Section: Research Paper

Design of Green IoT for Sustainable Smart Cities and Eco-friendly Environment

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Abstract- The importance of an eco-friendly environment is to update the system that emits toxins. People nowadays tend to enrich their lifestyles and ask others to do so. Thus the eminent systems nowadays concentrate on the positions and holdings of the devices that are working under some circumstances. The guidance of the system and the endurance of the devices are terminally evolved and revolve with each other. The new endeavour to the devices is rich in sources of information and the consolidation of the data that has been proven to control the eminent environment. The man-made devices make the process easy and held towards enhancement. The most important criteria are the design of a sustainable smart city and its amenities. The smart revolves around the internet of things and artificial intelligence technology. People will be having more credits for the enhancement of the cities they live. They will be happy to discover more technology-based items for their easy living and happy environment. The conclusive nature of the system helps the reduction of pollution and the soreness of the errors that the technology had produced. The most important part of the smart city is every system that revolves around them will be monitored for the whole year and they will be surveillance through the system for security and the purpose of maintaining decorum and controlling the peace among the people. The control unit is situated in the heart of the city to control the mechanism and the process of connecting cities

through the working environment the most important point in this proposed system is that the data are stored in the cloud storage platform and they cannot be updated or deleted without the administrator's permission. And the conclusive part of the system is that they only have a single administrator. The admin will be login into the cloud storage for accessing the data and he will be having access he is the one who will be providing all the details to the user and the data will be stored in the cloud for protection and security. This enables the consumption of energy.

Keywords: Smart city, Eco-friendly, Cloud Storage, Internet of things, and artificial neural network.

INTRODUCTION:

The immense and dense system of the population has endeavoured to control the cities through smart hubs. The smart hubs are nothing but a central processing unit for every smart city. The immense population and the diversity in their living made the environment a polluted one and the most expensive place to live in. thus these smart cities were developed to elope the condition and change the people's mind set in living and help each other to make a better lifestyle. Thus the system helps in the reduction of their living cost and even the betterment of their living. Most people wanted to live in a pollution-free and happy environment. This proposed system helps those people to live to their fullest. The most alluring success of this proposed system is that they provide a work-life balance and a happy environment to hop on. The Proposed system aims in admiring the cities and their living condition and the prosperity of the environment. The system helps in maintaining the socio-economic measures and the economic condition of the people will be uplifted for a percept and they will be enjoying their lives to the fullest. The most important part of the system is to drive an eco-friendly environment to live in and help the people to consider living in a smart helps them reduce anxiety and the pressure of living in a normal city. The most important feature of the smart city is that they are equipped with control units and the maintenance of these control units are user friendly and cost-effective. The admin is there to rule out the measures and the defect in the system. The administrator helps the people to live calmly and peacefully without any hesitation or prejudice in their lives. The smart city is built under surveillance so that no other protocol measures will be taken care of. They help people to live their lives in peace and harmony. The surveillance system that is been built in the smart city is one of the important parts of the city. They will be monitored all day long and helps people to roam freely. Thus the surveillance is been locked into a server room where the admin only has the access to the servers. The servers are nothing but massive devices controlling and storing data transmission in the city. The data which is been enrooted into the city will be encrypted by the server and then will be sent or received by the other cities. Thus this encryption helps people to control their data losses and maintain their integrity and the data as such as possible. The importance of data control and system manipulation will be discovered only by the administrator.

