UNIVERSITI TEKNIKAL MALAYSIA MELAKA

HOME AUTOMATION WITH GOOGLE ASSISTANT

This report is submitted in accordance with the requirement of the Universiti Teknikal Malaysia Melaka (UTeM) for the Bachelor of Mechanical Engineering Technology (Telecommunications) with Honours.

by

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APPROVAL

This report is submitted to the Faculty of Electrical and Electronic Engineering Technology of Universiti Teknikal Malaysia Melaka (UTeM) as a partial fulfilment of the requirements for the degree of Bachelor of Electronics Engineering Technology (Telecommunications) with Honours. The member of the supervisory is as follow:

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ABSTRAK

Laporan ini mencadangkan pembangunan Automasi Utama dengan Google Assistant yang memberdayakan pengguna untuk menggunakan peralatan rumah oleh aplikasi pembantu Google. Dunia sekarang tanpa telefon pintar atau telefon pintar canggih sangat sukar untuk hidup. Oleh itu, kami telah memasukkan modul Wi-Fi ESP 8266 dengan telefon pintar yang memperlihatkan antara muka pengguna yang mudah berbanding bilangan suis yang kompleks yang diletakkan di kawasan yang berbeza rumah kita. Ini adalah kelebihan untuk pengguna sistem ini Mengendalikan peralatan di rumah dari telefon bimbit canggih adalah lebih berfaedah bagi pelanggan untuk mengawal peralatan rumah di mana sahaja mereka berada pada masa yang sama mematikan perkakas apabila pengguna tidak menggunakan Wi-Fi aksesibiliti. Ini disebabkan oleh hakikat bahawa kebanyakan telefon pintar terbina dalam dengan kebolehan komunikasi jarak jauh, contohnya Wi-fi yang cukup memberi mereka kuasa untuk berkomunikasi dan mengawal peralatan dalam lingkungan mereka. Makalah ini menggabungkan bahagian perkakasan dan pengaturcaraan Arduino Uno, Modul Wi-Fi ESP 8266 dan tambahan pula aplikasi telefon pintar yang merupakan tajuk yang kompeten untuk membangunkan rangka kerja rumah yang dapat mengawal atau memantau keadaan peralatan rumah. Bahagian ini menggambarkan pelan mengenai konfigurasi, pelan dan pelaksanaan Automasi Utama dengan Sistem Penolong Google.

ABSTRACT

This report proposes the development of Home Automation with Google Assistant that empowers users to utilize home appliances by Google assistant application. The present world without a smart phone or advanced mobile is very hard to live in. Therefore, we have incorporated the ESP 8266 Wi-Fi module with the smartphone which presents simple user interface compared to complex number of switches which is placed in different area of our home. This is an advantage for the users of this system Controlling the appliances at home from the advanced mobile phone is extra advantageous for clients to control home appliances wherever they are at the same time switch off of the appliance when user is not around using Wi-Fi accessibility. This is due to the fact that most smart phones are built-in with long range communication abilities, for example Wi-fi that pretty much empower them to communicate and control appliances in their range. This paper combines the hardware and programming part of Arduino Uno, ESP 8266 Wi-Fi Module and furthermore smart phone application which are the competent headways to develop a home framework that can control or monitor the state of home appliances. This part portrays the blueprints about the configuration, plan and execution of the Home Automation with Google Assistant System.

DEDICATION

Firstly, I want to thanks God and dedicate my thesis paper to my beloved parents, siblings and friends at Universiti Teknikal Malaysia Melaka whom always give satisfied courage and motivation.

I would like to express my deepest gratitude to my Bachelor Degree Project Supervisor Puan Gloria Raymond Tanny who always guides me to achieve and complete my Bachelor Degree Project and helped in the writing of this report and above all the knowledge that has been shared.

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v	-	Voltage
s	-	Time in seconds
mA	-	Current in miliampere

LIST OF ABBREVIATIONS

GSM	Global System for Mobile Communication
Mobile App	Mobile Application
I/O	Input / Output
AC	Alternating Current
DC	Direct Current
PWM	Pulse Width Modulation
Wi-Fi	Wireless Fidelity
EEPROM	Electrically Erasable Programmable Read Only Memory
NC	Normally Closed
NO	Normally Open

LIST OF PUBLICATIONS

CHAPTER 1

INTRODUCTION

1.0 Introduction

Home automation with Google assistant is a standout among the latest development that can change the general population life. It is arranged with the objective of serving physically challenged people and senior citizen which bring towards the purpose of Home automation. Home automation is made principally to give those exceptional needs with a framework that can control by voice or monitor state of electrical appliances for instance lights, fans, door at house. This Home Automation system will engage the users to control at home by utilizing the mobile applications. The user can additionally control their electrical appliances whether to turn ON or OFF through Google assistant app in smart phone at any time and whenever. The system ought to be subtle, straightforward and simple to structure. The usage of mobile applications to control home appliance can be seen as most recent and latest pattern in this Home Automation system. In this progression of Home Automation change, there are few specific affiliations was exhibited for example overall system for mobile communication (GSM), Wi-Fi and applications.

