



Faculty of Electrical and Electronic Engineering Technology



**Development Of Smart Vehicle Locking With Phone And
Camera Triggering System Using IoT Application**

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

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**Development Of Smart Vehicle Locking With Phone And Camera Triggering System
Using IoT Application**

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



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DEDICATION

First of all my dissertation work to people around me as especially my beautiful family and to my beloved parents Pn Anisah and En Ashabullyamin always encourage me to do anything good in my life. They also have no limited trust on me to finish this project.



ABSTRACT

The paper is to reduce cases of motorcycle theft. Maybe nothing much can help the police officer with their work, but any industry must have a new idea to counter their problem so this is one of them. According to TheStar newspaper by Meng Yew Choong on Saturday, 28 Dec 2019 based on insurance claims, statistics from the Vehicle Theft Reduction Council of Malaysia Bhd (VTREC) showed on 2018 more than 7,500 motorbikes were stolen. We straightly go VTREC that we can find from 2019 until the last year 2020 motorcycle stolen cases lead on top vehicle theft with number 6099 unit on 2019 and 3993 on 2020. The objective of this project is to facilitate the owner also policeman to recognize thieves just use a mobile phone. It makes time shorter to do an investigation and to produce a design safety lock triggering system for vehicles just using a smartphone and slowly supply high safety lock to replace an existing safety lock that already has. From this objective, we can see the advantage of implement the system that can help to reduce the cases.

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ABSTRAK

Tujuan kertas kerja ini adalah untuk mengurangkan kes kecurian motosikal. Mungkin ia tidak dapat banyak membantu pihak polis dalam tugas mereka, tetapi dalam setiap industri semestinya memerlukan buah fikiran yang baru untuk mengurangkan masalah mereka jadi ini mungkin salah satu darinya. Berdasarkan surat khabar TheStar yang ditulis oleh Meng Yew Choong pada Sabtu, 28 Dis 2019 berdasarkan tuntutan insuran, statistik daripada Vehicle Theft Reduction Council of Malaysia Bhd (VTEC) menunjukkan pada 218 lebih daripada 7500 motosikal telah dicuri. Kita terus pergi kepada VTEC kita dapat melihat pada tahun 2019 sehingga tahun lepas 2020 kes kecurian motosikal mendominasi kes kecurian kenderaan dengan angka bilangan 6099 pada tahun 2019 dan 3993 pada 2020. Objektif untuk projek ini adalah untuk memudahkan pengguna motorsikal juga pegawai polis untuk mengenalpasti pencuri hanya menggunakan telefon pintar, ia menjadikan masa mencari motor yang hilang lebih singkat, dan mengeluarkan lakaran sistem keselamatan untuk kenderaan hanya menggunakan telefon pintar dan pelan-lahan membekalkan kunci keselamatan untuk menggantikan kunci keselamatan yang sedia ada. Daripada objektif ini kita dapat melihat kelebihan mengaplikasikan sistem yang dapat membantu mengurangkan kes.

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LIST OF SYMBOLS

MHz,kHz	-	Frequency
MB	-	Megabytes
Mm	-	Length
V	-	Voltage



LIST OF ABBREVIATIONS

GSM	- Global System for Mobile communication
IoT	- Internet of Things
RFID	- Radio Frequency Identification



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CHAPTER 1

INTRODUCTION

1.1 Background

Locking system is a well-known system for people nowadays. It is proven that the lock industry already uses it 600 years ago. Locks and security keys build for the same purpose, they were manufactured with increasing complexity for the person that has a bad habit of stealing people's belonging. As we know, nowadays we are living in the rapid development of modern world and most of the things have been changed. To be simplified, Development of Smart Vehicle Locking With Phone And Camera Triggering System Using IoT Application being introduce as one of the padlock which comes with a new innovation that consist of camera and also the notification system. We can say that this system as a very practical safety system for padlock. Vehicle System Lock Triggering System is starting to be more user-friendly than more commonly in motorcycle riders, and they are often controlled with a smartphone. Vehicle System Lock Triggering System makes an owner doesn't have trust issue to park their motorcycle and it is because additional system that they provide really in another class.

