

Smart Street Light and Anonymous Complaint System

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Abstract: Smart street lights are a project on intelligent illumination control of street lights to optimize the matter of power consumption and illumination of the streets, late within the night. Street lights today are being replaced by LED street lighting system, which reduces the facility consumption. The other advantage of LED is that the intensity are often controlled easily. Hence, movement detection based street light control are often designed easily.

Keywords: LED, STREET LIGHT, SMS GATEWAY

I. INTRODUCTION

A Street lights are the main requirements in today's lifetime of transportation for safety purposes and avoiding accidents during night. Despite that in today's busy life nobody bothers to modify it OFF/ON when not required. The project introduced here gives solution to the present by eliminating manpower and reducing power consumption. This requires three basic components i.e. LDR, Sensors and Microcontroller. During day time there's no requirement of street lights therefore the LDR keeps the road light OFF until the sunshine level is low or the frequency of sunshine is low the resistance of the LDR is high. This prevents current from flowing to the bottom of the transistor. Thus the street lights do not glow. As soon because the light level goes high or if light falling on the device is of high enough frequency, photons absorbed by the semiconductor give bound electrons enough energy to jump into the conduction band. The resulting electron (and its whole partner) conducts electricity, thereby lowering resistance. if system finds any light not working it will automatically send notification to municipal corporation.

Now-a-days, the communication network is widely developed. Text and files are often shared in many forms. The data is encrypted for the sake of secure data storage. The data stored in database is frequently modified so this feature is to be considered while designing the proficient secure storage techniques. In Online social networking access control is extremely important and only valid user must be allowed to access and store personal information, images and videos and every one this data is stored in cloud.

The goal is not just store the data securely in database it is also important to make secure that anonymity of user is ensured. People step back to require any step against corrupt actions thanks to fear of showing their identity. For this anonymous authenticity is provided by database. In this paper, distributed access control that is only approved users with valid attributes can have entry to data in database Also the identity of the user is kept a secret. Now another problem that arises is that what if some evidence is uploaded and the authentic user is not able to post it to the public due to some reason, then the evidence becomes of no use. To overcome this, in this paper we have added a timer function which will automatically upload the file after a certain period of time. There are many KDCs for key management due to this the architecture is decentralized. There is no access of knowledge for users who are revoked. The system is flexible to replay attacks.

II. LITURATURE SURVEY

Sindhu A. M et al. worked on smart street lights using infrared sensors (IR) and by introducing Light Emitting Diode (LED) lamps instead of High Intensity Diode (HID) lamps since HID lamps are not cost effective and reliable. The system was implemented using IR sensors, using which the movement of vehicles and pedestrians was monitored and the system was programmed to get activated once there was an input to the sensor. But the range of IR sensors is less. IR sensors make lamps light up on detection of movement which will lessen lamp life in the long run due to being on/off againand again if the vehicular traffic is discontinuous. . So LDR can be used instead to vary the intensity of light than shutting it down completely. [1]

ShagunMalhotra et al. worked on a smart street lighting system that suggested an intelligent use of street lights that is energy efficient and offered effective way for the maintenance of street light by using a Global System for Mobile (GSM) module that sends the relevant information to the centrally located control station. But using a GSM module is not much reliable because of connectivity complexity, so instead an ESP8266 Wi-Fi module can be used to send the required data to the control station.[2]

K. Y. Rajput et al. in their work on intelligent street light using GSM, also suggested the concept of smart lamp posts in which there will be a 24-hour monitoring of street lamps where necessary actions will be taken and maintenance will be done to check the condition of lamps using GSM module. But surveillance system of lamps requires frequent maintenance increasing human dependency. [3]

ChetnaBadgaiyan et al. proposed a smart street lighting system using ZigBee and PIR sensors for higher efficiency and maximum throughput. ZigBee is a wireless communication module which is generally very complex and its implementation is much more difficult. [4]

B. K. Subramanyam et al. proposed a wireless street lighting system, which uses a combination of current technologies and research made in this field to provide efficient and convenient use of electricity. By replacing the conventional lamps with solar lamps considerably large amount of electricity was saved. But using LDR in place of solar lamps it costs less per unit of street lamps in comparison and works well in all weather conditions. Also, this system works in any weather condition very effectively. [5]

P. Nithya et al. suggested and implemented an intelligent monitoring and maintenance of street lamps, which used a wireless zig-bee module to send collected data to a central station. [6]

R. Kavitha et al. proposed street lights based on traffic. The street lights pole detects traffic in vision direction, necessary actions are taken. The system also gives facilities to pass emergency vehicles efficiently. [7]

S. Suganya et al. worked on street light automated system which detected the movement of vehicles and pedestrians on the street. The maintenance of the lamp post and provide various statistics a zig-bee module was implemented to maintain a wireless communication. LED, zig-bee module, power transistors and many other sensors were collectively used to implement the smart street light. [8]

Anila Devi et al. Implemented a street lamp which was completely based on a GSM module along with a zig-bee module implemented with some additional sensors. The system was implemented on the concept of wireless technology for further monitoring and repairing of lamps. Led lamps were installed which are more reliable and cost effective and requires much less maintenance. [9]

K. Santha et al. have proposed a system that will make use of movements of vehicles and the street lights are controlled accordingly. The system was programmed to work automatically according to the road conditions. The intensity of the light was managed on the basis of vehicle movements. The system was implemented using a pic microcontroller, which was programmed to suit the necessary situations.[10]

Srikanth et al. proposed an automatic lighting system based on remote control that uses ZigBee. The implemented system is completely automatic and the functions of turning the lights on and off or simply dim the light were done efficiently depending on the movements taking place on roads. Using PIR sensors the motion of all the objects were detected. [11]

To ensure anonymous user authentication ABSs were introduced by Majietal. This was also a centralized approach. A recent scheme by Majietal. Takes a decentralized approach and provides authentication without disclosing the identity of the users.

