A Review on Smart Street Light System

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Abstract: Design of smart street light system using PIR and arduino is proposed. The system is smart enough to detect the person presence and turn on the light as per the object detect. Energy consumption is increases day by day which result increase the power generation. Most of the time street light is on for longer period with no use. To reduce the power consumption and knowing the log detatils of street light by use of Internet Of thing is studied. The microcontroller with sensor modules and Esp8266 are used for the hardware part.

Keywords: PIR sensor, LDR sensor, Smart Street light, Arduino Uno.

I. INTRODUCTION

Because of high accuracy in performing diverse assignments and can perform multitasking work in same time; a Smart Street light System has been generally utilized. This innovation has developed exponential consistently and some opposition is held in choosing the best Controller and Wireless Communication. Modem configuration to perform particular assignment inside timeframe. This task is done wherever in light of the fact that a considerable measure of human association diminished. Brilliant Street Light framework utilizing IOT is characterized as a straightforward Street light, which naturally ON/OFF and can deal with issues with outrageous care utilizing uncommon taking care of. Here, the data is exchanged point-by-point utilizing Wi-Fi transmitters and recipients and is sent to a server used to Control and checking the status of the road lights, and to take fitting measures if there should be an occurrence of disappointment. This framework permits considerable vitality investment funds with expanded execution and viability. Driven lighting and correspondence systems are changing road lighting. Falling expenses and upgrades in quality are making LED lighting the default choice as urban communities supplant and update existing lighting frameworks. LEDs can diminish vitality utilization for road lighting by up to half, and as the cost and the nature of LED lighting keep on enhance, that interest is developing. outcome, city lighting systems are turning into the stage for a wide assortment of brilliant city developments. This vision of the city lighting system as a keen city stage is the following wilderness for road lighting.

II. ROAD LIGHTING MANAGEMENT

And no more fundamental level, lighting controls give basic highlights, for example, remote on-off control, diminishing, and planning capacities. There is additionally an extensive variety of cutting edge capacities that can be empowered by shrewd controls:

1) *Energy checking and charging:* Accurate data on vitality utilization is an essential component in diminishing vitality costs. Moreover, as road lighting turns out to be part of more mind boggling power framework, precise and constant data on vitality use turns out to be more essential for streamlining and lattice administration. Execution checking: One of the most refered to advantages of an organized road lighting framework is the capacity of an administrator to remotely screen blackouts. This disposes of time spent on evening time watches to distinguish breaking down lights and guarantees that issues can be settled in a convenient way.

2) *Color controls:* Early LED lighting arrangements were related with a monotone, indeed, even cruel, light. Be that as it may, present day LEDs can be acclimated to choose the shading temperature of the white light give by road lights. For instance, lighting might be balanced for open security purposes, to fit with exceptional occasions, or for the diverse needs of retail or business areas. Late improvements in full shading tuning grant significantly more prominent control of enlightenment, permitting a relatively unbounded scope of shading and temperature choices.

3) *Adaptive lighting:* Sensors that screen neighborhood conditions can empower arranged frameworks to adjust the splendor of road lighting as fundamental. Connecting light controls to movement volumes, for instance, can give significant vitality investment funds. In the event that no movement is present or activity volume is to a great degree light, at that point full brilliance road lighting isn't fundamental. Comparative movement locators can empower lighting levels to coordinate road action. Climate sensors can likewise empower adaption to rain, snow, or different conditions. For case, lights might be turned up amid rain showers and withdraw when the climate clears.

4) *Emergency reaction:* Networked road lighting frameworks give city directors a number of highlights for managing open security issues and crises, for example, blazing lights before a house that crisis specialists are endeavoring to discover or lighting up lights at a mischance or wrongdoing scene. Other regular applications incorporate the utilization of versatile light controls to give notices to drivers in school security zones.

