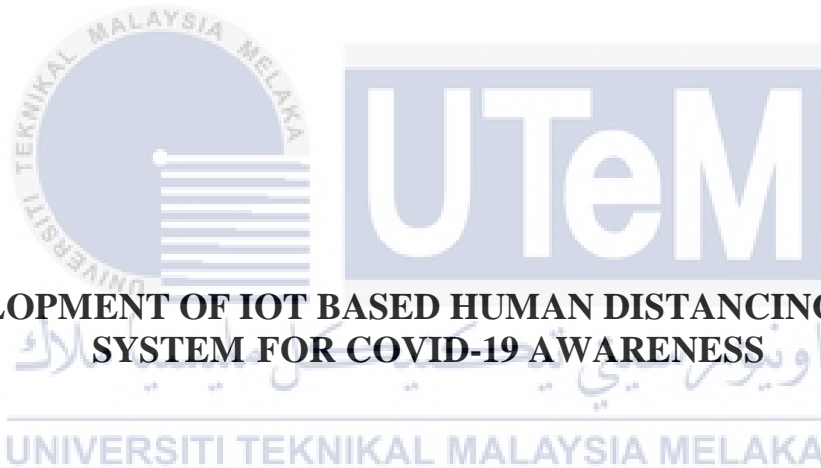




Faculty of Electrical and Electronic Engineering Technology



**DEVELOPMENT OF IOT BASED HUMAN DISTANCING ALERT
SYSTEM FOR COVID-19 AWARENESS**

NURATIKAH BINTI ANNUAR

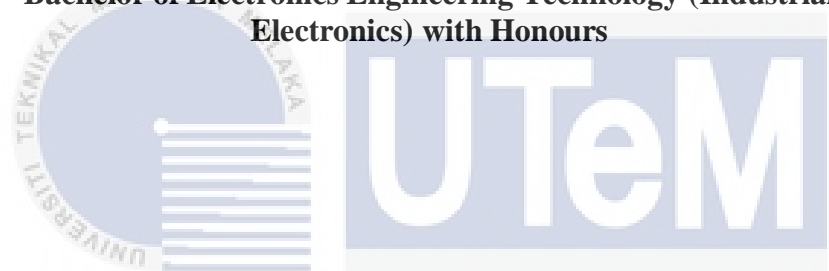
**Bachelor of Electronics Engineering Technology (Industrial Electronics) with
Honours**

2021

**DEVELOPMENT OF IOT BASED HUMAN DISTANCING ALERT SYSTEM FOR
COVID-19 AWARENESS**

NURATIKAH BINTI ANNUAR

**A project report submitted
in partial fulfillment of the requirements for the degree of
Bachelor of Electronics Engineering Technology (Industrial
Electronics) with Honours**



اونيورستى تىكنىكل ماليسيا ملاك
Faculty of Electrical and Electronic Engineering Technology

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2021

**BORANG PENGESAHAN STATUS LAPORAN
PROJEK SARJANA MUDA II**

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Awareness

Sesi Pengajian: 2021/2022

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Tarikh: 11/1/2022

Tarikh: 11/1/2022

DECLARATION

I declare that this project report entitled 'Development of IoT Based Human Distancing Alert System For Covid-19 Awareness' is the result of my own research except as cited in the references. The project report has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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APPROVAL

I hereby declare that I have checked this project report and in my opinion, this project report is adequate in terms of scope and quality for the award of the degree of Bachelor of Electronics Engineering Technology (Industrial Electronics) with Honours.

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Date : 27 DISEMBER 2021

Signature :



Co-Supervisor :

Name (if any)

Date :

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DEDICATION

To my beloved mother, Harizan Binti Mat Yusoff and my father, Annuar Bin Salleh I acknowledge it not enough to be proud without them that I have learned more valuable thing. Thus, dedicated to boths my parents who taught me that even the biggest task can be accomplished with step by step at a time and taught me that the best kind of knowledge to have is that which is learned for its own sake.

and

To my classmate and teammates, who support me and help me to achieve this project. A big thanks for all that always support me and believing in me. Thank you.



ABSTRACT

The new coronavirus (2019-Cov), which first appeared in Wuhan, China in December 2019, quickly spread throughout Hubei province, eventually reaching all of China's provinces and being exported to over 20 nations by January 30, 2020. COVID-19 has been posing a threat to the planet since the end of 2019. Until an effective vaccine is found, it is believed that the globe will have to fight the COVID-19 pandemic with caution. Social distancing is a recommended solution by the World Health Organization (WHO) to minimize the spread of COVID-19 in public places. Most governments and national health authorities have set the 1-metre physical distancing as a mandatory safety measure in shopping centers, schools, and other covered areas. This project proposes a solution based on Development of Smart IoT Human Distancing Alert System using ESP32 CAM and Blynk. By using the internet, the project can be controlled and monitored remotely and receive notifications over Wi-Fi to smartphones. This project consist of three main components: Arduino UNO, Ultrasonic sensor and ESP32 CAM. This system using suitable sensors that useful in human presence detection. The system will alert the user using alarm if the user is stay below 1- metre from another person. By using the ESP32-CAM it will recognize either the detection is human or object then it will warn the user about distancing. This IoT based project also connecting to Blynk to send notification for authorities, parents or guardians, as well as recording the activities for the day.

