

Automatic Street Light System using IoT

Soumodeep Samanta, Prakash Singh, Chandra Shekhar Yadav, Dr K Saravanan

¹Dept. of ISE, NHCE, Bangalore

²Dept. of ISE, NHCE, Bangalore

³Dept. of ISE, NHCE, Bangalore

⁴Professor, Dept. of IS Engineering, NHCE, Karnataka, India

Abstract - The purpose of this project is to design and implement a model of automatic street light system which uses infrared sensors and is operated through Arduino. The light will brighten up when there is a vehicle passes through the road and will be dimmed when the road is empty.

Key Words: Smart street lights, Automatic street light system, eco-friendly, sensors, Internet of Things (IoT), Bread board, Connecting wires, Arduino, Resistors, LED, LDR

1. INTRODUCTION

Street Lighting system is considered as a vital part in most of the countries. The salient features of a street light as indirectly helped the government in reduction of crime rate and accident in the areas. Conservation of electrical energy is a major concern of the 21st century, as the rapid burning of fossil fuels have resulted in exhaustion of fossil fuel. Although street lights are a top priority, it is highly expensive, energy consuming and possess a high priority load over safety concern. This can be changed by automating the street light system which can reduce the load and manpower significantly. Automatic Street Light system is a type of automation project where manual processing is not required. These is an IoT based project where we combine Arduino, Bread board, sensors and wires along with a written code for project implementation.

1.1 Literature Survey

The system used here is a closed loop on-off system. Controlling lighting system by means of LDR and Arduino together on an Indian street are relatively new concept. Still today research has been done only on street light system based on Passive Infrared receiver and few are LDR based but they are controlled by means of timers and analog circuits. Some were controlled by wireless GSM/GUI networks which are too costly and too affordable. The disadvantages of the current system are: [1] Need a manual operator to operate the lights on the street. [2] Switching time is same in all climates. [3] There are many streets in India where lights are switched on during the day, energy is

wasted due to this carelessness. Hence by using Arduino and LDR system considerable amount of energy will be saved.

1.2 Existing System

In recent years, we have seen street lights which are operated manually by human beings due to that there were many problems faced by people who operate and the street lights such as the operators gets short circuits due to physical damage by the environments or some other consumers, the street lights gets fused due to 24 hours light on, the street lights gets dim whenever the durability of the bulbs gets completed or some wire disconnection or the operator are not available for some reason. Therefore, the rate of accidents gets more in number. So, to reduce all these problems, we have come with new idea called Automatic Street Light System where there is not waste consumption of electricity is one of the major points and another major point is that it reduces almost eighty percent of rate of road accident. This is the benefit of automatic street light system in one hand and the other hand there is no ay demand for person to operate it and we even will have one of the great updates in our development.

2. Limitations

- The automatic street light system requires a higher initial investment compared to the conventional street lights.
- Risk of theft of the automatic street light system is much higher since they are non-wired and much expensive
- Rechargeable batteries of the automatic street light system is required to be replaced a few times which is time consuming and is a difficult management process.
- Automatic street light may not switch on and off on the needed time that means more accidents may happen and more costs may be spent.
- These lights are mostly being affected by the weather conditions due to air, thunder, etc.

3. CONCLUSIONS

IT and controlled system manufacturers are seizing the opportunity of having new mobile hardware device as the "Internet of Things" being to a scale of. As we know, the number of devices is increasing continuously more and more and more automation will be required for both the IT and for the manufacturing companies. As every manufacturing companies are moving towards the IoT sector. Due to this the demand are rapidly growing.

In this mean time, we have introduced this project called as automatic street light system. It helps their country to increase their infrastructure with the development of emerging technologies. Many countries are facing the problem of the street light so this can solve that problem even it has many other benefits such as it is cost efficiency, reduce the power consumption as it is automatic street light system. So, in daylight it will turn off the light and daylight also it will save the energy. In the night if the vehicle passes through the road it will glow brighter and when it passes away it will dim.

This is possible only when we take the help of Internet of Things (IoT). So, these things will help the nation and the world to save the electrical energy for the better growth and for the future planning.

This system is very efficient energy saver and also user friendly as it can work on any kind of weather and the best part of the project is the automatic switching of the light without much human effort and can be used in very large scale.

REFERENCES

[2] J. Mohelnikova, Electric Energy Savings and Light Guides, Energy & Environment, 3rd IASME/WSEAS International Conference on, Cambridge, UK, February 2008, pp.470-474.

[3] M. A. Wazed, N. Nafis, M. T. Islam and A. S. M. Sayem, Design and Fabrication of Automatic Street Light Control System, Engineering e-Transaction, Vol. 5, No. 1, June 2010, pp 27-34.

[4] R. Priyasree, R. Kauser, E. Vinitha and N. Gangatharan, Automatic Street Light Intensity Control and Road Safety Module Using Embedded System, International Conference on Computing and Control Engineering, April 2012.

[5] K. S. Sudhakar, A. A. Anil, K. C. Ashok and S. S. Bhaskar, Automatic Street Light Control System, International Journal of Emerging Technology and Advanced Engineering, Vol. 3, May 2013, PP. 188-189

[6] M. Popa, C. Cepișcă, Energy Consumption Saving Solutions Based on Intelligent Street Lighting Control System. U.P.B. Sci. Bull., Vol. 73, April 2011, PP. 297-308.

[7] R. Mohamaddoust, A. T. Haghghat, M. J. M. Sharif and N. Capanni, A Novel Design of an Automatic Lighting Control System for a Wireless Sensor Network with Increased Sensor Lifetime and Reduced Sensor Numbers, Sensors, Vol. 11, PP. 8933-8952.