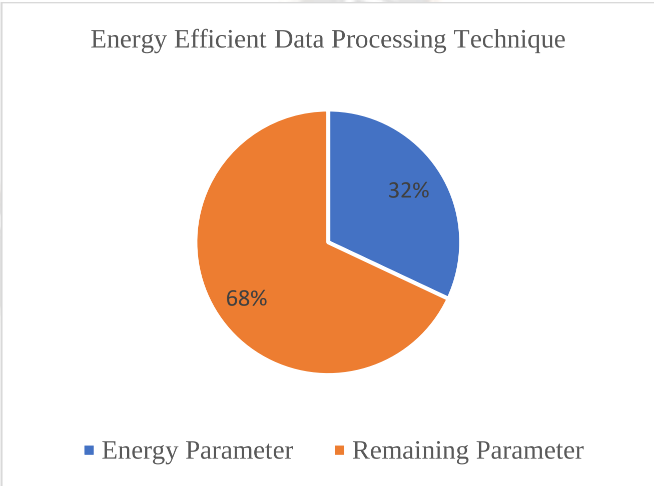

Figure 7. Energy Efficient Data Processing Technique Parameters

For the sensor cloud, four research publications employed energy-efficient load balancing strategies. Total energy, total time, and communication energy are used as measures in the majority of recent articles for energy efficient load balancing systems. Any research publications for such techniques do not

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use precision, CPU clock frequency, query processing, and packet loss are all factors to consider., hop count, or scalability characteristics. The majority of study studies [13] overlook QoS factors. The energy and remaining parameter for an energy efficient Load Balancing approach are shown in Figure 8. The percentage of the energy parameter used in energy efficient scheduling technique for the sensor cloud ranges from 31 to 36%.

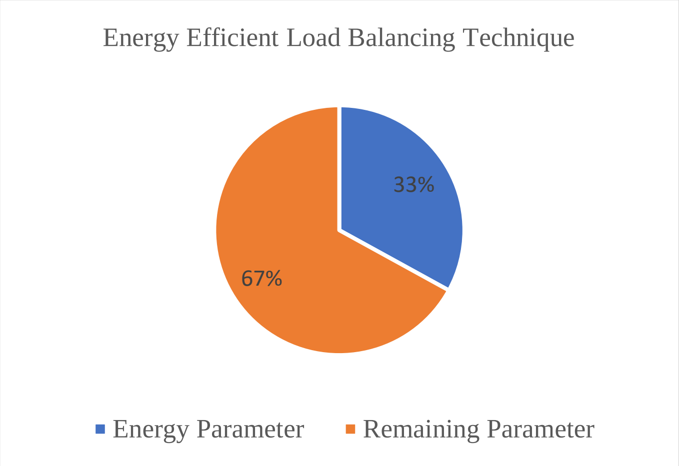

Figure 8. Energy Efficient Load Balancing Technique Parameters

IV. LIST OF APPROCHES

A. CLSS (Collaborative Location Based Sleep Scheduling Algorithm)

1) Mobile User Location History List

StarTrack System based on Cloud C is used to retrieve the location of a mobile user in Location List L. Based on the user's current location, StarTrack System is often utilized. First, System will track the Mobile user's Location Lu for current position with the help of GPS. All the data will be store in High Level Storage from where Application will retrieve data.

2) Mobile User Predication Location List

The Algorithm for Collaborative Sleep Scheduling based on Following Manner. The system will begin by obtaining a list of Mobile User Predictions. A regularly frequented location will be linked to the user's future location. While it is feasible that on certain days the user may visit place C before place A or place B prior to place A, it is more likely to happen on other days. So, without repeating the source and destination, All Places.

3) CLSS Scheme (Collaborative Location Based Sleep Scheduling Algorithm)

Pseudocode of CLSS Scheme

Step 1: Cloud c obtains mobile user u's current location lu.
Step 2: If l_u € L, c sends flag A to base station s. Otherwise, c sends s flag Z.
Step 3: s broadcasts flags to sensor nodes.
Step 4: Run Step 5 at each node *i*.
Step 5: If node *i* receives flag A, remain awake. Otherwise, go to sleep.

