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Contents

Energy Spectral Density Analysis of Muscle Fatigue	437
Noor Aisyah Ab Rahman, Mahfuzah Mustafa, Rosdiyana Samad, Nor Rul Hasma Abdullah and Norizam Sulaiman	
Modelling Automatic IoT Home Light System (SmartLi) by NODEMCU ESP8266	447
Muhammad Muttaqin A. Rahim, Nor Shazwanie Ramli, Najwa Raihana Abdul Wahab and Rohana Abdul Karim	
Development of Automated Gate Using Automatic License Plate Recognition System	459
Luai Taha Ahmed Al-Mahbashi, Nurhafizah Abu Talip Yusof, Syamimi Shaharum, Mohamad Shaiful Abdul Karim and Ahmad Afif Mohd Faudzi	
Design of T-Shaped UWB Antenna with Dual Band Rejection Using Inverted U- and C-Shaped Slots	467
Salwa Awang Akbar, Ahmad Syahiman Mohd Shah, Ahmad Afif Mohd Faudzi, Sabira Khatun, Syamimi Mardiah Shaharum, Nurhafizah Abu Talip @ Yusof and Mohamad Shaiful Abdul Karim	
Inter Vehicle Communication System for Collision Avoidance	475
Nurul H. Noordin, Althea C. Y. Hui, Nurulfadzilah Hassan and Rosdiyana Samad	
IOT—Eye Drowsiness Detection System by Using Intel Edison with GPS Navigation	485
Auni Syahirah Abu Bakar, Goh Khai Shan, Gan Lai Ta and Rohana Abdul Karim	
Automatic Detection of Diabetic Retinopathy Retinal Images Using Artificial Neural Network	495
Syamimi Mardiah Shaharum, Nurul Hajar Hashim, Nurhafizah Abu Talip @ Yusof, Mohamad Shaiful Abdul Karim and Ahmad Afif Mohd Faudzi	

MODELLING AUTOMATIC IoT HOME LIGHT SYSTEM (SmartLi) BY NODEMCU ESP8266

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Abstract. Most people are always forgot to switch off the light when going out for holiday and left the light on as long as they are on holiday. This could lead to the waste of the electricity. If the lights turn off, dark condition and environment will attract and expose to the burglar target. Technology in network and communication system allows us to remotely control the light condition either off or on in order to pretend the house is occupied. The aim of this project is to develop an automatic home light system that able to control remotely by using internet of thing (IoT) technology. Mobile application (SmartLi) for home light was developed and integrated with intensity and motion sensor. The porch lamp will light up when it's dark and also it will become brighter when there is a motion detected in dark surrounding.

Keywords— Arduino Uno, automatic light, home, IoT, NodeMcu ESP8266, porch

1 Introduction

People always try to prevent their house from being targeted to burglars during their holiday or the house is empty. One of the popular approached is switch ON the porch and home light for the whole holiday. However, it will lead to wastage of electrical energy especially power on the lamp during a day. Since most of energy use in residential buildings comes from lighting, an automation of the home light system is one of the alternatives for reduces the electrical usage [1][2].

Besides, it also useful for the purpose of home security due to the ability to mimic the house is occupied by owner although the house is empty. The illusion of occupied can be created by controlled the lightning system. Therefore, burglar will list out the house from targeted houses.

There are two common approached for automatic control lightning system: 1) sensor and 2) intelligent based [3][4]. Sensor based was widely used for control lightning system compared to the intelligent based. It is because, sensor based is easy to install with low cost. Meanwhile, intelligent based need an extra devices such as memory and Central Processing Unit (CPU) for processing the data. Due to that, the installation process becomes complicated.

Today, advancement technology in network and commmication system allow user to control the lighting system from a long distance by using IoT. Iot will be more helpful when the owner is going out either for holiday or etc. It also can help saving the electricity. Integration of IoT and sensor based application such as motion sensor will help in saving energy since it will triggered lighting system to take some necessary action. Such as, the light become dim or switch off when there is no motion detected within the time limit. In addition, the variation of dim intensity will provide an extra illusion for the existence of the owner.

Therefore, the aim of this paper is to introduce an application called "SmartLi" which able to control the lights via a smartphone and sensor based application. The system involves real time processing and detection of the surrounding intensity, a movement and a signal from the smartphone. The automatic light due to intensity and movement system was installed at outside the house which is at the porch. IoT system also has been implemented into the light system in the house, by connecting it using a network connection (Wi-Fi). Fig. 1 and Fig.2 had shown an overview of the proposed system.