SMART LIGHT SOLUTIONS

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ABSTRACT

Now-a-days street light have become a vital aspect including road safety. A lot of electricity is consumed by street lights. So it is imperative to save the power as much as we can. The cost of electricity continues to increase as wastage of energy increases. It has become very crucial for saving power. Street light monitoring control is system designed to improve the efficiency by automatically controlling the switching of street light. This project describes a new solution for street light control system. It consists of wireless technology. The street lights are controlled by the base server by just sending a notification by using wireless network. It consists of a client-server application. The primary motive behind implementing this project is to save the energy.

Keywords—*Microcontrollers,sensors,relay circuits,aurdino R3.*

1.INTRODUCTION

A Street light, lamppost, street lamp, light standard, or lamp standard is a proposed source of light on the side of a road or walkway, which is turned on or lit at a certain time every night. Significant benefits of street lighting include prevention of accidents and increase in safety. Studies have shown that darkness results in a considerable number of crashes and accidents, especially those involving pedestrians; pedestrian accidents are 3 to 6.75 times more prone in the dark than in day. Street lighting has been found to reduce walker crashes by nearly fifty percent. Street Light Monitoring control is an automated system designed to increase the efficiency and accuracy of an enterprise by automatically timed controlled switching of street lights. This project describes a new practical solution of street light control systems. The system also includes the client-server mechanism where a user can directly interact with the webbased application to manage the Street lamp of any placestation through wireless using Zigbee. In the LDR module, it consists of two LDR. One of the LDR is installing on top of the street lamp for checking the day/night status condition. Another LDR is placed under the street light to monitor and check the lamp health status. The results of the LDRs send to the microcontroller, where the microcontroller will process the data and send the data to the transmission module. In the communication module, there is wireless ZigBee that send the data through wireless to the control centre. In the control centre, it will monitor each of the street lamp statuses, as well as will be controlling the operation of the street lights. 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.

2. MODULES

Arduino is an open source computer hardware and software company, project, and user community that designs and manufactures single-board microcontrollers and microcontroller kits for building digital devices and interactive objects that can sense and control objects in the physical world. GNU Lesser General Public License (LGPL) or the GNU General Public License (GPL), permitting the manufacture of Arduino boards and software distribution by anyone.

Arduino board designs sets of digital and analog (I/O) pins that may be interfaced to various expansion boards (shields) and other circuits. The boards feature serial communications interfaces, including Universal Serial Bus (USB) on some models. The microcontrollers are typically programmed features from the programming languages C and C++. It provides an integrated development environment(IDE) based on the Processing language project.

The Arduino project started in 2003 as a program for students at the Interaction Design Institute Ivrea in Ivrea, Italy,aiming to provide a low-cost and easy way for novices and professionals for using sensors and actuators. examples of such devices intended for simple robots, thermostats, and motion detectors
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3.EXISTING SYSTEM

As we have seen street lights or light poles can be operated using some wired technology or using electricity box.this system is operated manually in villages. In cities and toModern lamps may also have light-sensitive photocells that activate automatically when light is or is not needed: dusk, dawn, or the onset of dark weather. This function in older lighting systems could have been performed with the aid of a solar dial. Many street light systems are being connected underground instead of wiring from one utility post to another.

3.1 DRAWBACKS OF EXISTING SYSTEM

- Todays Streetlight system is not flexible
- Most of the controlling are manual, whereas some are automated based on environment parameters
- Manual mistakes results into power wastage.
- The biggest problem is to handle remote area loca- tions.

4. PROPOSED SYSTEM

This project represents a new cost-effective solution for street light control systems. The control system consists of control circuitry, internet and electrical devices. The system also includes the client-server mechanism where a user can directly interact with the web-based application to monitor the Streetlight of any place from a single position. The base server will run a Java Web Application which will maintain whole street light of Country/State/City. When we have to switch ON/OFF any streetlight, the server will send a notification to that Street controller to take necessary action. Street light controller will receive that information, and it will decode and find the particular streetlight which will set using relay circuit, the notification came it will then decode and finds the appropriate streetlight which needs to put ON/OFF using relay circuit. The entire street light lamps are connected to relay driver circuit. The base server will run a Java application which will maintain Whole Street light record of the city. When we want to ON/OFF any particular streetlight, Notification message is send to adjust the pattern.

4.1 BENEFITS OF PROPOSED SYSTEM

- Automatic switching of lights
- Maintainence cost reduction
- Reduction of CO2 emission
- Wireless communication
- Energy saving
- Reduction of manpower

5. SYSTEM DESIGN

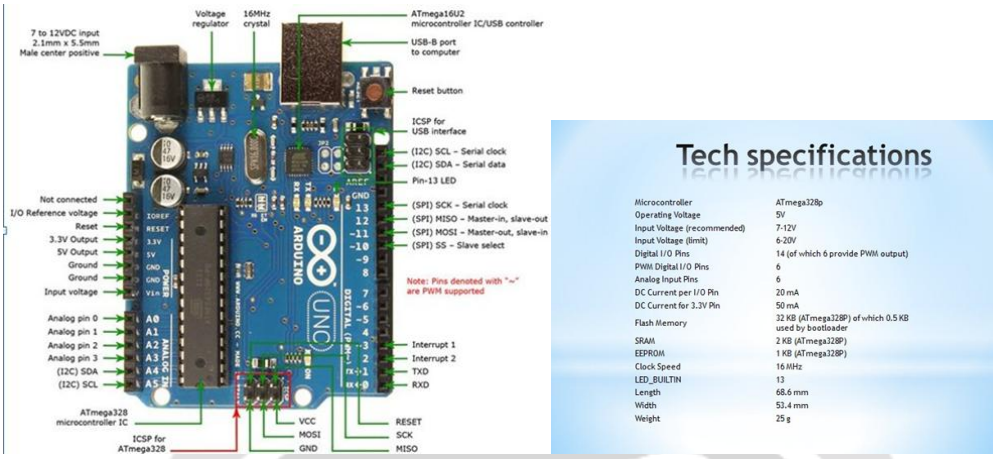

Fig-1: Tech Specifications

6.CONCLUSION

The application of new technologies to a system, histor- ically not the subject of much innovation, can transform it into an extremely efficient system allowing energy and money savings if compared with classical systems, as the Smart City paradigm teaches. The example shown in this article is a clear demonstration of this thesis. An isle of lamp posts used to light a crossroads and placed far from the city where the Internet signal does not arrive, has been re-designed combining all new technologies available on the market: LEDs for the lamps, PV panels for the power supply and an intelligent management. This last foresees an architecture that uses local sensors for intelligent lighting of the lamp, the storage of the functioning data, and their sharing by a local communication wireless mesh realized by ZigBee devices that send information to the coordinator lamp equipped with a RaspBerry-Pi card. The RaspBerry-Pi has been chosen for its low costs and for the possibility to drive also a WiMAX modem/router which allows to make the data system visible by a web site accessible by Internet also for areas very far from the city and not reached neither by the ADSL line nor by 3G signals. Sensors 2014, 14 24422 Some analysis and comparisons testify the validity of the adopted choices. For its reliability, simplicity and low cost, the proposed system can also be used to update existing conventional lamp posts making it a serious candidate to efficiently manage a set of sensors applicable in different fields including monitoring of energy consumption, other Smart City application and smart grids which needs to diffuse sensors and actuators to realize an efficient management of the system under control.

7.REFERENCES

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