1.2 Problem Statement

Vehicle Safety Lock System has been made for the overcome motorcycle theft case. There must be an efficient and reliable to help the user especially motorcycle riders to have an extra safety issue. Even they already have another lock, like the handle lock that is already installed in the motor system. Safety lock triggering system will ensure their motorcycle always secure

We already know that motorcycle existing installed by their safety lock. Which is handle lock, but for extra safety, there is certain company safety system come out with a good idea for making extra lock like brake pads lock, they also have chain lock and many more. All the lock that list is just delayed the theft process, and once theft case happen, we turn into police report that the best way, but there is a bad side here we must wait the investigation process, it may take few times and anything bad can happen on that motorcycle. Vehicle Safety Lock System has installed camera esp32, design to record live-action during case happen, once proposes a proper system that uses easy to access. The owner can recognize the person that tries to break our safety lock triggering system.

Theft cases increase day by day, it makes policeman is very busy handling it. So that they are very difficult to monitor and find the thieves. The system is designed to assist police jobs to provide high security in the process to decrease motorcycle theft. An example is an accident that involves motorcycle theft, so the police easily find the person by the picture that the camera (esp 32) captures.

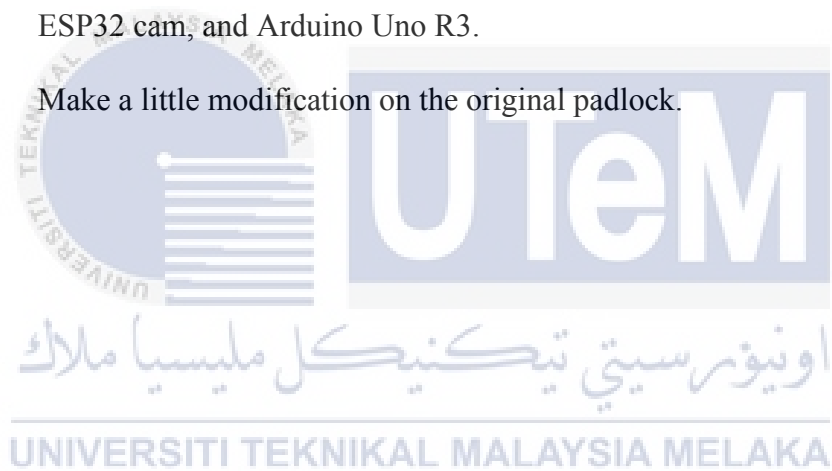
1.3 Project Objective

- I. To develop new motorcycle locking and monitoring system via mobile application
- II. To design motorcycle locking system with imaging and notification system

1.4 Scope of Project

The Scope uses for doing this project:

- a) Multisim, Proteus and Fritzing.
- b) Blynk Capture.
- a) ESP32 cam, and Arduino Uno R3.
- d) Make a little modification on the original padlock.



CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Development Of Smart Vehicle Locking With Phone And Camera Triggering System Using IoT Application are evolving into smart systems as smart technology evolve. The Internet of things is evolving on a daily, from little things robots to high performance capable of sharing data and completing missions and humans can handle many other things. The main goal of this paper is to develop a smart vehicle locking with a phone and camera base system using IoT, which will transform traditional vehicle security systems into a smart vehicle locking with a phone and camera triggering system using the IoT application for remotely accessing and monitoring vehicles from user phone. To be more precise, we want to build a lightweight, low-cost, extensible, and scalable wireless smart vehicle protection system that uses IoT and GSM and wireless connectivity that connects the camera and main circuit.