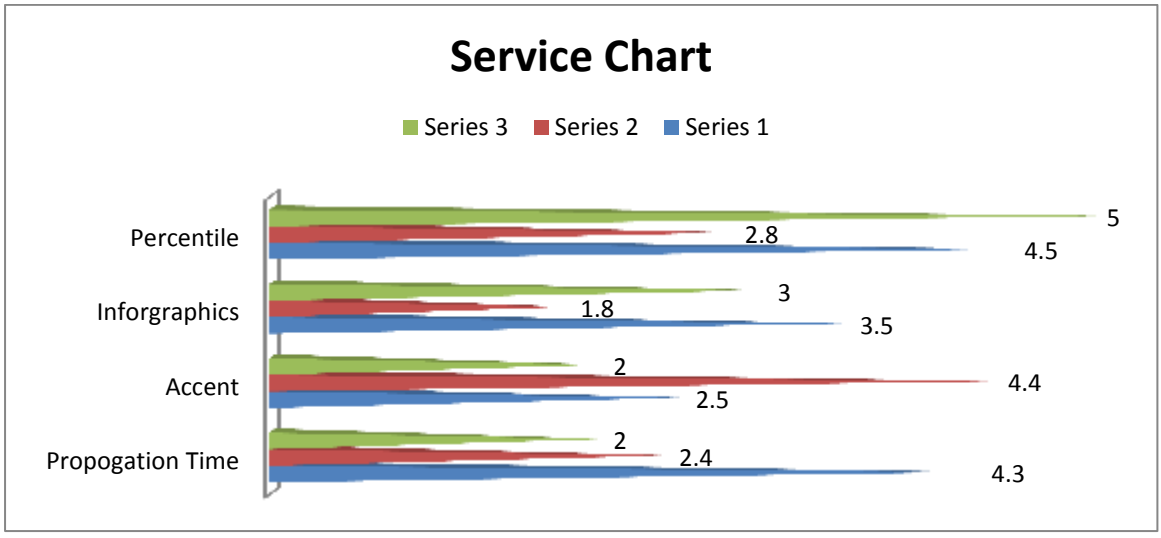


Figure: 1 Check for Eco-friendly Environment.

RELATED WORKS:

The importance of smart cities is growing faster and their needs are also growing fast. The need for the smart city tends to control all the technology that has evolved nowadays; most smart city projects have been developed [1]. The proposed system concentrated on the artificial neural network and the artificial intelligence technology for making it possible. The Internet of things is also been embedded into the proposed system for data security and data storage [2]. Thus the existing systems will be a part of the internet of things procedure. The internet of things is used for storing the data in the cloud and makes them securely saved in the cloud. These data cannot be accessed by the user only the admin have the access to the data [3]. People who need access to the cloud should raise a request to the admin for access. But the access to the storage is limited as such most of the data cannot be accessed. Data security is one of the most predominant in all devices and systems [4]. The control mechanism through the artificial neural network and the artificial intelligence is been accessed only through the internet of things [5]. The construction of smart cities needs time and more effort. The construction process consumes a lot of time and the process of making these cities are wisely helpful for the users and the time consumption is made to control the pacification of the systems success rate [6]. The important feature of the device is to make them repel the time and the technology that has been used. The importance of the system has made a great change in the environment [7]. The importance of making the cities more secure and smarter will be more authentic and mesmerized to pop up the system. Power consumption is the most prominent criterion for controlling the system. The harnessing of energy through the devices is similar and cost-effective [8]. People will be measuring the amount of energy they use and they need to know the charges of the energy used and the amount of energy will be divided among the persons [9]. The admin consults the users to harness the energy and makes them use of making it. The main usage of the smart city is to collect all the garbage and harness clean energy and make the city neat and clean for transportation [10]. Thus the data security system is reliable for the movement of data between two smart cities and makes them possibly communicate with each other. The consumption of data and energy for each user is been updated and harnessed by the meter in every home that reliably counts the number of usages and the number of persons using it. Smart cities are one of the important parts of technology development and an important part of developing countries [11-13]. As the smart city project helps developing countries to endure more positions and help them to compete with other developed countries. The important parts of smart cities are more endured and help the system to get into the space of time and limitless driving. This helps the buildings and the roads to get upgraded to the fullest [14-16]. The most alluring system of all time is smart city management and people of all ages will give a dash of claim on the project. The Government norms and techniques also help the proposed system with great effort and endeavour to live long and make the system prosperous and worth the time of appearance. The construction of server rooms and the power control units made this proposed to step ahead of the other existing system. This made the proposed system help the fullest to the devices and the design of this system made a great leap in the technology and made a confident move. The proposed system helps us to take a great leap in the era of time and make a bright future to the greatest and the fullest of all time [17-19]. In comparison with the existing system the performance of the proposed system has also made a great leap forward and made the proposed system shine in its way [20-22]. The importance of making the system reliable in getting the possibility of making it clear and vibrancy for the systems growth of the upcoming systems and the failure will be a massive immense in the system. The control mechanism helps the maintenance of the unit and the power [23-25].

