



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

**DEVELOPMENT OF EMERGENCY VEHICLE
LOCATION TRACKING SYSTEM BY USING MYSQL**

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

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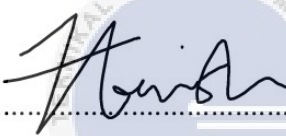
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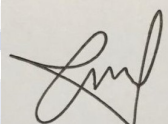
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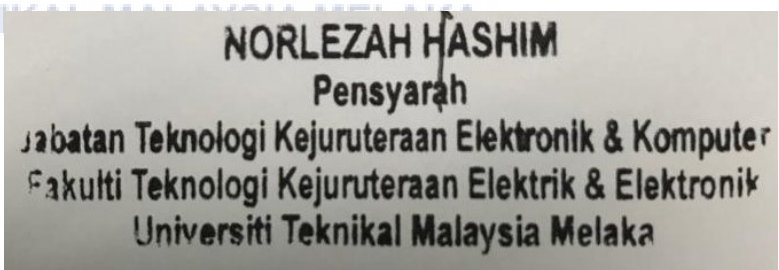
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APPROVAL

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 Electrical and Electronic Engineering Technology (Telecommunication) with Honours. The member of the supervisory is as follow:


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ABSTRAK

Projek ini adalah mengenai pembangunan Sistem Penjejakan Lokasi Kenderaan Kecemasan yang berasaskan Wi-Fi, GPS, pangkalan data dan Internet of Things (IoT). Projek ini dapat memantau lokasi kenderaan kecemasan dengan menggunakan modul GPS dan pangkalan data dari MySQL. Pada masa kini, kenderaan kecemasan memainkan peranan penting dalam masyarakat kita. Oleh itu, masa yang diperlukan untuk kenderaan kecemasan tiba di lokasi perlu tepat dan selalu tiba dalam jangka masa yang diberikan. Fungsi utama m projek ini adalah untuk menganggarkan masa nyata yang diambil untuk kenderaan kecemasan yang tiba di lokasi tertentu. Selanjutnya, hasil dari projek ini menunjukkan lokasi, masa yang diambil dan kelajuan kenderaan kecemasan dengan sistem penjejakan masa nyata. Lebih-lebih lagi, dengan susunan GPS dan pangkalan data dalam projek ini, ia akan memberikan data yang tepat kepada pengguna. Selain data yang tepat, sistem ini dapat mengakses atau memantau di desktop pengguna atau layar pemantauan.

ABSTRACT

This project is about the development of Emergency Vehicle Location Tracking System that based on Wi-Fi, GPS, database and Internet of Things (IoT). This project could monitor the location of the emergency vehicle by using the GPS module and database from MySQL. Nowadays, emergency vehicle is playing a crucial role in our society. Therefore, the timing or the time taken for an emergency vehicle to arrive on the exact location is needed to be precise and always arrived in the period of time given. The main function of developing this project is to estimate the real-time taken for an emergency vehicle arrived at the specific location. Furthermore, results from this project shows the location, time taken and speed of the emergency vehicle with a real-time tracking system. Moreover, with the arrangement of GPS and database in this project, it will give an accurate data to the user. Besides an accurate data, this system will be able to access or monitor on the user's desktop or monitoring screen.

DEDICATION

Special dedication to my beloved parents.

EN. ROSLI BIN MDNOR

PN.ZAIRENNA BINTI ONN @NGON

My family,

(Ahmad Nabil Figri Bin Rosli, Ahmad Danial Hakeem Bin Rosli, Ahmad Akmal Faez



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LIST OF SYMBOLS

V	-	Volts
GHz	-	Giga Hertz
KB	-	Kilo Bytes
MB	-	Mega Bytes
 MHz	-	Mega Hertz
KHz	-	Kilo Hertz
m/s	-	Meter per Second



