INTELLIGENT STREET LIGHT MONITORING SYSTEM WITH A SHORT MESSAGE SERVICE REPORT

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ABSTRACT

Recently, interests toward smart cities and green technologies have increased significantly. University researchers and even big company are moving toward green technologies for better future. Smart cities aim to create an environment that optimizes the entire city or community. They will offer highly energy-efficient and ecological living conditions by increasing efficiency and controlling transportation means to reduce wastefulness and irregularities, and using recyclable energy, recycling resources and effective water circulation.

In pursuit for a new and better technology, various street lighting systems have been develop to replace the old lighting system. However, there is still some drawback on the most develop system. The project aims at providing a user friendly interface for ease of data collection and analysis on the energy utilization and maintenance of the street light utilizing Wireless Sensor Network technology. The proposed system can save energy up to 40% through the method of controlling the light intensity by dimming the light through pulse width modulation (PWM). The system works by dimmed the street light if the sensor did not detect moving vehicle or pedestrian and turn the street light fully ON if it detect incoming vehicle or pedestrian. The system use Waspmote sensor board and Zigbee based wireless sensor network (WSN) for it sensor node communication. The sensor node is used to monitor the running status information, amount of energy use and dimming time of the street light for data logging purpose. All of this information will be send to the server through the GSM module connected to the Waspmote. The system use short message service (SMS) for reporting and one GSM modem installed on the server will receive the message. To control the GSM modem, SMS gateways are used. SMS gateway is telecommunication network facilities for receiving and sending SMS transmission to or from telecommunications network that support SMS. Database will stores the SMS report and it can be access through the web page. MySQL program was

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CHAPTER 1

INTRODUCTION

1.0 BACKGROUND OF PROJECT

Street lighting is important for a developing urban city to ensure its economic progress and provide an after dark access to the city [1]. The benefit of street light is it allows the safe movement for vehicle or pedestrians and help to reduce the street crime by acting as a deterrent to criminals [2][3]. A good lighting system can reduce crime, especially crimes involving property, such as robberies, thefts, stolen vehicles and residential burglary. Street lighting is not only favoured by many crime prevention professionals, it is also one of the most common suggestions made by people fearful in their use of public open spaces as a means of both crime prevention and fear reduction. A study has shown that street lighting does affect crime rates [4].

However, current street lighting has a few drawbacks. As we know traditional street lighting control system only turns on and off the street lamps. Generally, this method of lighting system is not energy efficient and has high maintenance cost. This is why various lamp and design for street light has been develop to improve the function of a street lighting [5]. Nevertheless, the upgrade and improvement on the lamp and design of the street light still have it