UNIVERSITI TEKNIKAL MALAYSIA MELAKA

FACIAL RECOGNITION SECURITY SYSTEM FOR CAR USING TELEGRAM APPS

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

by

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Tajuk: **FACIAL RECOGNITION SECURITY SYSTEM FOR CAR USING TELEGRAM APPS**

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APPROVAL

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

Signature: …….

Supervisor : Pn. Nurliyana Binti Abd Mutalib

ABSTRAK

Laporan ini membentangkan Sistem Keselamatan Pengiktiraf Wajah untuk Kereta Menggunakan Aplikasi Telegram sebagai sistem keselamatan tambahan kepada sistem keselamatan yang ada di dalam kereta. Di samping itu, sistem ini dapat membantu mengurangkan kecurian kereta setiap tahun. Antara komponen utama yang digunakan dalam membangunkan projek ini adalah Raspberry Pi 2, Kamera Pi NoIR, modul LCD, penyesuai WiFi, pembesar suara, LED, dan suis butang. Tambahan pula, sistem menggunakan algoritma Eigenfaces sebagai sistem keselamatan pengesanan wajah dan membolehkannya membandingkan imej dengan gambar dalam pangkalan data yang telah disimpan. Untuk projek ini, pengguna akan dapat berkomunikasi dengan pi raspberry melalui aplikasi Telegram. Aplikasi ini digunakan untuk memuji sistem keselamatan pengenalan wajah apabila pengguna yang tidak dibenarkan dikesan. Ia akan membolehkan pengguna yang diberi kuasa mempunyai lebih banyak kawalan ke atas sistem keselamatan.

ABSTRACT

This report presents the Face Recognition Security System For Car Using Telegram Apps as an added security system to the security systems already on the car. Additionally, this system can help reduce car thefts of each year. Among the main components used in developing this project are Raspberry Pi 2, Pi NoIR Camera, LCD module, WiFi adapter, speaker, LED, and button switch. Furthermore, the system uses the Eigenfaces algorithm as a face detection security system and allows it to compare images with pictures in a database that has been stored. For this project, users will be able to communicate with raspberry pi through the Telegram app. This app is used to praise the face recognition security system when an unauthorized user is detected. It will enable authorized users to have more control over the security system.

DEDICATION

This thesis is dedicated to:

My beloved parent,

Mohd Ariffin Bin Hassan and Nor Shakimah Binti Ridzuwan,

My supervisor,

Pn. Nurliyana Binti Abd Mutalib,

And all of my friends,

Thank you for their encouragement and unconditionally support.

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Besides, I would like to thank to my fellow friends who always ready to help me when I needed. In addition, my appreciation to them for has assisted me and share a lot of good ideas that help to accomplish my project.

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USB	Universal Serial Bus
SD	Secure Digital
HDMI	High-Definition Multimedia Interface
LCD	Liquid Crystal Display
GUI	Graphical User Interface
SQL	Structured Query Language
AUX	Auxiliary
DLNA	Digital Living Network Alliance
I/O	Input/Output
CPU	Central Processing Unit
CSI	Camera Serial Interface
FLD	Fisher Linear Discriminant
GPIO	General Purpose Input Output
HD	High Definition I2C Inter-Integrated Circuit
LED	Light-Emitting Diode
NoIR	No Infrared
PCA	Principal Component Analysis

VTREC	Vehicle Theft Reduction Council of Malaysia Berhad

CHAPTER 1

INTRODUCTION

1.0 Introduction

In this chapter, will give a brief explanation about the project that been carried out. Moreover, this chapter also provide the user of some important contents such as the background of the project, problem statement, objectives, scope of work and thesis outline.

1.1 Background

The increasing rate of car sales from year to year is one of the reason automobile theft crime rates increasing every year. Thus, drastic action needs to be taken by the most car manufacturer to increase the car security system. In the globalists' era now, a system that microprocessor-based or computer chip electronic waked a lot to facilitate human duty every day. For example, the technology that often used in car security is voice identification. The system will obstruct car from launched without voice identification that is correct and will start when correct voice identification with an owner of the mentioned car

Thus, car security system is important aspects that need to be taken importantly in most car manufacturer. Apart from that, according to trend during car manufacturing has been concentrating more in creating a system microcontroller based totally or computer chip electronic. For instance that keyless car system which will obstructing car from started until key near car allocate specific region for central location.