PROPOSED SYSTEM:

The importance of making a system verbalized or making it possible is in the hands of the user and the admin. The admin makes the time and effort to make the system work properly and work perfectly in all senses. The Smart city is not just a name it is a technology where every space is been upgraded to control the most awaiting systems. The Buildings in the smart city is also evolved to control the measures within the city. The smart city buildings are concrete based and they are built with an all-time surveillance system a bot will assist the building with the control measures like fire detection, theft detection, pest control, pollution control, and mood detection of the user. They control the home according to the user's mood. The house is embedded with all the bots to control the process of making the environment easy to live in and maintain harmony. The smart city buildings

are mainly converted as embedded-based systems to control the measures of the units that is been in the layout of the design which is been shown in the figure: 1 of smart city buildings with most of the endeavour.

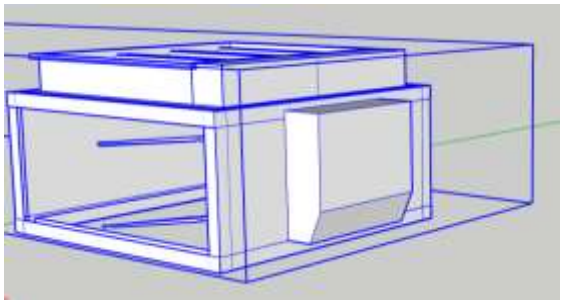


Figure: 2 Smart city buildings

The most important part of the proposed system which is the smart city is that we need neat and clean roads for transportation and it produces an eco-friendly environment for the arena. The cars that are traveling around the smart city will be automatically charged with the sensors that have been fixed on the roads. People don't need to wait for hours to charge their vehicles they will be automatically charged with the sensors on the roads and the charging port is been adapted to the circuit in their tires. The friction between the tires and the road produces kinetic energy which helps the vehicle to automatically charge itself and helps the user to get a pace of time for the charging. The roads are fitted with solar-based sensors for acute charging and maintenance. The roads are maintained properly with the user's continence and the taxes are levitated for the maintenance of these roads. The levitation of the tax will be automatically deducted from the user annually. The user will have to register to the charging so that they will be able to work with or else they cannot charge their cars and they will not get access to drive on these roads. All the data will be stored and sorted in the internet of things cloud. They will be managed by the admin. The smart transportation facility is upgraded nowadays and people wear smart gadgets that control their vehicles this is been updated on the roads also which is shown in figure: 2 of the smart roads for transportation.

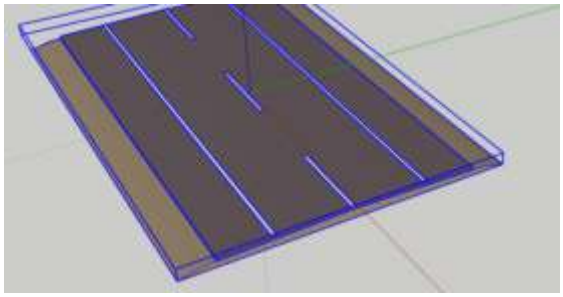


Figure: 3 Smart roads

The importance of the data is one of the most and foremost criteria in all the fields. People will charge actions on the community for not preserving their data properly. Thus to reduce these issues and the effect of data piracy, the proposed system has found a conclusion that helps the user to proclaim the maintenance of the machine and the server that has been used for the updating of the user. The servers are vitally protected. The important part of the servers is that they store data in highly secured wallets and transfer them with encrypted secured keys to the other cities. This helps the reduction in data piracy and makes the user send their data to the desired people without any hesitation and data control mechanism. The main event that helps the user to communicate with the other user is made easy and possible without any data latency and makes sure to control their flow. The data latency is been enabled to control the up gradation of the redundancy of the systems. The important features are that they are topped up with the Internet of things for extra accuracy. The servers are data storage units and they are shown in the figure: 3 servers as such they are dynamic servers that help the user to complete the user-defined needs.

