

UNIVERSITY OF
WESTMINSTER



INFORMATICS INSTITUTE OF TECHNOLOGY

In collaboration with

UNIVERSITY OF WESTMINSTER

Smart street lighting system for energy efficiency

A dissertation by:

Umar N. Packeer – 2014026

Supervised by:

Mr. Prasan Yapa

Submitted in partial fulfilment of the requirements for the

BEng/BEng (Hons) Software Engineering Degree

Department of Computing

April 2018

© The copyright for this project and all its associated products resides with Informatics
Institute of Technology

Abstract

Street lights are one of the main components that make up to a country's infrastructure. They play a major role in assuring safety on the streets to the general public. As much as they are a need, the problem faced by a country like Sri Lanka is the level of energy needed to power street lights.

The smart street lighting system designed in this research is an approach that is proposed to minimize the utilization of electricity by street lights. The use of sensors in the present street lighting system could bring about the feature of supplying lighting based on demand. Firstly, automating the process of switching on and switching off lights has been done with the usage of an LDR. The LDR is a sensor that is used to depict the level of sunlight. Secondly, the feature of dimming is introduced so that lights do not work at full intensity at times when there is hardly any vehicular movement. For this cause, IR sensors are used to capture motion, so lights work at full intensity only when motion is captured.

One other factor that is addressed is alerting relevant authorities of faulty street lights. For this, a current sensor is attached to each street light. No flow of current detected by the sensor used would be sent over to the monitoring system designed.

The monitoring system is implemented as a single page web application, that would enable the administrator to monitor street light activity. Additionally, the feature of manually controlling the street lights from a central location has been integrated into the system.

The system has been tested through various functional and non-functional methods. Further, evaluation has been carried out of the overall project by experts and the author to prove its importance.

Keywords: LDR (Light Dependent Resistor), IR (Infrared), Current sensor, Internet Of Things, Street lights