

Universiti Teknologi MARA

**Resilience Intruder Alarm System using IoT
Approach**

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ABSTRACT

Criminal activities like house breaking these days are increasing in Malaysia which needs to be concerned about. One way to avoid intruders from breaking our house is by installing an alarm system as a kind of deterrent. This project focuses on helping homeowners to detect intruders from infiltrating their house area using Internet of Things (IoT) approach. Internet of Things (IoT) has been applied to various applications due to its low cost and easy to build as well as improved efficiency. The scope of this project is mainly to design an intruder alarm system that can notify homeowners via smartphone through email and SMS using GSM module as well as send data to the database when motion detected by unknown intruders within a coverage area. In this project, a microcomputer named raspberry pi model 3B+ and double pyroelectric infrared (PIR) which act as sensors were used to sense motion and detect the presence of human being or intruder. In this contact, a buzzer which attached to the raspberry pi was triggered whenever motion was notified as well as captured photo from the attached webcam that was installed for evidence. This alarm was powered by the electricity (AC) but in order to make it resilience or counter difficulties such as power failure, an additional portable battery (Powerbank Veger VP-1056) was mounted as a backup system to make the alarm remain active during power blackout. Certain constraints about the developed system and improvement of resilient intruder alarm system using IoT as compared to the conventional alarm system were highlighted. Also mentioned in this project is to add features on the webcam using Deep Learning and OpenCV that can identify and differentiate the types of detected intruders either human beings, animals or other moving objects. Ideally, such matters can be proposed for future development of this project.

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CHAPTER 1

INTRODUCTION

In this chapter, a brief explanation regarding project background and other related component for detailing proposed project were made and to be explained.

1.1 Background of the Study

According to Malaysian Crime Prevention Foundation (MCPF) senior vice-chairman Tan Sri Lee Lam Thye who has said that due to the economic and Covid-19 crisis in Malaysia, criminal activities will increase especially with the risen of unemployment (Tang, 2020). Ashley Tang (2020) in theStar news mentioned that more criminal activities may occur, especially now that interstate movement is permitted and police barriers have been lifted as the country returns to normalcy. Additionally, criminal activities too are generally more interested in house breaking as they believed there are many valuables in such houses. Malaysians must not take their safety precaution for granted. With the lack of security in most houses, crime prevention awareness must be implemented among the society. Not just some security, conventional security alarm also must be avoided due to inefficient and has several weaknesses that needs to be pointed out. One of them is impermanent.

One way to detect from getting infiltrated by unknown intruders is by using an internet of things (IoT) as an intruder alarm system using IoT approach. In this era of technology where technology is advancing at an unprecedented rate, Internet of Things (IoT) has been applied to various applications due to its low cost and easy to build. Some related projects have been developed elsewhere using certain approaches. For example, one of the projects named Smart Motion Detection System using Raspberry Pi (Margapuri, 2020) which heavily relied on the internet is vulnerable to power outage and no backup power system attached. If a house loses power, the security alarm will also be turned off