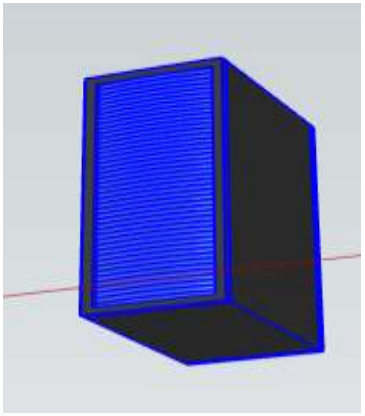


Figure: 4 Servers

The latency is applicable for all the devices that are equipped with the users less conspiracy and maintenance of the devices. The power control unit is one of the important processes of making the power outages to the smart city. Most of the important criteria in every smart city construction unit are that we need a power outage unit for all the matters. If no power outage is deposited in the system then there will be less power outage and there will be more power breaks down and this will make the system work inappropriately. Thus we need a well-equipped system of power outage units. This helps the system to work in hours of timeliness and with perfection. Power is an important factor in the smart city. The systems in the smart city work using power units only. So people should concentrate on the power leakage and the breakdown of the devices of the power systems. The artificial neural network is used to cleanse the power breakdown and the power waste. The people will get a seamless output of power for their well-being lifestyle. As such the smart city is covered with electric appliances such as Chabot's and electronic roads for transportation and e- garbage collectors for garbage disposal. The smart city even includes smart buildings built with all the amenities for an eco-friendly environment. As such the importance of the power units is a cause of the smart city. The power room is one of the important parts of the smart city project as such they are shown in the figure: 4 as a power room that helps in maintaining power breakdowns and power outages.

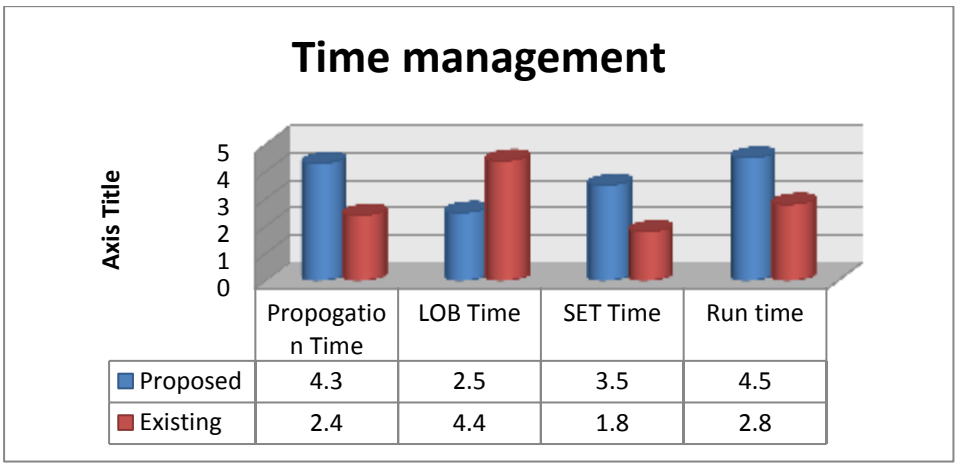


Figure: 5 Time management Chart

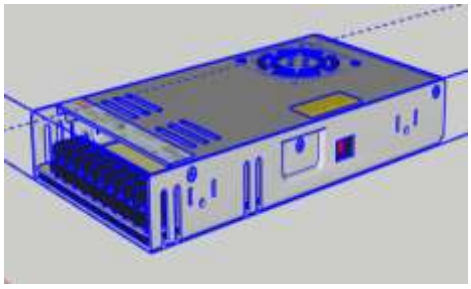


Figure: 6 Power room

Garbage repositories are one of the important parts of smart cities as such these are nearly an important cause. Waste disposal in smart cities is one of the most hybrid criteria. People in the smart city need a cleaner and more vivid environment for their well-being and the as such the disposal and degradation of waste material plays a major role in the well-being of the city. The waste disposal should be done on time and it should be allowed under circumstances and needs a timely cleaning or people will be complaining about the waste disposal and their process of amenities. The garbage repositories are enabled with WI-FI technology to assure that they make a spill out of the devices and this helps the admin to send the people to clean out the unit for a good environment and healthy atmosphere which is shown in the figure: 5 of garbage repositories.

