IOT Based Smart Street Lights

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Abstract

Streetlights are among a city's strategic assets- providing safe roads, inviting public areas, and enhanced security in homes, businesses, and city centers. However they are usually very costly to operate, and they use in average 40% of a city's electricity spending. 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. 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

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. This project describes a new economical solution of street light control systems. The control system consists of wireless technology. Base server can control the whole city's street lights by just sending a notification using network. The main motive behind implementing this project is to save energy.

Problem Statement

- Situation is very common in rural areas like 5 km from the city.

- Contributing to "**Global Warming**".

- Who will afford power wastage in the age of power "**Load-Sharing**"?

Existing System:

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. Various protocols have been developed as well as compatible hardware for most types of lighting.

Drawbacks of Existing System

1. Today's Street light system is not flexible.
2. Most of the controlling is manual. Whereas some are automated based on environment parameters.
3. Biggest problem is to handle remote area locations.
4. Manual mistakes results into power wastage.

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 Ones 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.

Hardware Interfaces

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

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

Acknowledgement

Conclusion

In this paper, an efficient autonomous street lighting control and monitoring system based on the wireless technology. The main motive behind implementing this project is to save energy.

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