B. LPPC Algorithm (Location Priority Predefined Configuration Algorithm)

1) The LPPC Algorithm is working on following Method.

With predefined configuration, the mobile user can turn sensors on and off based on their needs and environment. In this scenario, the sensor's location is crucial, coupled with the Priority system. The Location, Priority, and Predefined Configuration (LPPC) algorithm is created as a result. When none of the three conditions are met, the energy algorithm is ineffective, and the sensor remains awake. The sensor goes to sleep if it is not in an active state. If the sensor is surrounded by other sensors that keep an eye on the same thing, it will remain awake while the others in the vicinity sleep. The sensor sleeps or wakes up in accordance with its priority schedule if it has one.

Pseudocode of LPPC Scheme

Step 1: for (i = 0: M) {
Step 2: if (Si.A = 'N')
Step 3: Sleep (Si):
Step 4: Else if (Si.CSLG(Si.L) > 0) {
Step 5: For (j=0: CSLLocation (Si.L)) {
Step 6: If (j!=i)
Step 7: Sleep (Si);}}
Step 8: Else if (Si.P is not NULL)
Step 9: Prioritize (Si)
Step 10: Else
Step 11: Awake (Si)

C. PROPOSED LBPRSS Algorithm (Location Based Power Reduction Sleep Scheduling Algorithm)

1) SYSTEM FLOW

Figure 9 Indicate the System Flow of Propose Work.

- Deploy No. Of Sensors with Energy Harvesting Concepts.
- We are Considering Source & Destination Sensor on And Remaining Sensor Would be Off.
- First of all our System Match the Location of Sensor and User with accuracy.
- After Match the Location, Our Second Sensor Will on and Remaining Would be Off.
- Now our client will go on predicted path on which our sensor is already deploy and sensor will randomly on – off according to the location match with client.

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- At a time, Source, Destination and Current Location Sensor is On and Remaining Would be Off.
- With This Mechanism, we can Save Large Amount of Energy.
- When Location Would be Same, user can get Message according to the System requirement for Industry/Society/City.
- We have implemented This System for Small as well as On Large Scale for Society , Industry or Campus Also.
- We have created this System for Socially Connected People for Same Intension whether it is Office People Group or School Student Group, City People Group.
- We have created Algorithm, Android Code (user location – Lat, long.), Sensors and circuits and all, Mobile App and social group, Cloud on rent etc. Its apply in real time system for further result measurements.

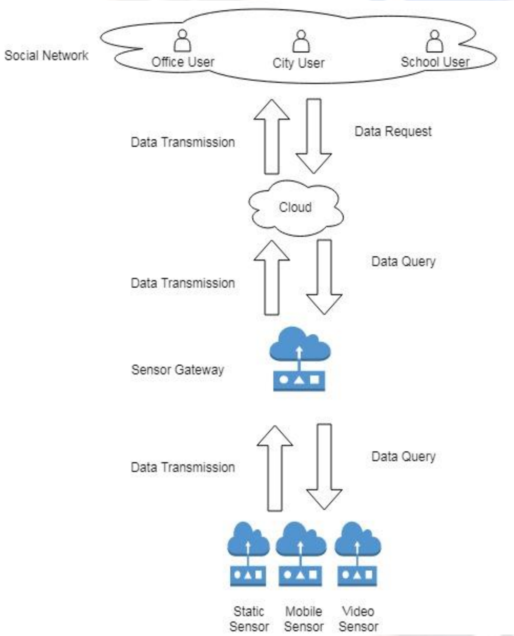

Figure 9. Propose EELBSS Algorithm System Flow

2) *FLOWCHART*

In this Section, we will discuss Flowchart for Location Based Power Reduction Sleep Scheduling Algorithm.