III.RELATED WORK

The paper shows a working dynamic road light administration framework in view of an Internet of Things engineering. The present framework depends on natural and activity markers to gauge the requirements for road light power. It at that point controls the luminaires appropriately. Quantitative tests have been completed on certifiable situation utilizing genuine road light luminaires sent on one road of a Swiss city. These tests unmistakably demonstrated the importance of the arrangement. The general vitality sparing when utilizing our answer is estimated and it adds up to 56% for the thought about situation.[1]

In this paper creator depicts another prudent arrangement of road light control frameworks. The control framework comprises of a GSM Modem, and control hardware and the electrical gadgets. Base server can control the entire city's road lights by simply sending a SMS to GSM organize. The fundamental thought process behind executing this task to spare vitality. Likewise we can mechanize day by day required electrical exchanging utilizing this task .[2]

This paper is to give a comprehensive survey on the idea of the keen city other than their distinctive applications, advantages, and points of interest. Moreover, the vast majority of the conceivable IoT advances are presented, and their capacities to converge into and apply to the diverse parts of brilliant urban areas are examined. The potential utilization of keen urban communities concerning innovation advancement later on gives another important discourse in this paper. In the mean time, some viable encounters the whole way across the world and the key obstructions to its execution are completely communicated.[3]

This paper introduces the requirement for coordination of Cloud and Internet of Things, a specialist arranged and Cloud helped on Cloud IoT worldview which in light of the layered reference engineering. Reference design for specialist situated vision and Cloud - helped is proposed, a Cloud based IoT worldview applications situation is depicted that have been exhibited in the writing, lastly recognized and examined about open issues and future bearings.[4]

Optimisation of a standalone street light system with consideration of lighting control. This paper aims at designing and executing the advanced development of embedded systems for energy saving of street lamps. Nowadays, the human has become too busy and is unable to find time even to switch the lights wherever not necessary. This paper gives the best solution for electrical power wastage. Also, the manual operation of the lighting system could eliminate. In this article, Light Emitting Diode (LED) is used. In this system, the main drawback was switching arrays of street lights were not possible. Only Single Street can be operated.[5]

E-Street zone-automatic Street light based on the movement of vehicles. Every street light can be integrated with an IR sensor which detects the movement of vehicles. When the vehicle passes, light gets illuminated. Due to this electricity can be consumed less and energy can be saved up to some extent. A solar panel has been installed, and hence it gets charged by sunlight. But it is impractical as street lights are also useful for the people walking by the roadside and this sensor only goes on when the vehicle passes it. Also, it is costly due to IR sensors used in every single street light.[6]

IV.INTERNET OF THINGS\

The IoT is a broadband network which employs standard communication protocols, whereas the Internet would be its convergence point. The major notion of the IoT is the widespread existence of objects which are able to be measured and inferred, as well as it is able to modify the situation. Accordingly, IoT is empowered by the expansion of several things and communication equipment. Things in the IoT involve smart equipment such as mobile phones and other facilities including

foodstuff, appliances and landmarks that can collaborate to achieve a joint objective. The main characteristic of the IoT is its effect on consumers´ life. In the concept of IoT, since the cabling cost for millions of sensors is expensive, the communication between sensors should be wireless. Low-power standard communication is suitable for interconnection among many devices. According to location and distance coverage, some networks are introduced as follows.

1) Home Area Networks (HAN) which use short-range standards like, ZigBee, Dash7, and Wi-Fi. All monitoring and control components in a home are connected by the HAN.

2) Wide Area Networks (WAN), provide communication between customers and distribution utilities which require much broader coverage than HAN and for implementation needs fiber cable or broadband wireless like 3G and LTE