ABSTRAK

Coronavirus baru (2019-Cov), yang pertama kali muncul di Wuhan, China pada bulan Disember 2019, dengan cepat menyebar ke seluruh wilayah Hubei, akhirnya menjangkau seluruh wilayah China dan dieksport ke lebih 20 Negara pada 30 Januari 2020. COVID-29 telah menimbulkan ancaman kepada planet ini sejak akhir 2019. Sehingga vaksin yang berkesan dijumpai, diyakini bahawa dunia harus melawan wabak COVID-19 dengan berhati-hati. Jarak sosial adalah penyelesaian yang disyorkan oleh Pertubuhan Kesihatan Sedunia (WHO) untuk meminimumkan penyebaran COVID-19 di tempat awam. Sebilangan besar pemerintah dan pihak berkuasa nasional menetapkan jarak fizikal 1 meter sebagai langkah keselamatan wajib di pusat membeli-belah, sekolah dan kawasan tertutup lain. Projek ini mencadangkan penyelesaian berdasarkan Pembangunan Sistem Peringatan Jarak Manusia Smart IoT menggunakan Esp32 Cam dan Blynk. Dengan menggunakan internet, projek ini dapat dikawal dan dipantau dari jarak jauh dan menerima notifikasi melalui Wi-Fi kepada telefon pintar. Projek ini terdiri daripada tiga komponen utama: Arduino UNO, sensor Ultrasonik dan ESP32 CAM. Sistem ini menggunakan penderia yang sesuai yang berguna dalam pengesanan kehadiran manusia. Sistem akan memberi amaran kepada pengguna menggunakan penggera jika pengguna berada di bawah 1 meter dari orang lain. Dengan menggunakan ESP32-CAM ia akan mengenali sama ada pengesanan adalah manusia atau objek kemudian ia akan memberi amaran kepada pengguna tentang menjauhkan diri. Projek berasaskan IoT ini juga menyambung kepada Blynk untuk menghantar pemberitahuan kepada pihak berkuasa, ibu bapa atau penjaga, serta merekodkan aktiviti untuk hari itu.

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LIST OF SYMBOLS

V	-	Voltage
M	-	Metres
cm	-	Centimeter



LIST OF ABBREVIATIONS

<i>LCD</i>	-	Liquid Crystal Display
IOT	-	Internet of Thing
SHS	-	Smart Healthcare System
WHO	-	World Health Organization
IDE	-	Integrated Development Environment
GSM	-	Global System for Mobile Communications
PIR	-	Passive Infrared
LED	-	Light Emitting Diode
GPIO	-	General Purpose Input Output
SPP	-	Serial Port Protocol
IR	-	Infrared



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CHAPTER 1

INTRODUCTION

1.1 Background

This chapter will provide an overview of the project's background, problem description, scope expected outcomes and objectives to be achieved. This project focusing on developing and monitoring human distancing with Alert System For Covid-19 awareness using Blynk. According to World Health Organization (WHO) COVID-19 is disseminated primarily among people who are in close proximity within 1 meter over an extended period of time. When an infected person coughs, sneezes or talks, droplets from their mouth or nose fly into the air and settle in the mouths or nostrils of those who are nearby. Social distance should be used in concert with other everyday preventive actions to stop the spread of COVID-19 [1].

This project provides a solution based on the development of a smart IoT human distancing alert system using the ESP32 CAM and the Blynk platform. The project can be managed and monitored remotely over the internet, and notifications may be sent to cellphones via Wi-Fi. The Arduino UNO, Ultrasonic sensor, and ESP32 CAM are the three essential components of this project. This system employs appropriate sensors for detecting human presence. If the user is less than 1 metre away from another person, the device will send notification to alert the user. The ESP32-CAM will determine whether the detection is human or object, and then warn the user about distancing.

Internet of Things (IoT) platform is multi-layer technology that connects the hardware to the devices. It will use the network to acquire and distribute important data. The Internet of Things was created with the intention of serving as a bridge between hardware and software [2]. This project is using Arduino because is a low-cost project. This project focuses on monitoring using sensor based on Internet of Things (IoT). To make it connected to IoT, this project will be monitored via smartphone or cloud server, such as mobile application and cloud server.