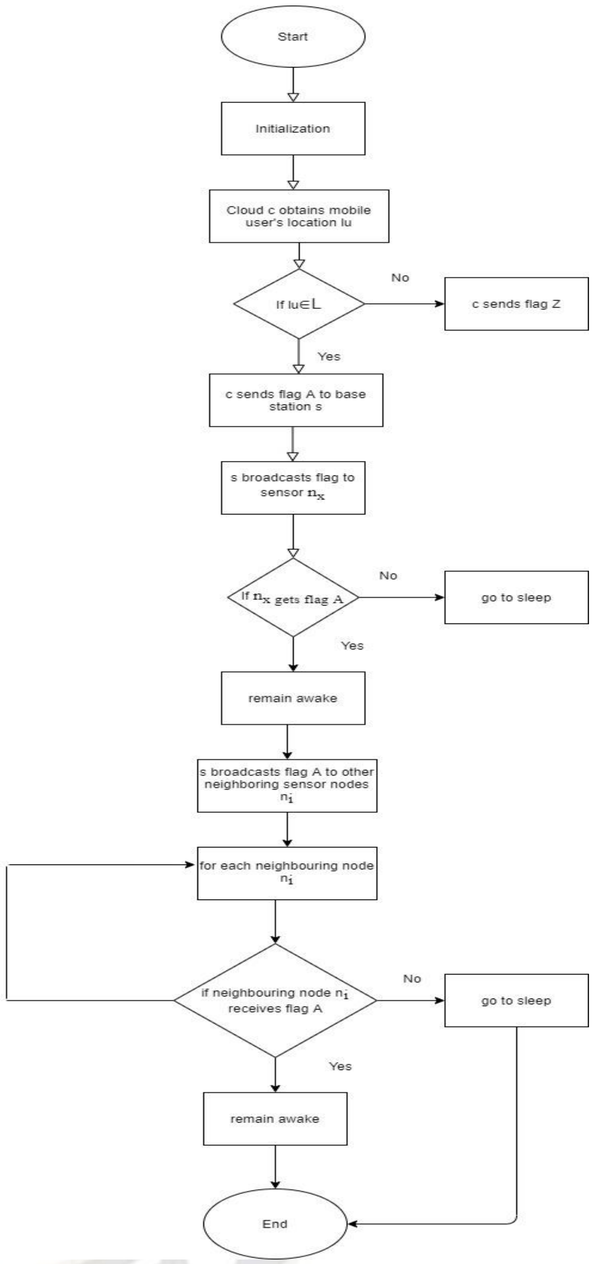

Figure 10. Location based POWER REDUCTION sleep scheduling algorithm flowchart

3) *4.3.3 Location Based Power Reduction Sleep Scheduling Algorithm*

Pseudocode of LBPRSS Algorithm

Step 1: Start
Step 2: Live location lu of mobile user u's will be taken by Cloud c.
Step 3: Cloud c delivered a flag A to base station s if lu € L. If condition not satisfied than transmit the flag Z.
(L=area of sensor nodes)
Step 4: Individual sensor n_x will receive a flag A which is broadcast by base station s.

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Step 5: If specific sensor n_x receives flag A, it awakes, else go to sleep.
Step 6: If specific sensor node n_x receives flag A, base station s will send flag A to all nearby Sensor nodes n_i.
Step 7: Run Step 7 at each node that is nearby (n_i) in Step 6.
Step 8: Stay awake if a neighboring node (n_i) receives flag A. Otherwise, get some rest.
Step 9: End

V. RESULT

In Result Section, we will compare three parameters like Power Consumption, Network Lifetime and Network Work rate for CLSS Scheme, LPPC Scheme and LBPRSS Scheme.

We are taking following input parameters for Experiment.

Testing Parameters

- Energy Parameter
- Sensor Inputs
- User Mobile Location

Training Set

- Ultrasonic Sensor Inputs (Distance, Location)
- User Mobile Location (Location Identification)
- Sensor Inputs (Ultrasonic Sensor Data)
- Sensor Response Data (On/Off Method)

We have implemented our system based on 2 methods.

1) **With Real time Data**
2) **With Simulation.**

We have considered the Various parameters like Power Consumption, Network Lifetime and Network Work Rate for real time data.

Network Lifetime is calculated as the instant when the first sensor node dies, or when a percentage of sensor nodes have exhausted their energy, or when area coverage is no longer available.

$$NL = X*T$$

Where NL=Network Lifetime,

X = Eo/E

Eo=Initial Energy, E=Overall Energy

T=Time Epoch Interval

Network Work Rate is defined as the number of time epochs during which the network needs to work, divided by the network lifetime.

$$NWR = (NTE/NL) *100$$

Where NWR=Network Work Rate,

NTE=Number of Time Epochs,

NL=Network Lifetime

Power Consumption is the amount of energy consumed during the periods of being idle or sleep.

$$E = (W/TS) *100$$

Where W= Working Sensors

TS=Total Sensors

Table 2 Indicate the Result regarding Power Consumption, Network Lifetime and Network Work Rate. Along with Table, Figure 11, 12 & 13 described the chart related to Result.