1.1 Problem Statement

These days home automation system is getting higher solicitation and enthusiasm to upgrade our way of life. Home automation empowers the capacity to control appliances by using smart phone application is advancing. Home automation system offers a way of life in which an individual finds the opportunity to control electrical appliances at house by using a

mobile phone. Also, the measure of energy used by the client of home automation brings down the sum of energy required to control the appliances manually. These days the physical challenged and senior citizen depends upon people to turn on or off any appliances at home. This development of home automation will help them to control and monitor the appliances at home to avoid the senior citizen from tumbling down and this will likewise make their life basic. In addition, this advancement of home automation will reduce the danger of falling of the senior citizen and also for handicapped individual.

1.2 Objective

This project embarks on the following objectives:

1) To control electrical appliances of Home Automation using voice recognition by Google Assistant application.
3) To reduce the usage of normal switches.

1.3 Scope of Project

The Home Automation with Google Assistant system is structured by utilizing Arduino Uno and ESP 8266 Wi-fi Module.

- Arduino Uno and Wi-fi module plays a important role in this project undertaking which it will control and monitor the conditions of the electrical appliances at home.

- ESP 8266 Wi-fi module is used to monitor and control electrical appliances at home by using mobile applications.

- Relay circuit was also used in this project to act as an electronic switch to switch on the desired electrical appliances.

- Servo motor will be used to open the door and close the door.

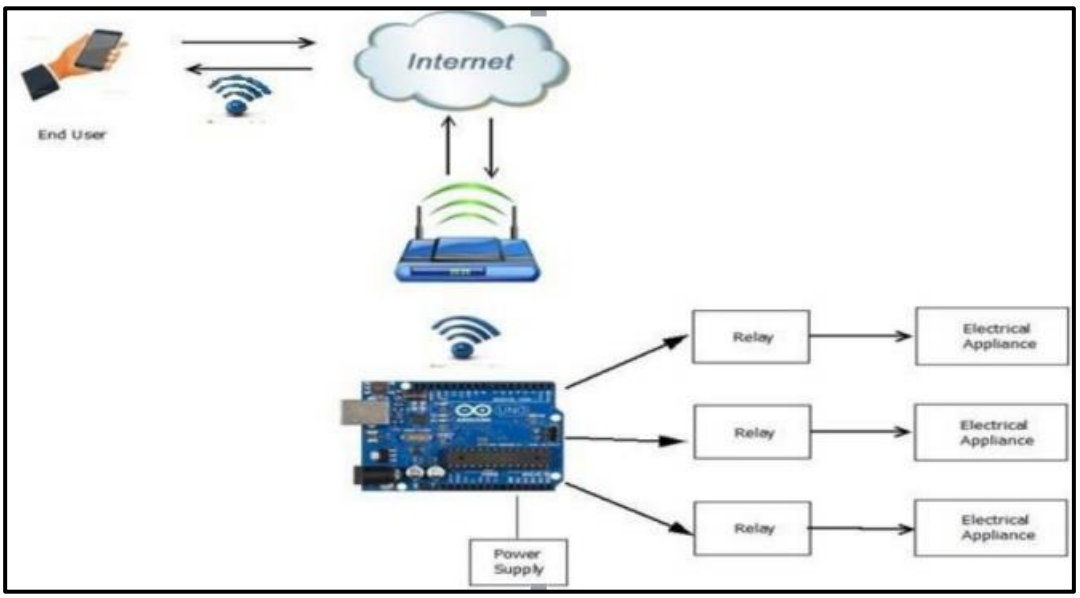

Figure 1.1 System Architecture of Home Automation with Google Assistant

Figure 1.1 shows the Home Automation with Google Assistant system is structured by utilizing Arduino Uno and ESP 8266 Wi-fi Module. Arduino Uno and Wi-fi module plays an important role in this project undertaking which it will control and monitor the conditions of the electrical appliances at home. ESP 8266 Wi-fi module is used to monitor and control electrical appliances at home by using mobile applications. Voltage Regulator is used in this Home Automation with Google Assistant project undertaking to decrease 5volt output of Arduino Uno to the 3.3 volt before making