

UNIVERSITI TEKNOLOGI MARA

**IoT based Home Surveillance with
Smart Doorbell**

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ABSTRACT

The latest leap in the digital world is the Internet of Things. The Internet of Things (IoT) is the network of inter-connected objects able to collect and exchange data over the World Wide Web. IoT has started superseding the conventional ways of doing basic to complex tasks. It aims at taking the existing passive data to a whole new level of an active network. There are many kinds of doorbell system. If we look at the traditional approach, the visitor used to ring the doorbell and waits for a certain time so that the owner would open the door. If there is no one at home, the visitor uses to leave without any clue whether the owner is at home or not. As technology has played a vital role in development, it has changed the lifestyle of the people in society. Doorbell systems have evolved from historical doorbell to modern touchpad and it has become more reliable and efficient with the use of sensors and IoT. This project aims to develop a doorbell that can trigger a photo capture and send an alert notification to the user's mobile phone. This project's objective is to identify the user requirement, design, and develop the IoT-based Home Surveillance with Smart Doorbell. This project will be produced for an android platform and the target user for this project is the house owner that uses a mobile application for home security. Mobile Application Development Lifecycle (MADLC) and IoT Design Methodology is the approach that has been used to develop this project. This project will be developed using Arduino Uno, Wi-Fi Module, and Camera Module. This project is a subset of the Smart Home concept. The project will be developed until the testing phase only. The limitation for this project is this project does not have a face recognition system, does not have one-way or two-way audio and video communication between the visitor and the homeowner, and this project only works in the Android operating system. This system will be a major boost for homeowners as they will have the ability to view the photo and video feeds that happen in front of their house.

Keywords: Internet of Things (IoT), Mobile Application Development Lifecycle, IoT Design Methodology, Arduino Uno, Smart Home

TABLE OF CONTENTS

ACKNOWLEDGMENT	i
ABSTRACT	ii
TABLE OF CONTENTS	iii
LIST OF TABLES	vi
LIST OF FIGURES	vii
CHAPTER ONE: INTRODUCTION	1
1.1 Project Background	1
1.2 Problem Statement	2
1.3 Project Aim	3
1.3 Project Objective	4
1.5 Project Scope and Limitations	4
1.6 Project Significance	6
1.7 Chapter Summary	6
CHAPTER TWO: LITERATURE REVIEW	7
2.1 Doorbell System	7
2.1.1 Mechanical Doorbell System	7
2.1.2 Wired Doorbell System	8
2.1.3 Wireless Doorbell System	8
2.2 Video Surveillance Technology	8
2.2.1 Functions of Video Surveillance	9
2.3 Home Automation Security Technology	9
2.3.1 Bluetooth-based Home Automation Security System	10
2.3.2 Mobile-based Home Automation Security System	11
2.3.3 GPRS-based Home Automation Security System	12
2.3.4 Internet-based Home Automation Security System	12
2.4 Smart Doorbell	14
2.4.1 Technologies of Smart Doorbell	14
2.4.2 Software Tools	17
2.5 Mobile Application	17

CHAPTER ONE: INTRODUCTION

This chapter talks about the outline of this project which is project background, problem statements, objectives, scope, and project significant

1.1 Project Background

Internet of things (IoT) has become one of the rising factors of modern technology. A physical device can be controlled by a computer or software via the internet. Hence, the device also can be control from anywhere and anytime (Akter, S., Sima, R. A., Ullah, M. S., & Hossain, S. A.,2018). The introduction and development of smart devices have become a major influenced on the idea of connecting everyday objects across established networks (Khanaa, V.,2018). The rise of IoT also sheds new light on the home automation concept. Home automation is defined as controlling household appliances and other features through local networking or by using a remote control. Due to its various benefits, home automation is becoming common, as it contains multiple, connected devices such as home entertainment consoles, security systems, lighting, access control systems, and monitoring. A smart home automation system is built into smart homes to provide homeowners with comfort, convenience, and security (Tiwari, S., & Gedam, R.,2016).

To satisfy the rising demand for a high standard of living, home security using the new system likes the Internet of Things is becoming more crucial. The issue that emerges with the older system used in every household can be considered too simple. The current market system only provides simple switching, remote controlling which is less stable and secure. Home security that uses the Internet of Things can be assumed as a high-end product. Initially, the idea of home security is consists of a complex, high-cost product, and incompatibility with existing devices (Soumya, S., Chavali, M., Gupta, S., & Rao, N.,2017). For example, the price of Ring Video Doorbell is \$199 which is quite expensive. Besides, the latest products or systems available concentrate more on comfort rather than protection and security (Azlan Abu, M., Fatimah Nordin, S., Zubir Suboh, M., Syazwan Md Yid, M., & Faiz Ramli, A.,2018). Due to this, homeowners are vulnerable to