1.2 Problem Statement

Nowadays, we are not living as the normal life because the covid-19. The world has been facing the challenge of COVID-19 since the end of 2019. COVID-19 pandemic is still evolving and affected many operations worldwide and millions of lives. With the number of COVID-19 instances growing by the day, during a period of facing this epidemic people may experience fear and anxiety. They tend to be worried about themselves or their family members contracting Covid-19 or spreading it to others.

By the 24 December 2021, the cumulative numbers reported confirmed cases of covid-19 had reached 2,735,241 including 31,334 total deaths. It causes people more depression and boredom. A break from work and other significant activities disrupts people's daily pattern and may cause them to feel sad or depressed. Boredom and loneliness can grow from spent long periods of time at home.

During the gradual reopening of communities following the initial wave of the COVID-19 epidemic, life would not return to normal anytime soon. As a result, public health officials are attempting to educate residents on proper behavior, in public, maintain a safe distance from all others, wear a face mask and avoid touching people. Many people have struggled to make these behavioral changes [3]. Maintaining a 1.5 meters gap requires a huge change in behavior. It's a new custom that requires some practice. This project development of IoT-based human distancing alert system for Covid 19 awareness aids individuals in remembering people to stay safe in distance from one another especially in public places. It allows individuals to retain their lives together in a more secure manner and to protect each other's health.

1.3 Project Objective

The aim of the work is about the Smart IoT Human Distancing Monitoring System based in doing so, the bulk of the work can be summarizing as follows:

- i. To design a system that measure the distance between human and alert the user when the distance is too close.
- ii. To develop the human distancing smart system with the IoT element.
- iii. To analyse the efficiency of a smart IoT Human Distancing Monitoring system in terms of distance and detected human face.

1.4 Scope of Project

This project is restricted to:

- i. To focus the uses of Internet of Thing (IoT) requires connectivity between system, the cloud and smartphones by using Blynk interface inside the smartphone.
- ii. Arduino is an open source platform that can be programmed with the Arduino IDE software, uploaded the code to the Arduino UNO, and uploaded the code to Esp32 cam and monitored with Blynk.
- iii. This project is only focused on alert the user about the harmful conditions in public places about to stay safe in distance from one another if distance <1 metres.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter will discuss the overall overview of the project – the Smart IoT Human Distancing Monitoring System. This IoT smart human distancing is the new technology that is applied in person to alert the range. Besides, this project is the solution for the problem statement that was stated in chapter 1. The incidence of COVID-19, a newly infectious flu-like respiratory disease caused by the SARS-Cov-2 virus (also known as coronavirus), has impacted practically every area of people's life around the world since the closing days of the previous year. It was first discovered in China, but it quickly spread to other continents in a matter of weeks.

According to The Straits Times, the overall number of identified cases will increase and the number of deaths is increasing. The presence of more aggressive variants with higher infectivity also influenced today's decision to lockdown [4]. Fever, fatigue, sore throat, nasal congestion and loss of taste and smell are all common signs of coronavirus infection. It shown in Figure 2.1. It is most commonly transmitted directly (from person to person) through respiratory droplets, although it can also be transmitted indirectly through surfaces. Further, even asymptomatic people (almost 45 percent of the time) might spread the disease, exacerbating the problem.

As a result, the use of face masks and physical distance has demonstrated to be effective in reducing illness spread. The lack of licensed vaccines and treatments, on

the other hand, is the most critical problem. Governments have also established several preventive and safety measures in order to combat the disease as a result of these facts. In this project, some researches need to be done to know some information to find what the existing system can do and know the method to making the more effective project to address the issue that Malaysia is facing in this epidemic period.

