UBIQUITOUS SECURITY CAMERA

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BORANG PENGESAHAN STATUS TESIS

JUDUL: UBIQUITOUS SECURITY CAMERA

SESI PENGAJIAN: SEM 3 2015/2016

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UBIQUITOUS SECURITY CAMERA

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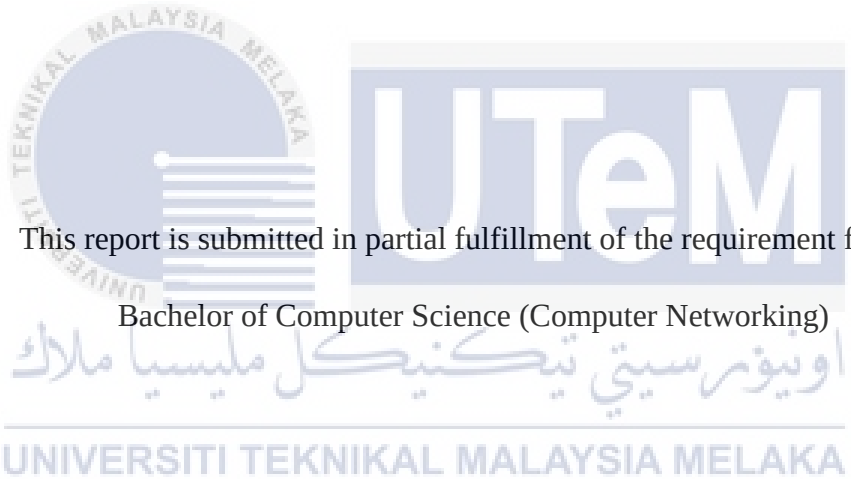

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Bachelor of Computer Science (Computer Networking)

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DECLARATION

I hereby declare that this project report entitled

UBIQUITOUS SECURITY CAMERA

is written by me and is my own effort and that no part has been plagiarized without citations.

STUDENT : _____ DATE: 23-8-16

(CHUA CHONG CHIN)

I hereby declare that I have read this project report and found this project report is sufficient in term of the scope and quality for the award of Bachelor of Computer Science (Computer Networking) With Honours.

SUPERVISOR : _____ DATE: 23-8-16

(DR.NORHARYATI BINTI HARUM)

DEDICATION

To all those who have supported, encouraged, challenged, and inspired me. And especially to my beloved parents, and friends for all their guidance, attention which has made it possible for me to make it up this point and as well as my supervisor who courage me and awareness to follow the possible route. Thank you.

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I would also like to thank my beloved parents who have been giving me support and motivation throughout my project. With their encouragement, I work hard and complete this project successfully.

At last I would like to thank all my batch mates for their constant support and guidance.

ABSTRACT

This project is to implement a product which is Ubiquitous Security Camera. This project using Pi NoIR camera which have been configured a motion detection sensor that can capture images, record videos, and allow you to visually check on your property whenever motion is detected. An alert message (Captured pictures and recorded videos) will send to owner through Telegram. Owner can access images and videos using Telegram application and can activate siren sound just reply the command. This can frighten the thief if the crime is suspected in home or office. All features stated above is the security part of this project, common security camera will not come with this extra features. Besides that, this Smart Security Camera will capture pictures and record videos when motion is detected, so it is easier to locate incident video, and reduce space to store the pictures and videos. Common security just records the 24/7 recording and really hard to view back the videos without this features.