In this system we are going to use KDC for generation of encrypted Tokens and encrypted keys. Key distribution is done in a decentralized way. There is KDC which generates encryption and decryption keys and keys for signing. Creator on presenting token to KDC it will provide secret keys and keys for signing.

The database takes decentralized approach in distributing secret keys and attributes to user. Ruj et Al proposed a distributed access control mechanism in clouds. However, the scheme did not provide user authentication. The other drawback was that a user can be create and store a file and other users can only read the file. Write access was permitted To users other than the creator.

Wang et al addressed secure and dependable database storage. The database is also prone to data modification and server colluding attacks. Although Yang alyu proposed a decentralized approach, their technique does not authenticate users, who want to be remain anonymous while accessing the cloud.

ABS(Attribute-based signature) is a protocol which was proposed by Maji et al. In ABS, users have a claim predicate associated with a message. The claim predicate help to identify the user as an authorized one, without revealing its identity.[12]

III. PROPOSED SYSTEM

In our proposed system, we make use of the property of LDR, which is its resistance varies with respective to the sunshine intensity, In our proposed system the night and day is identified using LDR, Then during the day time the street light will be switched off and then during the night time street light will be switched on automatically, LDR sense the light if light is low LED ON and Light sense is high LED OFF. If light is low or of LED on Ned voltage sensor alert and sensesms to municipal corporation.

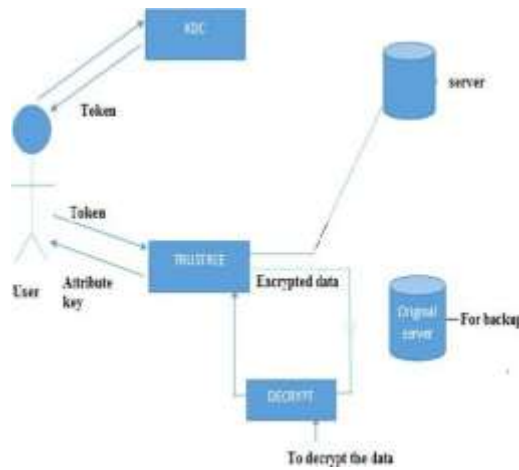


Fig.1 System architecture

IV. Technology

Java: Java has been tested, refined, extended, and proven by a dedicated community of Java developers, architects and enthusiasts. Java is designed to enable development of portable, high-performance applications for the widest range of computing platforms possible. By making applications available across heterogeneous environments, businesses can provide more services and boost end-user productivity, communication, and collaboration—and dramatically reduce the cost of ownership of both enterprise and consumer applications.

Token Generation: In this method, we will generate encrypted token by KDC. A security token may be a physical device that an authorized user of computer services is given to ease authentication. The term may also refer to software tokens. Security tokens are used to prove one's identity electronically. The token is used in addition to or in place of a password to prove that the customer is who they claim to be. The token acts like an electronic key to access something.

Key Generation: After validating the tokens we will generate the encrypted key to the user. Key generation is the process of generating keys in cryptography. A key is used to encrypt and decrypt whatever data is being encrypted/decrypted.

Algorithms used: AES (Advanced Encryption Standard)-256 bit key length.

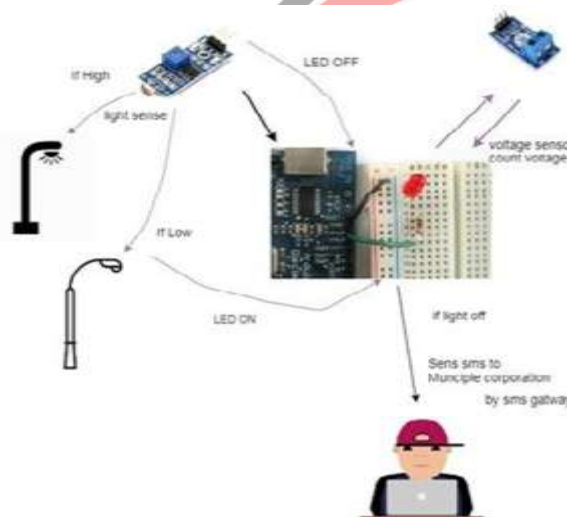


Fig. 2 Anonymous complaint system

CONCLUSIONS

The use of power electronics is increasing exponentially across various sectors of human life. The components utilized in the project, like Arduino and sensors are slowly becoming an important part of our daily routines. So, it's only fitting that we use them to enhance efficiency in every walk of life. Keeping in mind the urgent need for energy conservation, Street Light System with IOT is an excellent and effective solution. It combines safe lighting protocols with a minimal man power. The energy savings, as discussed before are phenomenal. The future scope of this project expands into speed detection and customizable area of illumination.

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