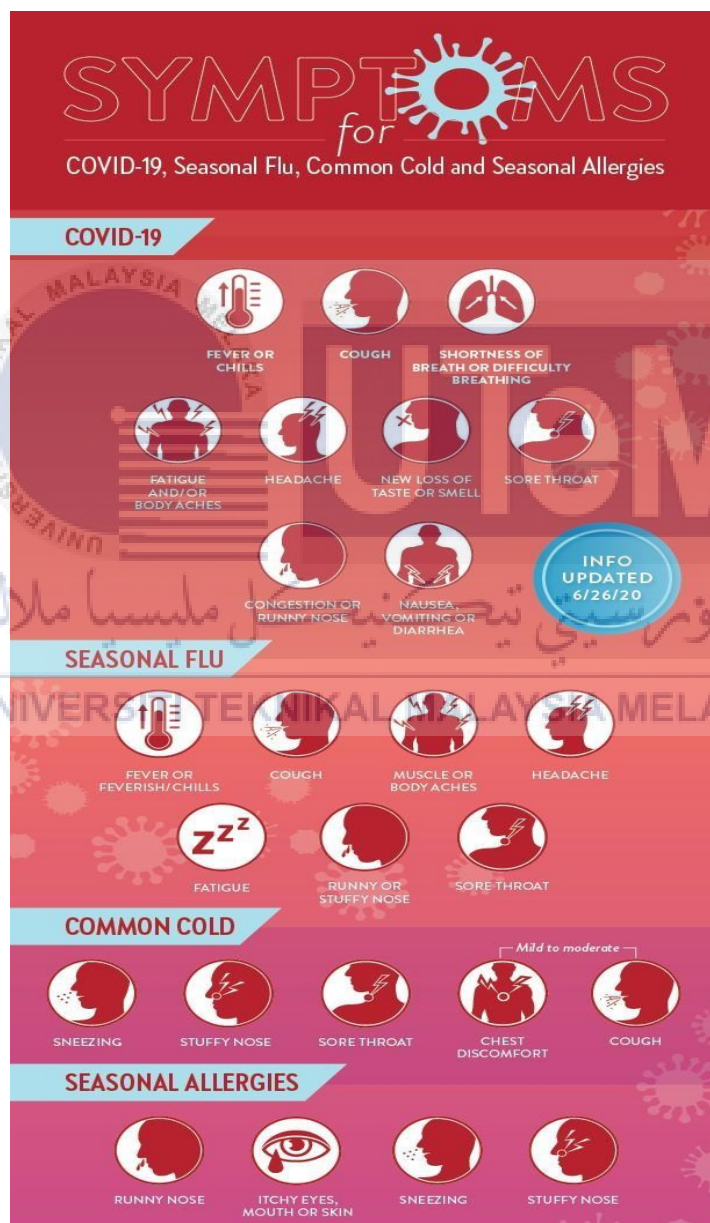


Figure 2.1: Infographic about Symptoms of Covid-19

2.2 Iot Based on Human Distancing Monitoring

The goal of this project is to collect data from a sensor that has been processed by a microcontroller and then transferred to a mobile phone using ESP32 CAM. This is to make the process of monitor from afar easier. Internet of Things (IoT): Integration of Blynk for this project, it is suggested that Blynk be used in domestic usability to introduce an IoT platform that monitors distance between people. The Internet of Things (IoT) has a lot of potential for supporting people in their daily lives, such as tracking and managing any product or service. Some associated technologies are required to construct the IoT platform. The first is Arduino. Blynk is a framework for building web-enabled devices that connect people with things that will be connected anytime, anyplace and anything. The user interface was designed using a digital dashboard. Blynk also serves as a controller application for the Arduino and Raspberry Pi shown in Figure 2.2.

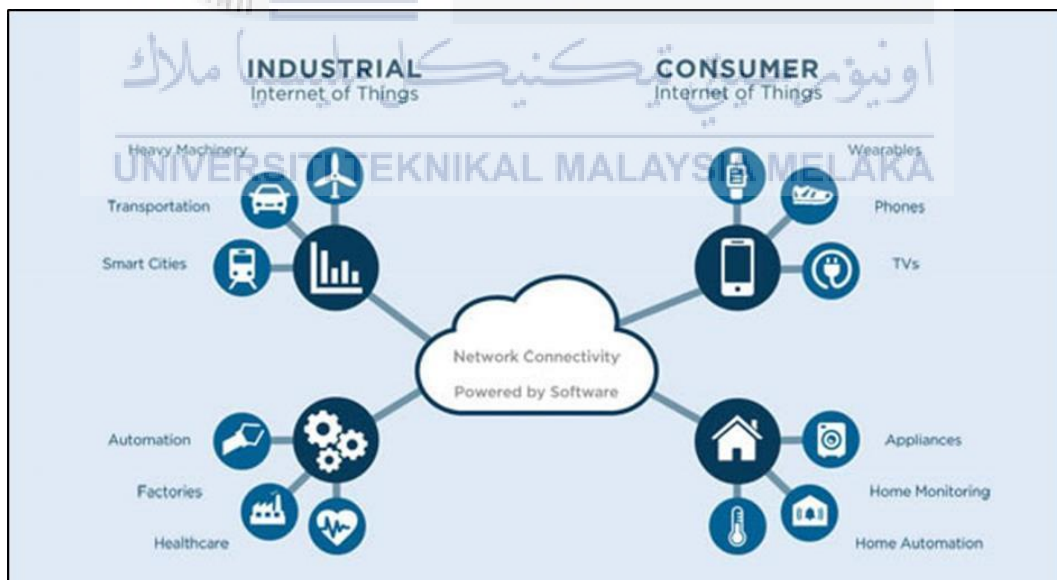


Figure 2.2: IoT Diagram