



## Street Lights Controlling System Using IOT

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#### Abstract

A Street light, lamppost, street lamp, light standard, or lamp standard is a raised source of light on the edge of a road or walkway, which is turned on or lit at a certain time every night. Major advantages of street lighting includes: prevention of accidents and increase in safety. Studies have shown that darkness results in a large number of crashes and fatalities, especially those involving pedestrians; pedestrian fatalities are 3 to 6.75 times more likely in the dark than in daylight. Street lighting has been found to reduce pedestrian crashes by approximately 50%.

Street Light Monitoring & control is an automated system designed to increase the efficiency and accuracy of an industry by automatically timed controlled switching of street lights. This project describes a new economical solution of street light control systems. The control system consists of a control circuitry and the electrical devices. This also

includes client server mechanism where user can directly interact with web based application to control the Street light of any place from single position. A number of street light control systems have been developed to control and reduce energy consumption of a town's public lighting system. These range from controlling a circuit of street lights and/or individual lights with specific ballasts and network operating protocols. These may include sending and receiving instructions via separate data networks, at high frequency over the top of the low voltage supply or wireless. Since the cost of electricity continues to rise and as wasting energy is a growing concern for public and authorities, it's becoming crucial that municipalities, highway companies and other streetlight owners deploy control systems to dim the lights at the right light level at the right time, to automatically identify lamp and electrical failures and enable real time control.

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*This project describes a new economical solution of street light control systems. We want to provide IP address to street lights (IOT) so that the base server can control the whole city's street lights using internet. The main motive behind implementing this project is to save energy.*

**Keywords:** - Internet of things (IOT); Street lights; Google Maps.

## I. INTRODUCTION

Streetlights are among a city's strategic assets: providing safe roads, inviting public areas, and enhanced security in homes, businesses, and city centers. Street Light Monitoring & control is an automated system designed to increase the efficiency and accuracy of an industry by automatically timed controlled switching of street lights. Base server can control the whole city's street lights by just sending a notification using network. The main aim is to provide IP to Street lights which can be control through internet. This project describes a new economical solution of street light control systems. The control system consists of a wireless technology. This also includes client server mechanism where user can directly interact with web based application to control the Street light of any place from single position. Base server will running a Java Web Application which will maintain complete street light record of City/State/Country. When we want to switch ON/OFF any particular street light just by giving command we can operate it. The main motive behind implementing this project is to save energy.

## II. PROJECT IDEA

Street lights are the key factor of any city to make it smart city. But we have seen such situation when our street lights are ON in morning. So we want to develop such a system which will operate street lights of the city at anytime.

## III. GOALS AND OBJECTIVES

In this project we will try to operate street lights from the remote server. The main objective is to develop efficient Street Light System.

1. To provide wireless access for controlling it.

2. Need some Server which can be use to control whole cities street lights.
3. Low cost Internet technology can be used for remote access.

## IV. MOTIVATION

The motivation of this project is to design a smart lighting system which targets the energy saving and autonomous operation on economical affordable for the streets. Build an energy saving smart lighting system with integrated sensors and controllers. Design a smart lighting system with modular approach design, which makes the system scalability and expandability. Design a smart lighting system which compatibility and scalability with other commercial product and automation system, which might include more than lighting systems.

## V. LITERATURE SURVEY

Smart street lamp monitoring system using Xbee wireless module. Their aim is to monitor the health of street lamps and forward monitored result to the control station. Inside the lamp module, it consists of light dependent resistors (LDR) module, microcontroller module and transmission module. The lamp module will communicate with the control centre through wireless using Xbee. In the LDR module, it consists of two LDR. One of the LDR is install on top of the street lamp for the checking the day/night status condition. Another LDR is place under the street lamp to monitor and checking the lamp health status. The results of the LDRs send to microcontroller, where the microcontroller will process the data and send the data to the transmission module. In the transmission module, there is wireless Xbee that transmit the data through wireless to the control centre. In the control centre, it will monitors each of the street lamp status, as well as controlling the operation of the street lamps.

Automatic Street Light Control System Using Microcontroller, this paper aims at designing and executing the advanced development in embedded systems for energy saving of street lights. Nowadays, 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 is completely eliminated. In this paper the two sensors are used which are Light Dependent

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Resistor LDR sensor to indicate a day/night time and the photoelectric sensors to detect the movement on the street. The microcontroller PIC16F877A is used as brain to control the street light system, where the programming language used for developing the software to the microcontroller is C-language.

