UNIVERSITI TEKNOLOGI MARA

CONTACTLESS LIGHTING CONTROL SYSTEM FOR CLASSROOM USING INTERNET OF THINGS

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ABSTRACT

Internet of Things will demonstrate how quickly technology develops. The use of the internet is now widespread in the world. However, as technology progressed, the need for a system to manage the lighting in the classroom based on the Internet of Things grew. Most classrooms in the school, college, and university use the switch button to control the lights. Students have a habit which is leaving the classroom without switching OFF the lights. Due to that action, an institution may need to pay a huge amount of bills from their budget for unnecessary energy consumption. The current situation also shows COVID-19 has caused a sudden pandemic in our country. Many sectors including educational institutions have been ordered to close temporarily to control the spread of COVID-19. This COVID-19 virus can be affected through the touching surface like a switch button. Thus, this Contactless Lighting Control System can solve the problems. The system developed will control and monitor lighting systems with a sensor that can transmit and receive the signal wirelessly. This system will use a nodeMCU with LDR (Light Dependent Resistor) and a PIR (Passive-Infrared sensor) to create the controller device. The controller device can be monitor and control the data by using Blynk and web applications as it is much cheaper and easier to manage and control compared to other hardware light sensors. Users will use the Blynk apps to control the light in the classroom, while the admin will monitor the light through the web application.

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CHAPTER 1: INTRODUCTION

1.1 Background Study

The Internet of Things (IoT) is an innovation that coordinates numerous objects of daily life that are prepared with microcontrollers and transceivers for communication to interconnect with each other and the users. IoT is important for an educational institution to become a pioneer in technology advancement and innovation, transferring knowledge and implement it into a real environment. With an IoT, users can control connected and wireless devices since the system allows the trade of information through a network.

In our daily life, energy saving has become a necessary thing. Existing lighting systems need to be improved because most of them need to be controlled manually at the switch button and have increase energy consumption due to human negligence. According to Jabeen & Kumar (2016) numerous ordinary power-saving strategies such as using high star rating electrical devices that consume less energy and cutting off the power supply may not sufficient and there will be a lot of inconveniences to the users and expensive electrical devices. Beadle (2019) also states that greenhouse gas (GHG) emissions will reduce and benefit the environment by saving energy. By avoid energy waste for unoccupied classrooms and turning off electricity during the absence of students and teachers, a significant amount of energy can be saved.

In the circumstances affected by the COVID-19 virus now, precautions should be taken to reduce the virus from spreading. There are a lot of schools, colleges, and the university was closed due to this pandemic. According to Hashmi & Asif (2020), this virus can be affected by touching surfaces touched by someone who has a virus such as a cough or sneezing. If a student has been infected with the virus especially that student who has no symptoms, has touched the switch buttons, this will spread the virus in the classroom.