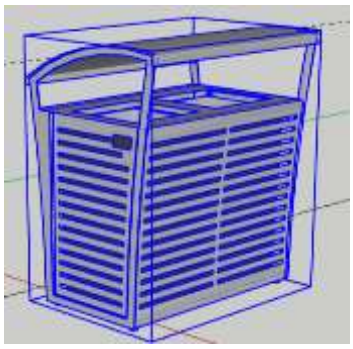


Figure: 7 Garbage Repositories

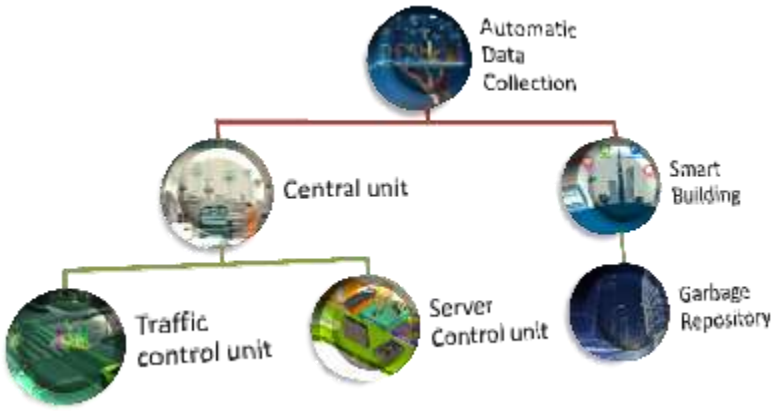
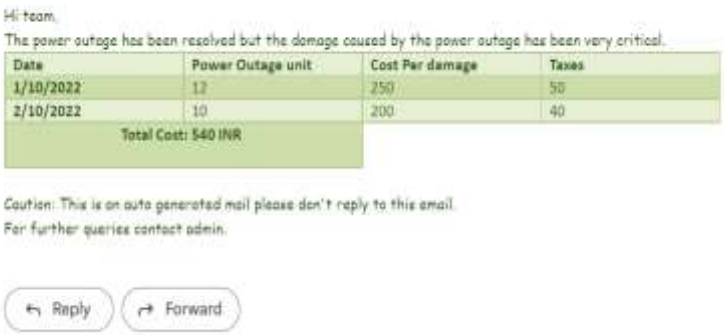


Figure: 8 Data collection units

The conclusive nature of the smart city is that they are reliable and make sense for the automation of the units that is been installed in it is shown in the figure:6 as the overall data collection unit. It helped people live the desired life they need and help them to live a life that technology has harnessed for them. The smart city project will endure the people's time and the nature of the work they do. It helps them to make the world an easier place to live.

RESULT AND DISCUSSION:

The balanced life cycle starts when there is a balanced system of joy to work in a convenient environment. People need a hazard-free environment to live or cherish their entire life in with those environments as such the proposed system helps them to reveal a balanced lifestyle. The proposed system deals with the entire smart city module which elongates the comparison of the time and accuracy being revealed by the units. The Internet of things helps in making the whole server so-called data storage elevator and the artificial intelligent bots help them in reproducing the smart buildings feature and the other amenities of the system. Figure: 7 helps us to reveal the comparison between the existing system and the proposed system. As per the internet of things you will get a notification of the power outage in the units that the user has been working which will give a due date to pay the amount that is to be paid. The automated mail will be sent to all the user and they will be reliably working on automation as such no manpower is needed for the estimation and calculation of the usage of devices and the damages caused by the system is shown as the output in the figure: 6 of notification for the power outage.


Hi team,

The power outage has been resolved but the damage caused by the power outage has been very critical.

Date	Power Outage unit	Cost Per damage	Taxes
1/10/2022	12	250	50
2/10/2022	10	200	40
Total Cost: 540 INR			

Caution: This is an auto generated mail please don't reply to this email.
For further queries contact admin.

Reply Forward

Figure: 9 Notification for the power outage.