## VI. PROPOSED SYSTEM

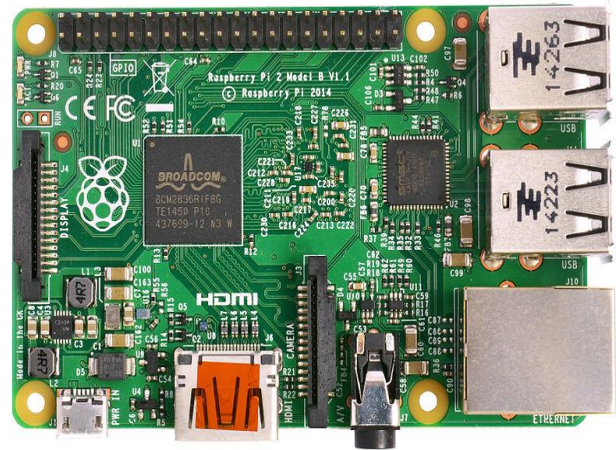
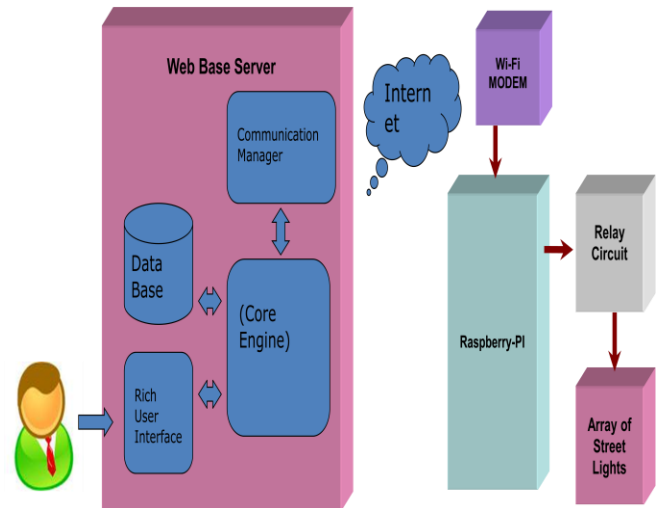
Street Light Monitoring & control is an automated system designed to increase the efficiency and accuracy of an industry by automatically timed controlled switching of street lights. This project describes a new economical solution of street light control systems. The control system consists of internet, and control circuitry and the electrical devices. This also includes client server mechanism where user can directly interact with web based application to control the Street light of any place from single position.

Base server will running a Java Web Application which will maintain complete street light recode of City/State/Country. When we want to switch ON/OFF any particular street light, server will send a notification to that street controller to take necessary action. Street light controller will receive that notification and will decode it and finds the particular street light which needs to put ON/OFF using relay circuit. Once the notification came It will then decode the will decode it and finds the particular street light which needs to put ON/OFF using relay circuit. The entire street light lamps are connected to relay driver circuit. Base server will running a Java application which will maintain complete street light recode of city. When we want to switch ON/OFF any particular street light, server will send a notification to that street controller to take necessary action.

## VII. ARCHITECTURE DESIGN

Architecture Diagram of Proposed System

### ARCHITECTURE DIAGRAM OF RASPBERRY PI



Architecture Diagram of Raspberry pi

## VIII. HARDWARE INTERFACES

1. Processor – Intel Core2Duo, Pentium –III/i3
2. Speed – 2.4 GHz
3. RAM - 1 GB (min)
4. Hard Disk - 50 GB
5. Raspberry pi

## IX. SOFTWARE INTERFACES

1. Operating System: Windows XP/Windows Vista/Windows 7.
2. Front End : Java 7
3. Back End : MySQL 6
4. Tomcat 7



5. JDK 1.7
6. Java Serial Communication
7. Google Map 3.0 Version

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#### CONCLUSION

In this paper, an efficient autonomous street lighting control and monitoring system is based on the wireless technology. The main motive behind implementing this paper is to save energy. By using IOT it is easy to control the streetlights from one place only. Intelligent street lighting system is described that integrates new technologies offering ease of maintenance and energy savings. The proposed system is appropriate for street lighting monitoring and controlling in remote as well as urban areas.

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