

Smart Street Light System using IoT, Computer vision and Machine Learning

Smart Gujarat for New India Hackathon 2019-20

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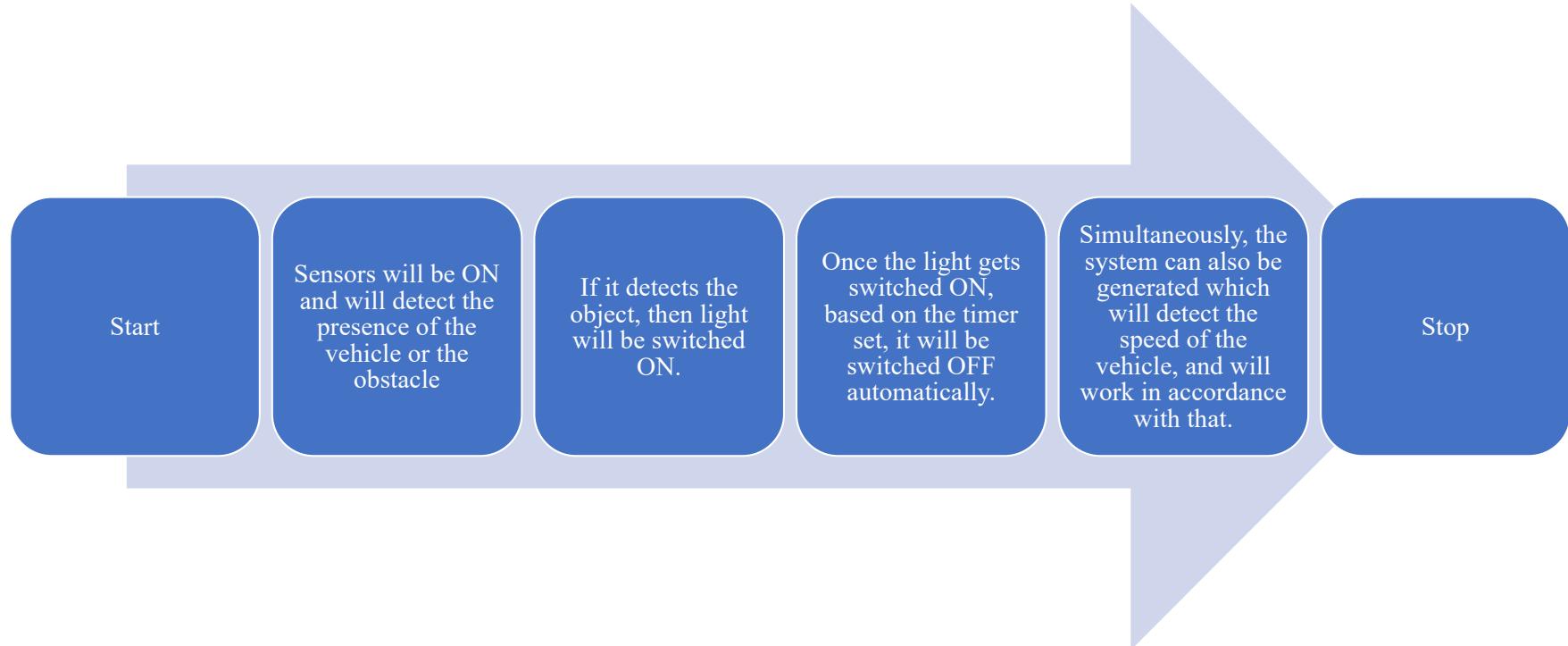
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Mentor – Professor Kuntal Patel

Abstract

A street light control system that operates automatically is not only the easiest street light system but also intelligent. It uses Infrared (IR) Sensors to control and guarantee a better efficient system. The street light is switched ON/OFF through an Internet of Things (IoT). Street lights will be switched ON only when a person or an obstacle comes in the detection range else it will be switched OFF. The system keeps a record of all the street lights such as the name of the area, pin code, number of light poles and number of poles that are in working conditions. Furthermore, the system has an auto-message function which will set off if any light is damaged and will show the address of the damaged light, thus it is easy to find and repair the damaged light. A smart street lighting system is a flexible street lighting system consisting of various sensors and a controller which makes it an intelligent street lighting system. The system allows substantial energy savings with increased performance and maintainability. By using this system, manual work will be reduced to a great extent.

