UNIVERSITI TEKNIKAL MALAYSIA MELAKA

DEVELOPMENT OF CAR WARNING & TRACKING SYSTEM USING IoT

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

by

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APPROVAL

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

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ABSTRAK

A huge of vehicles were reported missing every year. Thus in order to increases the quality of life for this case, a useful tracking system with more reliable is needed. The purpose of this project is to combine the Global Positioning System (GPS) with ESP Wi-Fi technology by interfacing with an Android application, Blynk. This project can be divided into three phases. For first phase, which is based on the Wi-Fi connection via smartphone for ON or OFF the system. Moreover, in this part the user or owner of the car connect the whole vehicle tracking system in his or her car. When the owner is driving the car, the system will be in OFF condition but when owner parks the car, the system will be activated. By looking at the activated system, first by using the Blynk App, the app is created and installed in smartphone of the user. Secondly, this application shows the username and password. By login into the app correctly, only then can connect to the Wi-Fi module in the system. Finally, by using the Wi-Fi technology interface the smartphone to the ON or OFF the system, which means when the car is driven by owner the system is OFF and wherever the car was in the parking the system were in the ON mode where the whole system ready to work. For the second phase, when the thief is unlocking the car, in that time the sensor send alert SMS to owner. This happen because of the electromagnetic sensor which sense unlock where it can detect whether the door has moved in or out. On the third stage, if the robbery begin and the car cannot be moved at that point , the system send the details of the area or directions to the proprietor at

regular intervals by utilizing GPS innovation interface with Wi-Fi innovation by means of SMS notice. By this, the proprietor can quickly make a move to establish the auto by following the area. On the other hand, if the burglary did not begin in 5 minutes the car can't start which implies the motor framework was locked. Finally, when the proprietor reset the password in the Blynk application inverter, the car can be start back.

ABSTRACT

Setiap tahun, kehilangan kenderaan secara besar-besaran telah dilaporkan. Oleh itu untuk meningkatkan kualiti hidup untuk kes ini, sistem penjejakan yang berguna dengan lebih dipercayai diperlukan. Tujuan projek ini adalah untuk menggabungkan Sistem Penentududukan Global (GPS) dengan teknologi Wi-Fi ESP dengan interfacing dengan aplikasi Android, Blynk. Projek ini boleh dibahagikan kepada tiga fasa. Untuk fasa pertama, yang berdasarkan sambungan Wi-Fi melalui telefon pintar untuk ON atau OFF sistem. Tambahan pula, di bahagian ini pengguna atau pemilik kereta menyambungkan keseluruhan sistem pengesanan kenderaan di dalam keretanya. Apabila pemilik memandu kereta, sistem akan berada dalam keadaan OFF tetapi apabila pemilik memasuki kereta, sistem akan diaktifkan. Dengan melihat sistem yang diaktifkan, pertama dengan menggunakan App Blynk, aplikasinya dicipta dan dipasang dalam telefon pintar pengguna. Kedua, aplikasi ini menunjukkan nama pengguna dan kata laluan. Dengan masuk ke dalam aplikasi dengan betul, hanya boleh menyambung ke modul Wi-Fi dalam sistem. Akhirnya, dengan menggunakan antara muka teknologi Wi-Fi telefon pintar ke ON atau OFF sistem, yang bermaksud apabila kereta dipandu oleh pemilik sistem OFF dan di mana sahaja kereta berada di tempat letak kereta sistem berada dalam mod ON di mana sistem keseluruhan sedia untuk berfungsi.

Untuk fasa kedua, apabila pencuri membuka kunci kereta, pada masa itu sensor menghantar SMS peringatan kepada pemilik.

Ini berlaku kerana sensor elektromagnetik yang mengunci kunci di mana ia dapat mengesan sama ada pintu telah masuk atau keluar. Pada peringkat ketiga, jika rompakan bermula dan kereta tidak dapat dipindahkan pada ketika itu, sistem menghantar butiran kawasan atau arahan kepada pemilik pada selang masa yang tetap dengan menggunakan antara muka inovasi GPS dengan inovasi Wi-Fi melalui notis SMS. Dengan ini, tuan punya cepat boleh membuat langkah untuk menubuhkan auto dengan mengikut kawasan tersebut. Sebaliknya, jika pecah rumah tidak bermula dalam 5 minit, kereta tidak boleh bermula yang membayangkan kerangka motor dikunci. Akhir sekali, apabila pemilik menetapkan semula kata laluan dalam penyongsang permohonan Blynk, kereta boleh bermula semula.