2.2 ARDUINO UNO R3

Based on L. David William Raj¹, K. Santhosh², S. Subash³, C. Sujin⁴, P. Tharun⁵ - Voice Controlled Door Lock System Using Matlab and Arduino[1] The Arduino will operate the motor by the instructions provided to the motor driver. The motorized door lock would then operate. The motor's movement causes the door lock to open and shut in its forward and reverse rotations. That exactly how Smart Vehicle Locking With Phone And Camera Triggering System Using IoT Application run by Arduino. According to [2] they use Arduino as an open circuit that operates a programmable circuit board, also software call IDE use to run a computer. Other than that [3] also got a nice reference, it tells Arduino sketch written in C++ is submitted to the Arduino UNO via the IDE. The Android app is then activated on the handset, and the Bluetooth modules (connect phone and HC-05) are combined. Out of topic, it works as back up plan, looking forward RFID system for unlocking the lock, [4] RFID work as Radio Frequency Identification, and it is mainly used to deploy direct detection procedures to provide intelligence efficient transmitters and receivers not only extend the spectrum but are less susceptible to interference. As shown below figure 2.2 simple connection stemmed from Arduino Uno.

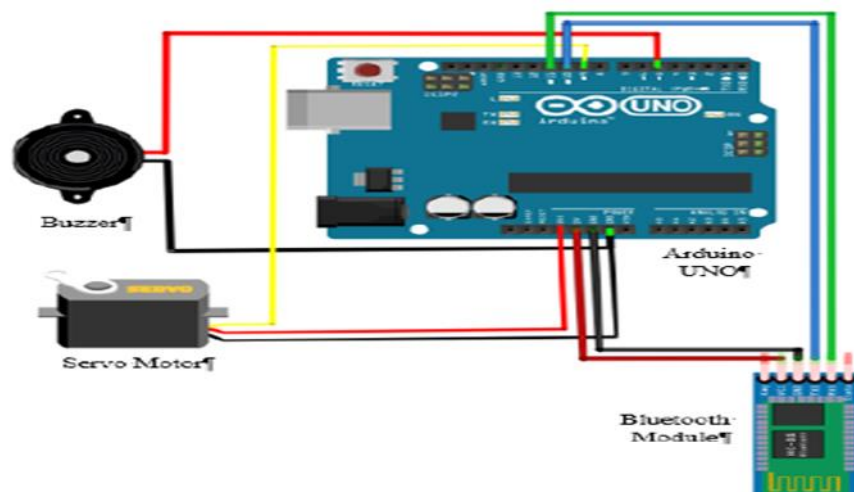


Figure 2.2 : Arduino connection.

2.3 GSM MODULE

Smart Vehicle Locking With Phone And Camera Triggering System Using IoT Application use GSM as main components same goes to [5] GSM, the most commonly used of the three digital cellular telephony systems, employs a variant of time division multiple access (TDMA) (TDMA, GSM, and CDMA) GSM simplifies and compresses data before transmitting it along with two additional sources of consumer data, depending on time slot.