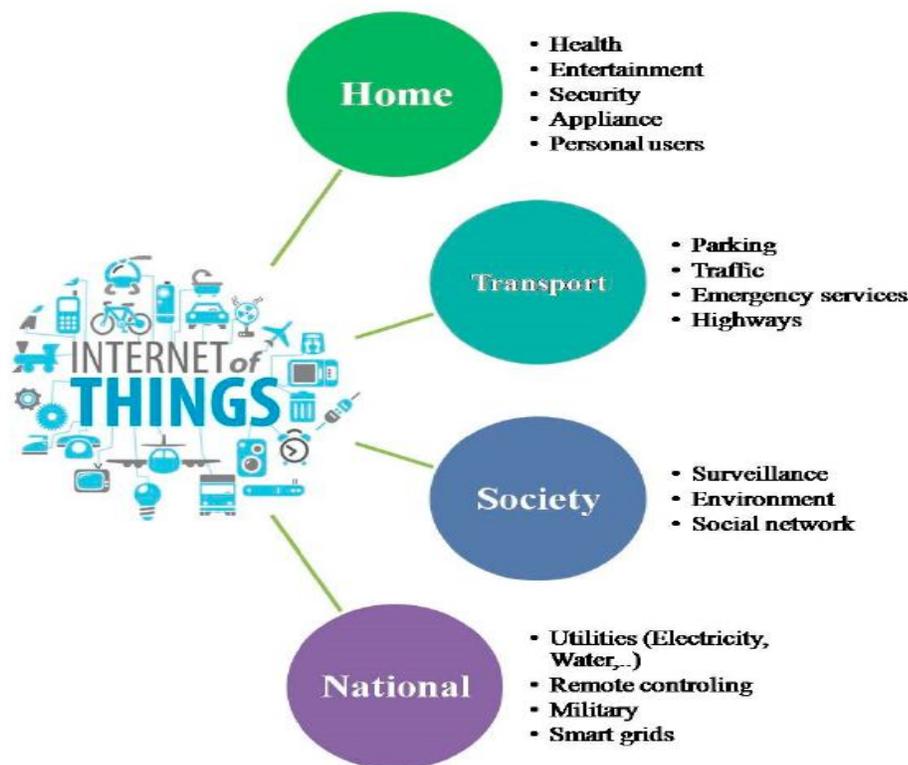3) Field Area Networks, which are used for connection between customers and substations.

Figure 3. IoT-based Application

Since traffic congestion causes remarkable costs for a city from an environmental and citizen's time wasting perspective, smart transportation and logistics can help to mitigate the impact. Dynamic traffic information, online monitoring of travel times, route choice behaviour can be conducted through the transport IoT and large scale WSNs. They also can develop stochastic models for mitigation plans and design algorithms for traffic control. Monitoring air and noise pollution by sensors within a IoT

framework can help to take possible steps for reducing environmental concerns. Moreover, social services like providing better water quality and waste management can be obtained by monitoring water sources and water distribution systems.

V. CONCLUSIONS

Energy is saved by removing modern street light to LED light. Thus more energy is saved by using the PIR ,IR based smaert street light. The IOT plays a vital role to maintain record of system log details on cloud which makes the power consumption of streetlight. The overall power can be calculated by use of cloud data. Light intensity sensor detects the intensity which can be used to turn on or turn off the light.

REFERENCES

[1] Nabil Ouerhani, Nuria Pazos, Marco Aeberli, Michael Muller, " IoT-Based Dynamic Street Light Control for Smart Cities Use Cases",   978-1-5090-0284-9/16/$31.00 ©2016 IEEE .

[2] Sayali Arkade, Akshada Mohite, Shraddha Joshi, Rutuja Sonawane, Vikas Patil "IoT Based Street Lights For Smart City", International Journal for Research in Applied Science & Engineering Technology (IJRASET)" , Volume 4 Issue XII, December 2016.

[3] Saber Talari , Miadreza Shafie-khah , Pierluigi Siano , Vincenzo Loia ,"A Review of Smart Cities Based on the Internet of Things Concept " Energies 2017, 10, 421; doi:10.3390/en10040421 .

[4] Shaik Masthan Babu , A.Jaya Lakshmi, B.Thirumala Rao, " A Study on Cloud based Internet of Things: CloudIoT", Proceedings of 2015 Global Conference on Communication Technologies(GCCT 2015)

[5]   Farah Ramadhani, and Kamalrulnizam Abu Bakar, and Muham-Mad Gary Shafer. "Optimisation of standalone street light system withconsideration of lighting control", IEEE, 2013.