In fact biometric introduction system has widely used nowadays. This system can further increase security level of a car. This system used for two purposes namely as introduction and authentication. So, unrecognized user cannot access the system. Hence, this will automatically help to decrease the crime rate in car theft.

1.2 Problem Statement

Most people today spend a lot of money on owning a car as transportation for work, study, and daily activities. Having a vehicle today makes our lives more comfortable. As a vehicle owner, we should always want to keep our vehicle in security from loss or theft. Some car owners have made a lot of money to keep their vehicles safe. With the rising levels of living nowadays, it is in line with the rise in crime rates, especially theft of cars. A vehicle owner's nightmare is when they return to the car park and know that their vehicle is no longer there. Often vehicles can be stolen from the hotel's car park, shopping complex or public car park. Even vehicles parked in front of the house were also stolen.

The issue of car safety is always become a priority among car owners. Technological advances can help to improve the vehicle safety and more advance methods introduced into the market. Vehicle safety systems today mostly need to lock or unlock the door and turn on the siren in case of aggression. Siren can only warn those who are near the vehicle during an emergency and this indicates that the existing security system

is sometimes ineffective. By improving the existing system, a sophisticated security alarm system is required. To increase the security level of a car, additional securities systems need to be added into a car. The camera is the one of the most suitable microcontroller with the additional module which needed for face identification security system.

Apart from that, for identifier security face system, there is an additional security functions. The owner use an application based to control the system. If there is unrecognized user, the system will be triggered. Once it triggered, owner will be informed through application notification. After that, the user can decide either to give an access to the unrecognized user to use the car or turn on the alarm warning.

1.3 Objectives

To overcome the problem stated above, some objectives are stated to achieve the purpose of the project. The objective of this project:

I. To study current system of facial recognition security system.
II. To develop facial recognition system with a telegram based system.
III. To optimize best performance of the facial recognition security system.

1.4 Scope of Work

This project consist of two parts which is hardware and software for the systems division, there is two important system will be studied comprehensively which, Telegram system, and face recognition security system so that all system stated will be functioning well.

Next, for the hardware part, system face recognition security will be paired with The Raspberry Pi NoIR camera as a module added to aim the recognition. Every module extension will be check wholly so that it installs and function properly.

Furthermore, to allow the microcontroller and the facial recognition to function properly, a programming coding is required and software will be uploaded in the microcontroller. Finally, the owner will be able to control the Telegram based system by giving permission to an unauthorized user. The owner of the car also can trigger the alarm of the car security system.

1.5 Thesis Outline

This report consists of five chapters. All these chapters discuss about the implementation of this project, which is about Facial Recognition Security System For Car Used Telegram Apps. Chapter 1 introduces the overview of this project that includes introduction, objective, problem statement, and work scope and thesis outline for this project.

Chapter 2 consists of the overview of existing project which related to the application of this project. The information about face recognition, type of microcontroller, and technology used will be discussed in details.

The methodology used to implement this project will be explained in Chapter 3. A block diagram will illustrate the whole function of the system the flowchart used as well as the operation of Facial Recognition Security System For Car Used Telegram Apps will be mention in this chapter.

The results obtained regarding to the performance of Facial Recognition Security System For Car Used Telegram Apps will be discussed. Also, there will be discussion on

the analysis based on the result as well as the overall project discussion and summarization of the system work.

Lastly, Chapter 5 concludes the overall progress from the beginning until the end of this project as well as recommendation for project enchantment in term of future work.

1.6 Conclusion

This chapter concludes the findings of the project. The development of Facial Recognition Security System For Car Used Telegram Apps is needed to create an awareness of vehicle theft problems that happened a lot in Malaysia.