ABSTRAK

Projek ini adalah untuk menghasilkan kamera keselamatan dengan menggunakan Raspberry Pi dan Telegram aplikasi. Project ini menggunakan Pi Noir kamera, ia telah dikonfigurasikan mengesan gerakan untuk menangkap gambar, video dan membolehkan anda tegok ulangan video yang telah ditangkap apabila mengesan gerakan. Amaran mesej (Gambar dan video telah ditangkap) akan hantar kepada pemilik melalui Telegram aplikasi. Pemilik boleh tegok gambar dan video yg telah ditangkap dan boleh mengaktifkan system penggera dengan membalas mesej. Dengan ini, ia boleh menakutkan pencuri jika mengesyaki pemborakan berlaku di rumah ataupun di pejabat. Semua ciri-ciri yang telah disenaraikan adalah bahagian keselamatan projek ini iaitu, kebanyakan kamera keselamatan tidak mempunyai fungsi seperti projek ini. Di samping itu, projek kamera keselamatan ini hanya akan menangkap gambar dan video setelah mengesan gerakan. Dengan ini, ia telah meringgankan ruang simpanan untuk menyimpan gambar dan video. Kebiasaan kamera keselamatan hanya akan menangkap 24/7 iaitu sepanjang hari dan ia susah tegok ulangan rakaman video yang telah ditangkap.

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CHAPTER 1

1. INTRODUCTION

1.1 Introduction

Nowadays most of the CCTV fields focus on high-definition to record video which cost very high. Besides that, CCTV that comes with notification through SMS or email, the cost is extremely high which unreliable that for home uses. Due to these factors, this project will implement CCTV come with notification services, low cost and easy to manage video and pictures.

This CCTV system consists of Raspberry Pi 2, Pi NoIR camera, speaker, router (network connection) and computer (database to store pictures and videos). This security camera will capture pictures and record videos when detecting motion in coverage area and sending the notification to user through Telegram apps. Users receive pictures and videos when the phone is online or connected to internet. If a suspicious activity detected, user can send a command to play sound to frighten thief.

1.2 Problem Statement (PS)

With the research of problem, there have some problem statement that can related towards the objective. Table 1.1 shows the problem of current CCTV system.

Table 1.1: Summary of Problem Statements

PS	Problem Statement
PS_1	Current notification for security camera only a short message to owner only.
PS_2	Installation of security camera with notification features is more expensive.
PS_3	Current CCTV detect motion using motion sensor, which used both camera and sensor.

1.3 Project Question (PQ)

In this project, there is found project question that need to identify. Besides that, this project improve the CCTV system and Table 1.2 shows the project question.

Table 1.2: Summary of Project Question

PS	PQ	Project Question
PS_1	PQ_1	How to send notification when CCTV detect motion effectively?
PS_2	PQ_2	How to build a low cost of the security camera with notifications features?
PS_3	PQ_3	How to build a motion sensor CCTV just using camera?

1.4 Project Objective (PO)

The achievement is with Problem Statements and Project Question of the project, Project Objective can be identify as stated in Table 1.3.

Table 1.3: Summary of Project Objectives

PS	PQ	PO	Project Objective
PS_1	PQ_1	PO_1	To study the possible notification method that can for current security system
PS_2	PQ_2	PO_2	To develop a security camera detect motion and has notification features, low cost and working properly.
PS_3	PQ_3	PO_3	To test and verify the development of security camera is working properly.

There are three project objectives that can be identifying from this project which are listed as below:

PO_1: To study the possible notification method that can for current security system.

This project purposely is to study the function of Raspberry Pi with Pi NoIR camera in developing a security camera.

PO_2: To develop a security camera detect motion and has notification features, low cost and working properly.

In this project, we developed a motion detection security camera with sending notification function to Telegram using Raspberry Pi and Pi NoIR camera which in low cost.

PO_3: To test and verify the development of security camera is working properly.

This project will carry out the testing to ensure the function working properly when the security camera is setup. With this test, this security camera can be sell at market which can become smart and low cost security camera.

1.5 Project Scope

In order to achieve the objectives of this project, there have several scope have been outlined. The core element is using Raspberry Pi 2 because it is cheap. Moreover, Micro SD card to install the operating system. The operating platform of this project is using Raspbian Jessie Version February 2016 (Latest Version) with Kernel version 4.1. Telegram will implement on this project which using BotFather which to manage a notification to user. Telegram will install in Android smartphone and need internet connect in order to receive the notification. Speaker also needed for this project in order to play the siren, speaker need come with headphone socket. The local area network (LAN) need to set up in order that the records of CCTV will save to Mounting Windows shares file.