DEDICATION

To my beloved parents Mr Balakrishnan Ramasamy

My supportive Supervisors Madam, Gloria Raymond Tanny

My faithful panels, lectures and staffs of FTK

My BETT Cohorts 5 classmates

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TABLE OF CONTENTS

CONTENTS PAGE

TABLE OF CONTENTS		xii
LIST OF TABLES		xvii
LIST OF FIGURES		xviii
LIST OF SYMBOLS & ABBREVIATION		xx
CHAPTER 1: INTRODUCTION		
1.1	Introduction	1
1.2	Background	2
1.3	Concept	3
1.4	Objective	5
1.5	Scope of Project	5
1.6	Problem Statement	6
CHAPTER 2: LITERATURE REVIEW		
2.1	GSM Technology	7
2.2	GSM Telecommunication Services	8
2.3	Global System for Communication (GSM)	9
2.4	Global System for Communication (GSM) Architecture	10

2.5 Benefits of GSM 14

2.6 Short Message Service (SMS) 15

2.7 GPS Technology 16

2.8 GPS Telecommunication Networks 17

2.9 GPS Communication Works in GPS Tracking Devices 18

2.10 Global Positioning System (GPS) Architecture 19

2.11 Benefits of GPS 20

2.12 Wi-Fi Module Technology 21

2.13 Previous Projects 23

2.13.1 "Vehicle Tracking and Locking System Based on GSM and GPS" 25

2.13.2 " Vehicle Theft Intimation Using GSM Modem" 26

2.13.3 "Integrated Vehicle Accident Detection and Location System" 28

2.13.4 "Anti-Theft Mechanism System with Accident Avoidance and Cabin Safety System for Automobiles" 29

2.13.5 "Design and Implementation of Vehicle Tracking System Using GPS/GSM/GPRS Technology and Smartphone Application" 30

2.13.6 "Advanced Vehicle Monitoring and Tracking System based on Pi" 34

2.13.7"Internet of Things Based Smart Transportation Systems" 36

2.13.8 "Vehicle Accident Messenger System 38

2.13.9 "GPS Based Vehicle Location Using ARM 7 LPC 2148" 39

2.13.10 “Vehicle Door Latch with Tracking and Alert System Using Global Positioning System Technology and IoT Based Hardware Control for Visibility and Security of Assets” 41

2.13.11 “GPS and GSM Based Engine Locking System Using Smart Password” 43

2.14 Summary

2.14.1 Microcontroller 45

2.14.2 Communication Networks 46

CHAPTER 3: METHODOLOGY

3.1 Project Flowchart 48

3.2 Project system architecture 49

3.3 Working of project 50

3.4 Project material

3.4.1 Power Supply 51

3.4.2 Arduino Uno ATMEGA 328 52

3.4.3 GPS Module – NEO-6M 53

3.4.4 2-Channel Relay Module 54

3.4.5 Electromagnetic Sensor 56

57

3.4.6 ESP Wi-Fi module 57

3.4.7 How ESP Wi-Fi module Works 58

3.4.8 Blynk App 59

3.4.9 How Blynk application works with Arduino 60

3.4.10 Arduino IDE 62

3.5 Conclusion 63

CHAPTER 4: RESULT AND DISCUSSION

4.1 Software and Coding Development

4.1.1 Coding for Sensor 65

4.1.2 Coding for GPS module 66

4.1.3 Coding for ESP8266 WIFI MODULE 67

4.1.4 BLYNK Application Development 68

4.2 Hardware Development and Experiment Work

4.2.1 Working of Vehicle Warning and Tracking 69

4.2.2 Vehicle Condition before Theft 71

4.2.3 Vehicle Condition during Theft 71

4.3 Project Analysis 72

4.4 Discussion 76

CHAPTER 5 : CONCLUSION AND FUTURE RECOMMENDATION

5.0 Introduction 77

5.1 Conclusion 78

5.2 Recommendation of Future Work 80

REFERENCES 82

APPENDIX 84

LIST OF TABLES

TABLE	TITLE	PAGE
Table 2.1	Table of the components	24
Table 2.2	The list of hardware and software GPS Based Vehicle Location Using ARM 7 LPC 2148 project	40
Table 2.3	Table of comparison of the three different microcontrollers	45
Table 2.4	Table of comparison of the 4 different wireless communication networks	46
Table 3.1	The pins of relay separate on the PCB	55
Table 3.2	The pins of relay 1x3 pin header separate on the PCB	55
Table 4.1	Time taken for receiving the message in an open place	72
Table 4.2	Time taken for receiving the message in an obstacles place	73

LIST OF FIGURES

FIGURE	TITLE	PAGE
Figure 1.1	Show the overall concept of this project	4
Figure 2.1	Bearer Services and teleservices	9
Figure 2.2	Typical GSM architecture	12
Figure 2.3	Global Positioning System (GPS) Architecture	19
Figure 2.4	ESP WIFI MODULE	22
Figure 2.5	At mega 328	31
Figure 2.6	Arduino Uno	31
Figure 2-7	GPS Module	31
Figure 2.8	GSM/GPRS module with SM5100B	33
Figure 2.9	GPS/GPRS/GSM SIM908 Module	35
Figure 2.10	Block Diagram of the project module connection	44
Figure 3.1	Flow Chart	48
Figure 3.2	Vehicle theft warning and tracking system architecture	49
Figure 3.3	Block diagram for vehicle anti-theft system	50
Figure 3.4	Power supply	51
Figure 3.5	Arduino Uno	52
Figure 3.6	GPS Neo 6m 0-001 Module	53