TABLE 2. RESULT TABLE

	CLSS	**LPPC**	**LBPRSS (Proposed Algorithm)**
Network Lifetime (In Minutes)	22.3	29.3	33.3
Network Work Rate (In Percentage)	71.1%	66.3%	57.1%
Power Consumption (In Percentage)	35.6%	30.3%	24.3%

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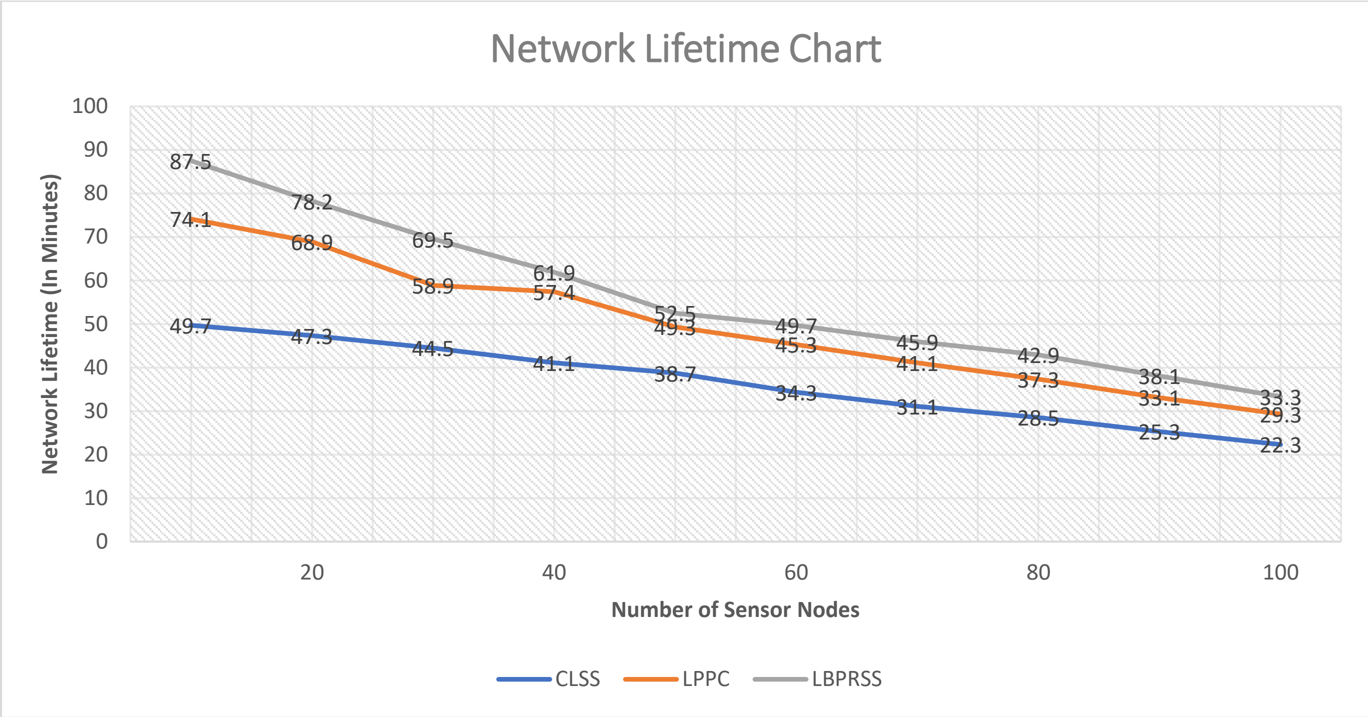