Work Flow



Observations

- The following observation have been made:
 1. The prototype is working in a well mannered structure along with all the sensors.
 2. The same dummy model can be used to switch ON/OFF the 220v AC led bulbs using relay module.
 3. The same prototype can also be used to detect the speed of the vehicles/obstacles and can adjust the time of the streetlight accordingly.
 4. The prototype can also be adjusted in such away that rather then switching ON and OFF, there will be and gradual increase and decrease in the intensity of the light.

Outputs

The images of the prototype:

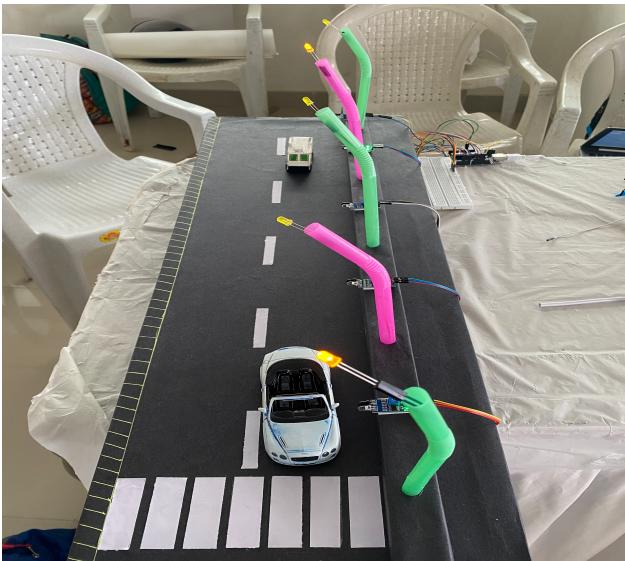


Image 1 :

Working model of the prototype

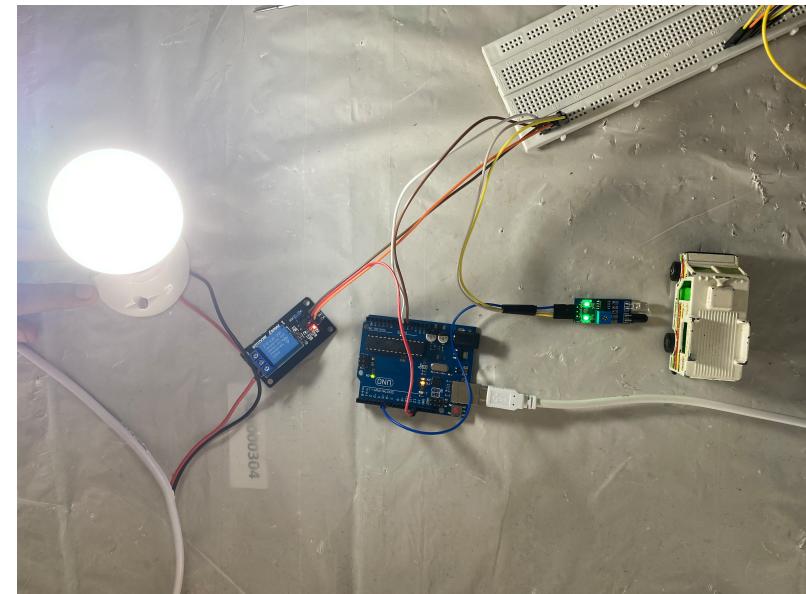


Image 2 :

The 220V AC Bulb switched ON when an object came in front of the IR Sensor.

Conclusion

- This is quite an efficient system which can be used to conserve the electricity, however, with still more advancements it can even be more better such as:
 1. Use of Wireless Power Transmission which will further reduce the cost.
 2. Cable breaking is one of the issue. Use of wireless technologies will reduce the cost to a much greater extent.
 3. Use of Non – Conventional Sources of Energy like Solar Energy or Wind Energy makes it even more sustainable.