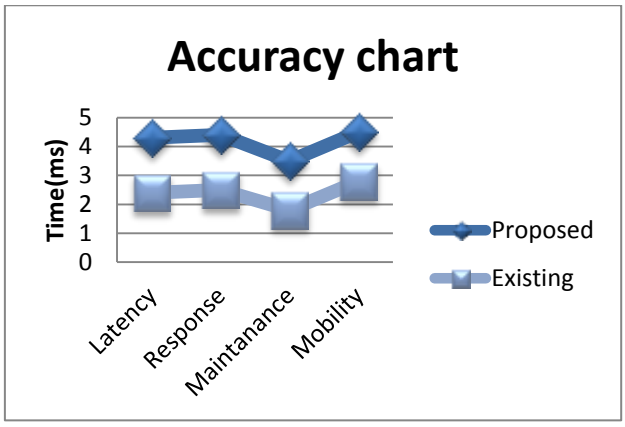


Figure: 10 Comparison chart

CONCLUSION:

The nature of technology that made the desires comes true was a dream to many. But the nature of these environments helps them to live their dream life. The importance of making the smart city proposed system to a greater extent is that they need to be in the same line of pace to control the units of propagation in the arena. The

control unit is been devised by the admin who manipulates to enhance the working of the system. The latency of the system has been increased and the response time of the system is also increased to an extent of time which helps the people to work more cautiously to increase the other amenities of the system. The maintenance cost has increased slightly because of the usage of the devices and the consumption of more devices that have not been used in the existing systems. The mobility of the system has been sharply increased due to the movable transportation and the power room that could be easily portable to the other acres. Thus this helps the mobility to sharply change its way accurately and made the system work more effectively than the existing system designs. Thus the accuracy has changed sharply too with more endurance and the reliability ratio is sown in the figure:8 of Implication chart.

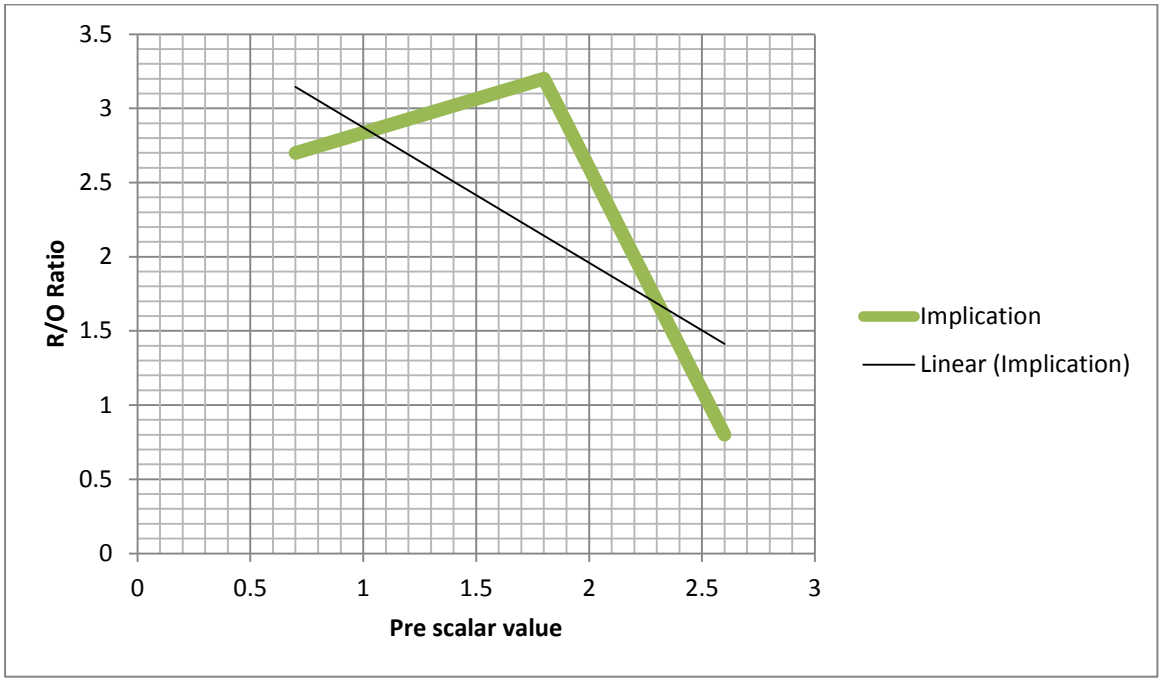


Figure: 11 Implication chart

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AVAILABILITY OF DATA AND MATERIALS:

The data sets generated during the current study is been available with the corresponding author of this paper on reasonable request.

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