Figure 11. NETWORK LIFETIME CHART

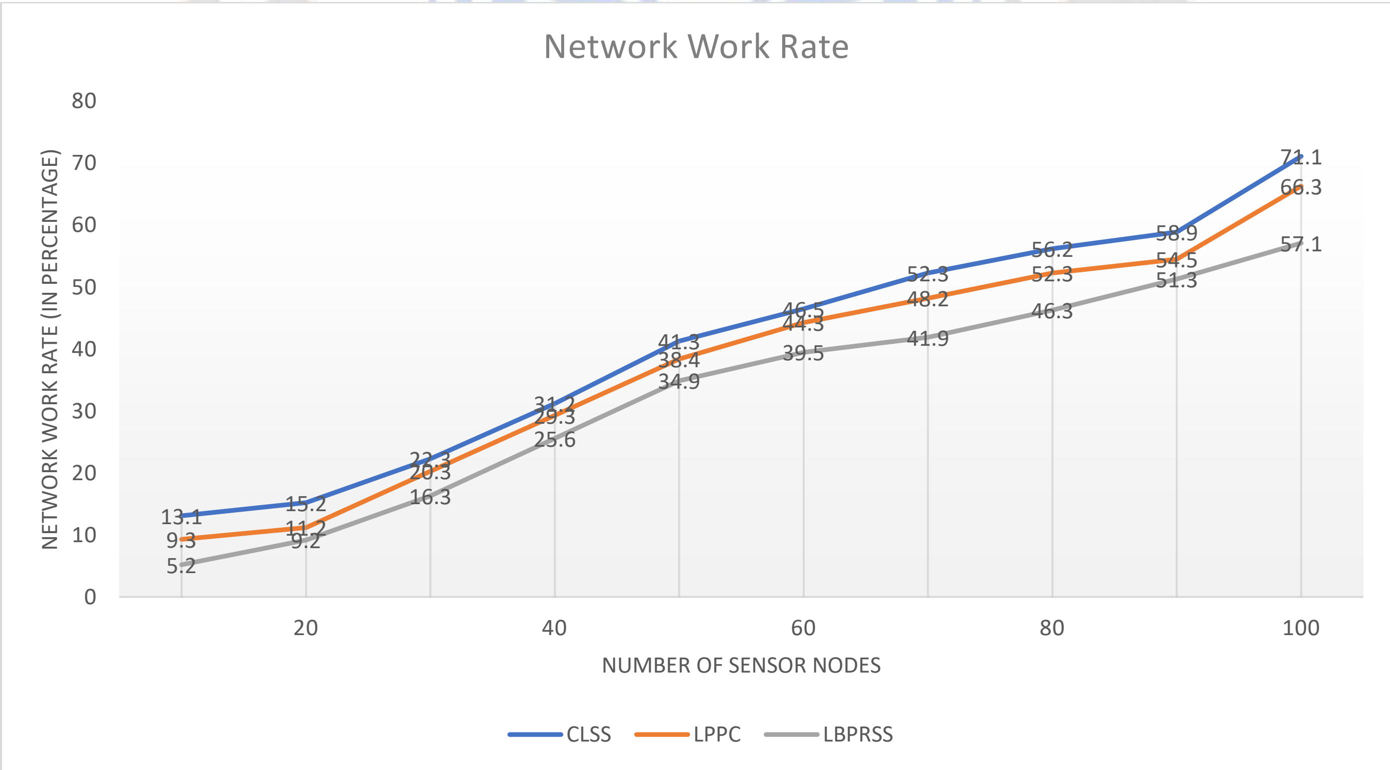

Figure 12. NETWORK WORKRATE CHART

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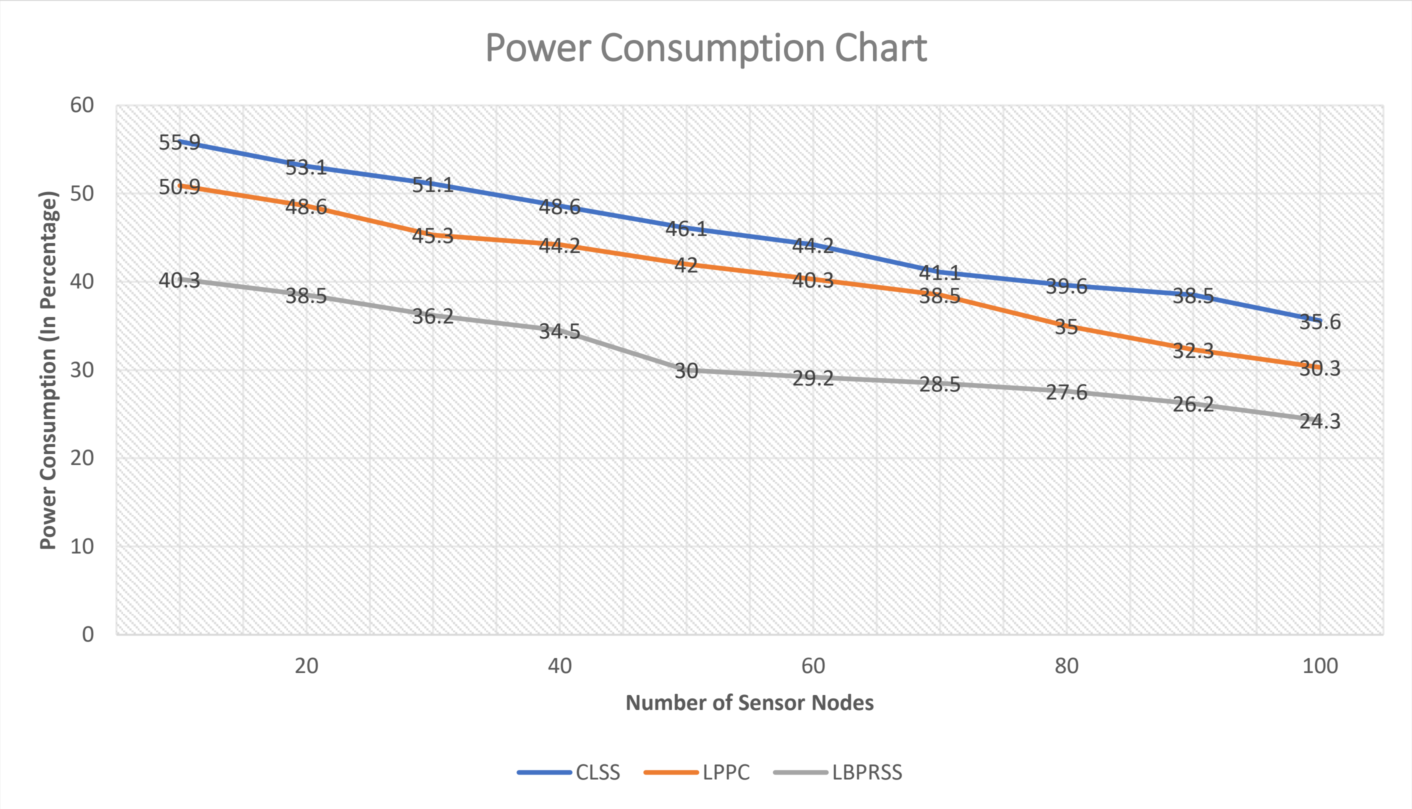

Figure 13. POWER CONSUMPTION CHART

We have considered Density Parameter for Simulation Part. In simulation, we have considered Yellow Car for Regular traffic. The Red Car is part of Social Network. We have considered almost 200 to 250 red car parallelly passing through the sensors and we can easily get the data accordingly. The Location Based Power Reduction Sleep Scheduling Algorithm & Flow chart for System remain same for Simulation.

VI. CONCLUSION

We have classified Energy Efficient Technique in Six Categories using numerous Parameter for Sensor Cloud Environment. We have taken approximately 20 parameters for classification technique. Generally, we focused on Energy Parameter in all six categories. Along with Energy Parameter, we considered Quality of Service associated parameters such as reliability, throughput, accuracy etc. Here we implemented our Location Based Power Reduction Sleep Scheduling Algorithm for Social Sensor Cloud for Energy Parameter. We have Compared our algorithm with two existing algorithms named CLSS & LPPC with Power Consumption, Network Lifetime and Network Work Rate Parameter and we found that our algorithm is far better than existing algorithm in both the methods. We can also add Quality of Service-related parameter for Social Sensor Cloud. In future we can expand our algorithm with the help of Artificial Intelligence & Machine Learning.

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