1.6 Project Contribution (PC)

This project is get some benefit to infer the objective. Table 1.4 is show the expectation of this project.

Table 1.4: Summary of Project Contribution

PS	PQ	PO	PC	Project Contribution
PS_1	PQ_1	PO_1	PC_1	Proposed suitable notification for CCTV application.
PS_2	PQ_2	PO_2	PC_2	Proposed suitable programming language for CCTV application.
PS_3	PS_3	PO_3	PC_3	Proposed suitable testing that carry in this project.

1.7 Thesis Organization

Chapter 1: Introduction

This chapter is the initial stage of project which discuss about the project summary and project background. Next, this chapter will including the Problem Statement (PS), Project Question (PQ), Project Objective (PO), Project Scope, Project Contribution, Thesis Organization and Conclusion of the project.

Chapter 2: Literature Review

This chapter discuss about the review of previous project which can implement in this project. This chapter will discuss the pros and cons of the project and produces the solution or further of the project.

Chapter 3: Project Methodology

This chapter discuss about method that use in this project which involve all the stages of the project and describe all the progress activity of the project.

Chapter 4: Analysis and Design

This chapter discuss about analysis and investigate the current product scenario which will describe the requirement, design and management of database of the product.

Chapter 5: Implementation

This chapter discuss about the configuration, installation and scripting of the project.

Chapter 6: Testing

This chapter discuss about all the testing that carry out in this project in order to achieve the Project Objective (PO). Besides that, this chapter will describe how to test the product and test result.

Chapter 7: Project Conclusion

This chapter discuss about the outcome and contribution of the project. Moreover, this chapter will state the future works which can improve this product.

1.8 Conclusion

In this chapter is describe the initial of the project which carry out the background of the project, aim of the project, problems of the project before starting the implement this project. After this chapter which can proceed the next stage which review the previous project.

CHAPTER 2

2. LITERATURE REVIEW

2.1 Introduction

This chapter will discuss about literature review of the related published information of CCTV using Raspberry Pi. Literature review of the project is to collecting related information or project, analysis current problem, critical review, solving or proposing the solution and make a conclusion. This chapter will include the discussion, planning, analysis all the resources and summary of previous project.

2.2 Related Topic

2.2.1 Keywords

Raspberry Pi –

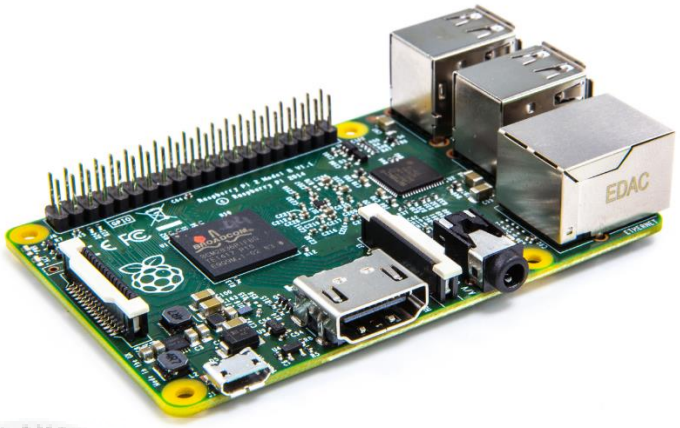

Figure 2.1: Raspberry Pi 2 Model B

The Raspberry Pi 2 is a low cost, credit-card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse. It is a capable little device that enables people of all ages to explore computing, and to learn how to program in languages like Scratch and Python. It's capable of doing everything that expect a desktop computer to do, from browsing the internet and playing high-definition video, to making spreadsheets, word-processing, and playing games. Next, Raspberry Pi has the ability to interact with the outside world, and has been used in a wide array of digital maker projects, from music machines and parent detectors to weather stations and tweeting birdhouses with infra-red cameras. We want to see the Raspberry Pi being used by kids all over the world to learn to program and understand how computers work. We have chosen this board for its easy to understand and powerful HD camera handling, good performance to power consumption ratio affordable price and wide community.