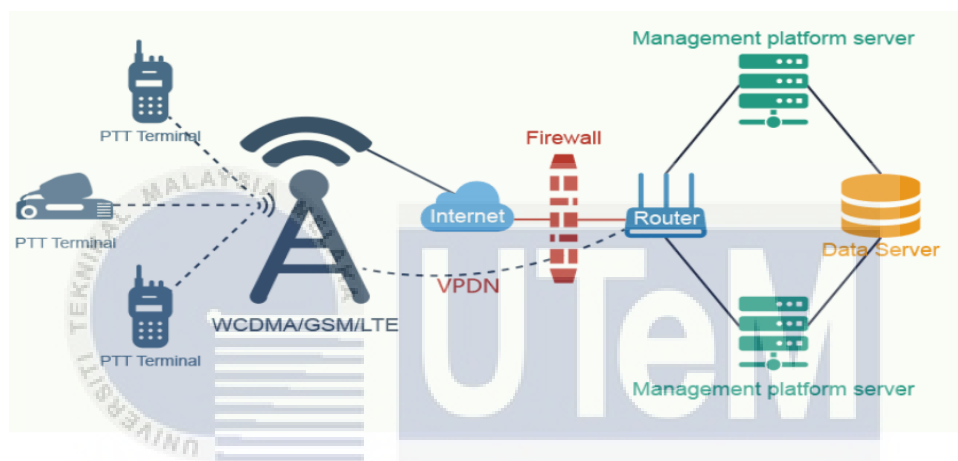


Figure 2.3: GSM work

[6] The figure 2.3 shows how GSM work. Go deep about GSM [7] it implements two channels of 25MHz, 890-915MHz, and 935-960MHz for the mobile system's transmit and receive bands. For receive band is split into 128 channels, bandwidth of 200 kHz per channel. Other than that [8] GSM as we know they provide a very good service to sent information needed via short message service (SMS). Many projects that use them as a preference combine GPS and GSM. But still the same purpose [9] The device can connect with the GSM module. The device and mobile networking, the GSM architecture are used. The GSM network is used to give and receive messages.

2.4 PHONE APPLICATION AND CAMERA

Smart Vehicle Locking With Phone And Camera Triggering System Using IOT Application naturally use the camera as our main component, ESP 32 camera is chosen but here [10]. Another example they decide to CITRIC notes as a camera sensor network. In their virtual lock scheme, these function descriptors can be used as event prediction algorithms. The CITRIC mote has 64 MB of RAM and 16 MB of ROM, which is enough to save over 1000 grayscale images with 320 240 resolution. Figure 2.4 is block diagram how CITRIC working on, for our information CITRIC more friendly for iPhone user

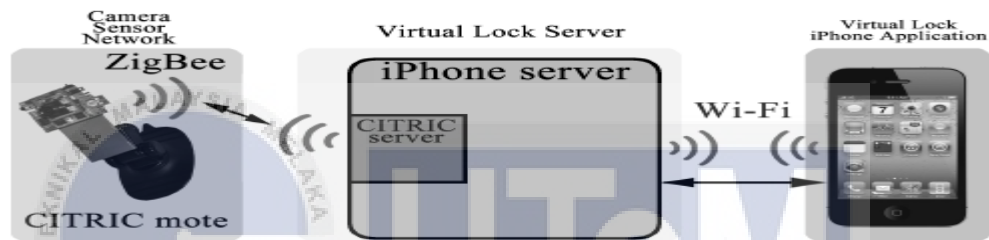


Figure 2.4 : Overview for CITRIC working

Accordingly on our project that uses camera and smartphone [11] but in their situation for find car using smartphone at the car park. Nearly function, this application can also help the persons to recognize thieves that stole their motorcycle. Another smartphone function is to install MIT AI2 companion for user access [12] the different their paper present a mobile phone for locking SIM card, but the application is here can access by the phone.



Figure 2.4.1 : P2P Q7 WIFI camera

Back to camera function, figure 2.4.1 is model P2P Q7 WIFI camera that function using wifi [13] they use P2P Q7 WIFI camera, it works through wifi for long-range communication and Bluetooth as a backup plan for any bad probability. We also can use this camera on our project Smart Vehicle Locking With Phone And Camera Triggering System Using IoT Application. Looking for phone application [14] android app build for make an easy way for user tor access. It connects with the camera for face recognition. They also connect with a camera using wifi from the camera. About the camera Smart Vehicle Locking With Phone And Camera Triggering System Using IoT Application looking forward to living streaming action[15] smartphone will have live streaming video from the camera, it makes instead of the picture we also have a video for clear visual action. Figure 2.4.5 below make it clear how its work, but in this case, they use 5MP PiCamera.



Figure 2.4.2 : live streaming flow.

More detail about camera record for good image [16] they implement online parsing algorithm. They call an algorithm for reads every detail symbol sequentially.



Figure 2.4.3 : location of lip

There is Figure 2.4.3 example result for live action capture and insert for detail from our face and goes a little deep into the lip. Phone applications always relate to the android basic module [17] helps us to get viewing live feed direct from the phone. It's more secured when the user can add a username and password for security. Figure 2.4.4 below show live action happen for home door.



Figure 2.4.4 : live-action.