LIST OF ABBREVIATIONS

CPU	Central Processing Unit
IoT	Internet of Things
GPS	Global Positioning System
Wi-Fi	Wireless Fidelity
MCU	Microcontroller Unit
GSM	Global System for Mobile
LCD	Liquid Crystal Display
DC	Direct Current
DBMS	Database Management System
SQL	Structured Query Language
MEO	Medium Earth Orbit
API	Application Programming Interface
GPIO	General Purpose Input/Output
UART	Universal Asynchronous Receiver/Transmitter
PWM	Pulse Width Modulation
SRAM	Static Random Access Memory
USB	Universal Serial Bus
TX	Transmitter
RX	Receiver
GND	Ground
RAM	Random Access Memory

GNSS

Global Navigation Satellite System



LIST OF PUBLICATIONS



CHAPTER 1

INTRODUCTION

1.1 Background

This project is about the development of Emergency Vehicle Location Tracking System. Hence, this project is also based on Global Positioning System (GPS), database, Wi-Fi and Internet of Things (IoT). In this new era, IoT technologies are widely used this day. It gives lot of advantages to the user such as leads several design techniques to achieve different efficiency and performance objectives (Gregorio *et al.*, 2020). Next, wireless fidelity or Wi-Fi is a wireless networking technology that uses radio waves to deliver high-speed wireless network. It is connected to smart phone, computer, tab, laptop and other smart device nowadays. Meanwhile, database is used for efficient data entry and database management. It has been shown that very effective ways for storing large volumes of data relies on data base software in equal amounts, supporting file structures, sound database administration practices and adherence to strict data-capture protocols in the field (Abzalov, 2016).

Besides that, this project also used Global Positioning System (GPS). The Global Positioning System (GPS) is a United States run satellite navigation system. The array consists of a constellation of nominally 24 medium-altitude Earth orbit (MEO) satellites, as well as a regional ground network for tracking and controlling satellites (Hegarty, 2017).

Furthermore, this project will combine all four components above and will give a good impact to the user that using this project. There are many application that can relate

with this project such as Google maps, Waze, Whatsaap (share live location) and etc. Moreover, by implement and develop this system, it will give a lots of benefit that can be used in the future.

1.2 Objective

1. To design and develop real-time location tracking system for emergency vehicles.
2. To analyse in term of functionality.

1.3 Problem Statement

Nowadays, emergency vehicle is playing a crucial role in our society. Therefore, the timing or the time taken for an emergency vehicle to arrive on the exact location is needed to be precise and always arrived in the period of time given.

Furthermore, the person who is driving the emergency vehicle need to report back their current location towards the control centre. So, the officer at the control centre will have to wait and cannot get the update of the emergency vehicle until it has been informed by the driver. Thus, this project will overcome the problem by using real-time location tracking system and it will be easily to access on the web within any monitoring devices.

1.4 Scope of Research

The Internet of Things (IoT) is the internetworking of physical devices or a smart devices that could connecting them to cloud, as to get information slightly from everywhere. Besides that, a nodeMCU ESP8266 is connecting to the Global Positioning

System (GPS) as the hardware of this project that could send data wirelessly to the database that is MySQL and to others IoT system.

The GPS that will be use is Neo6m that is compatible to node MCU ESP8266, it will give an accurate position where is the emergency vehicle is heading and arriving. This project will progress an electronic device that could notice the location and systematically updated in the database of an emergency vehicle.

1.5 Thesis Organizing

This project is about a real time detection location tracking system against the IoT system and database. This thesis consists of five chapters. For chapter one, a detailed explanation on the introduction of the project, objective and scope of the project. Next in the chapter two, the literature review has been conducted to do some research on the existing technologies and the method used in the previous projects has been discussed to make an improvement to this project. Besides that, for the chapter 3 has been explained more details about the hardware, software and the components that will be used in this project. Moreover, the flowchart of the project also will be shown as an overview of this project implementation. In the chapter 4, the results and analysis will be shown to proven the data has been recorded and taken for this project. Lastly in the chapter 5, the recommendations has been stated for future works against this project.