Figure 3.7	Relay 2-channel Module	54
Figure 3.8	Electromagnetic sensor device	56
Figure 3.9	ESP Wi-Fi Module	57
Figure 3.10	Blynk App	59
Figure 3.11	Arduino IDE Software	62
Figure 4.1	Coding for sensor	65
Figure 4.2	Coding for GPS Module	66
Figure 4.3	Coding for ESP 826 Wi-Fi Module	67
Figure 4.4	Blynk Development	68
Figure 4.5	Hardware Development	69
Figure 4.6	Working of Vehicle	70
Figure 4.7	Notification from Blynk	71
Figure 4.8	Time taken for receiving the message in open place	73
Figure 4.9	Time taken for receiving the message in obstacles place	74

LIST OF SYMBOL & ABBREVIATIONS

IoT	Internet of Things
GPS	Global Positioning System
GSM	Global System for Mobile
SMS	Short Message Service
PIC	Peripheral Interface Controller
TDMA	Time Division Multiple Access
CDMA	Code Division Multiple Access
SIM	Subscriber Identity Module
HSCSD	High Speed Circuit Switch Data
GPRS	General Packet Radio Service
EDGE	Enchased Data Global Evolution
UMTS	Universal Mobile Telecommunication System
SS	Switching Station
BSS	Base Switching Station
MS	Mobile Station
IMEI	International Mobile Equipment Identity
PSTN	Public Switching Telephone Network
BTS	Base Transceiver Station
BSC	Base Station Controller
MSC	Mobile Switching Centre
TTL	Transistor to Logic

VLR	Visitor Location Register
HLR	Home Location Register
AUC	Authentication Centre
EIR	Equipment Identity Register
PLMN	Public Land Mobile Network
SDH	Synchronous Digital Hierarchy
SONET	Synchronous Optical Networking
PC	Personal Computer
GNSS	Global Navigation Satellite System
RX	Receiver
TX	Transmitter
LED	Light Emitting Diode
QR	Quick Response
LCD	Liquid Crystal Display
IDE	Integrated Development Environment
GND	Ground
VCC	Voltage Supply
PIR	Passive Infrared
IR	Infrared
PCB	Printed Circuit Board
ARM	Advanced RISC Machine
AVR	Automatic Voltage Regulator
DSP	Digital Signalling Processing

LNA	Low Noise Amplifier
MC	Mobile Centre
USB	Universal Serial Bus
CPU	Central Processing Unit
RAM	Random Access Memory
ROM	Read only Memory
I/O	Input/ Output
AC	Alternating Current
DC	Direct Current
IC	Integrated Circuit

CHAPTER 1

INTRODUCTION

1.1 Introduction

"Development of car warning and tracking System with Blynk Application". The purpose of this project is to fulfil the demand of today's fastest growing vehicle fleet company which is to stay track on their fleets. It is a very helpful and versatile device and definitely will benefit the users. Not only by the vehicle fleet company, but anyone who prefer to stay on track on their important and valuable goods can utilize this. Information such as speed, time and location that is obtained from the GPS receiver will be the needed output from the system. These data will be then displayed on the user's smartphone screen. This shows that this method is very essential and also makes people life easier. General background of this project, the idea of this project, the objectives of carrying out this project, scope and the problem statement will be covered in this particular chapter.

1.2 Background

The vehicle tracking system contains a very important device which will be inserted inside the car. This is to ensure that the owner can able to track his/her car and identify the exact location where it is present[1]. Nowadays, Global Positioning System (GPS) is widely used by various vehicle tracking system in order to obtain a correct information about the vehicle position. Communication elements like GSM and satellite transmitter is combined together to convey the data more efficiently to the user. The information regarding a vehicle's location can be seen by the user via a software system or apps that can be installed in computer and smartphones.

Fleet operators generally make use of this vehicle tracking system for the management and safety of their fleet. It is also helpful for the operators in the sense of keeping an eye on the driving behaviour of the drivers. Parents of teenage drivers can monitor the movement of their children to ensure their safety. Individuals with cars, bus and lorries commonly depend on this tracking system to prevent the theft of their valuable vehicles which is increasing day by day these days. This system even lend a helping hand to the police to look for a lost vehicle by simply using the signal sent by the system[2] .It also might be a substitution for a standard car alarm. Due to the loss-risk of the vehicle decreases drastically, the insurance cost also reduces.

Most of the companies wish to track their valuable assets for insurance purposes and some other reasons. They now able to closely monitor the movements of their fleet and closely coordinates it on a map and also monitor the operating status with the assistance of this vehicle tracking system, they actually can plot real-time asset location with this service. This vehicle tracking service now can assist the sales professionals to locate some unfamiliar areas. They could get the driving directions and help to locate