[6]   P Arvind and V.Kishore . "E-Street Zone-Automatic Streetlight based on the Movement of Vehicles", IJST 2016.
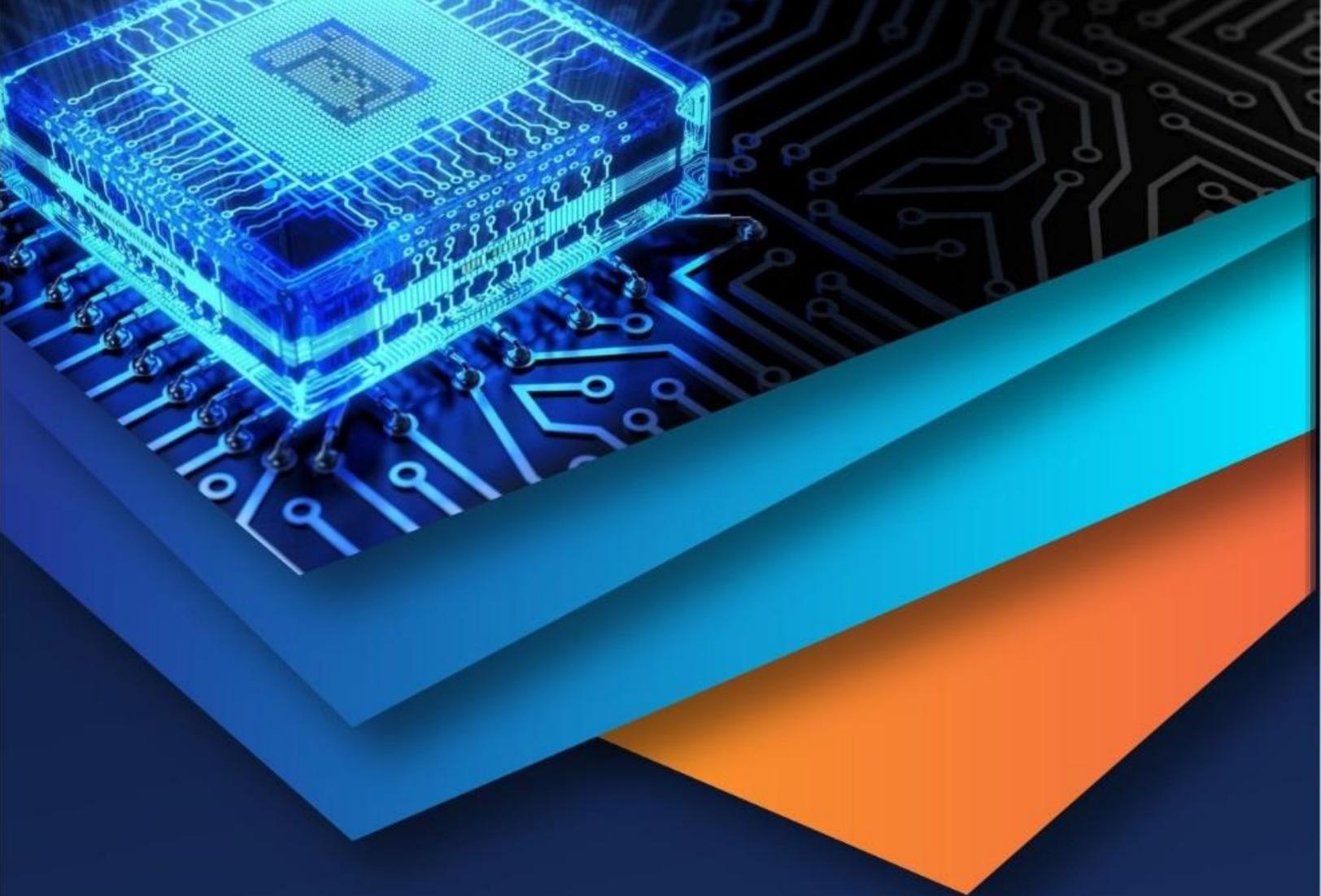
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