DECLARATION

I hereby, declared this report entitled "Development of Automatic Body Cleaning System for Pet Via Internet of Things (IoT)." is the results of my own research except as cited in references.

Signature	:	……………………………………
Author's Name	:	<u>MUHAMMAD FIKRI BIN RAMAT</u>
Date	:	……………………………………

APPROVAL

This report is submitted to the Faculty of Engineering Technology of UTeM as a partial fulfillment of the requirements for the degree of Bachelor of Electronic Engineering Technology (Telecommunications) (Hons.). The member of the supervisory as follow:

………………………………..

(Project Supervisor)

Ahmad Fauzan Bin Kadmin

ABSTRAK

Pembangunan Sistem Pembersihan Badan Automatik untuk Haiwan Peliharaan dengan penggunaan Internet of Things (IoT) mempunyai fungsi untuk membersihkan badan haiwan peliharaan secara automatik. Jika dibandingkan dengan kaedah biasa bagi membersihkan badan haiwan peliharaan, projek ini adalah untuk memudahkan kerja dan menjimatkan tenaga pemilik haiwan peliharaan. Projek ini juga bermatlamat untuk membangunkan Sistem Pembersihan Badan Automatik untuk Haiwan Peliharaan dengan penggunaan Internet of Things (IoT) visualisasi data. Dengan hanya menggunakan Internet of Things (IoT), pengguna boleh memantau dan memerhati haiwan peliharaan mereka di mana mana lokasi dengan hanya menggunakan telefon atau melalui laman web. Projek ini juga adalah bertujuan untuk meningkatkan pengetahuan mengenai Nodemcu ESP8266 dan manfaat yang dapat dicapai melalui penggunaan Internet of Things (IoT). Akhir sekali, tujuan utama projek in adalah untuk membantu pemilik haiwan peliharaan mengurangkan kos dan masa untuk haiwan peliharaan milik mereka.

ABSTRACT

The development of Automatic Body Cleaning System for Pet via Internet of Things (IoT) has the functionalities to cleaning pet body automatically. Compared to the usual method of cleaning pet body, this project is to simplifies pet owners works and energy. This project is to develop an automatic body cleaning system for pet with the application of Internet of Things (IoT) data visualization. By using Internet of Things (IoT), user can monitor and observe their pet in any locations by just using a phone or in a website. This project also to increase the knowledge about Nodemcu ESP8266 and the advantageous of the internet of things usage. Lastly, the key purpose of this project is to support pet owners by reducing cost and time for their belonging pets.

DEDICATION

To my beloved parents

Ramat Bin Haji Mat and Madihah Binti Wan Hassan

To supervisor

Encik Ahmad Fauzan Bin Kadmin

To all friends that help me a lot towards completing this project

ACKNOWLEDGEMENT

In the name of Allah, the Most Beneficent and Most Merciful. Firstly, all praises to Allah, the Almighty God that has given me the strength and spirit to complete this project. I would like to thank to my parents and friends for supporting me from when I started until finished this Final Year Project. Special thank also to my supervisor Encik Ahmad fauzan Bin Kadmin for guiding, support and put the trust on me while conducting this project. Lastly, not to forget to thank all my friends that help me a lot in completing this project.

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LIST OF ABBREVIATIONS, SYMBOLS AND NOMENCLATURE

DC   -   Direct Current

IoT   -   Internet of Things

OS   -   Operating System

IDE   -   Integrated Development Environment

DC   -   Direct Current

Max   -   Maximum

Min   -   Minimum

C   -   Celsius

V   -   Volts

GND   -   Ground

I/O   -   Input / Output

mA   -   Mill ampere

USB   -   Universal Serial Bus

V   -   Voltage

IOT   -   Internet of Things

PC   -   Personal Computer

INT   -   integers

IEEE   -   Institute of Electrical and Electronics Engineer

FYP   -   Final Year Project

CHAPTER 1

INTRODUCTION

1.0   Introduction

This chapter is explanation and declaration of introduction about this project. It will focus on the project background, problem statement, objective within this project, project scope, project methodology and thesis structure as the summary of this project. This project is about automatic body cleaning system for pet. The project will connect to Internet of Things platform to monitoring data.

1.1   Project Background

The development of Automatic Body Cleaning System for Pet via Internet of Things (IoT) is to give benefits for pet owners. This product introducing a more convenient way to cleaning their pets. Besides that, this product is attempting to create a friendly environment system for user by reducing their cost and time needed for their belongings pet. After that, one of the key purpose of this project is to pet cleaning their bodies by reducing amount of assistance from their owners. Pets, such as cat, carry germs and parasites that are easily passed on to human through handling and play. These germs and parasites live in infected pets and this is the reasons why pet owners should take care of their own pet hygiene and this product is developed to simplify owners work on taking care of their pet cleanliness. The pet that choose as the test

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subject is significantly to cat because it is more suitable to be compared with others animal.

1.2   Problem Statement

The purpose of this project is to overcome the normal technique for cleaning pets. Usually, pet owners clean their pets physically by using hands and some of them are busy with works and doesn't have time to hygienic their own pets. Other than that, for example is the pet shop owner, it may be difficult for them to be able care of the pets that in the pet shops. This circumstance would be wasting time because the roughness to clean and maintain the pet cleanliness. It is important things to keep their pet in hygienic condition because if not it would have affected on pet healthcare. Hence, by inventing Automatic Body Cleaning System for Pet is to counter completely these difficulties.

1.3   Objective

The key purpose that want to be accomplish after the accomplishment of this project is to:

    I.   To develop an automatic body cleaning system for pet with IoT data visualization

    II.   To analyze the system and sample performance such as drying timer, pet health and cost

    III.   To reducing time and cost for cleaning pets

1.4   Project Scope

The scope of this project is to study and develop an Automatic "Body Cleaning System for Pet via Internet of Things" by using the application of microcontroller and internet of things. The key purpose of this project is to support pet owners by reducing cost and time for their belonging pets. The "pet" type that been choose as test subject for this project is "cat" and thus, this report is made to ensure that this project is heading in right path to achieve its objectives. To develop this project the application of microcontroller system is used. It is because microcontroller system is a system that can be used to control this application. The type of microcontroller that use within this project is Nodemcu ESP8266.

Figure 1. 1 Nodemcu ESP8266

1.5   Project Methodology

In methodology shows the focused method and process used to develop and analyses that have within the project. Project methodology is a part that displaying the project flow and in decided way to complete a project. Besides it also includes the core challenge and difficulties that need to be tackled and explain about the expected outcome after finishing this project. Through methodology the operation to completing this project can be as guideline to the project outcome by showing the project work process. In this project Nodemcu ESP8266 is used as the main microcontroller for the project and it is an open source to Internet of Things platform.

Figure 1. 2 Internet of Things platform

1.6   Thesis structure

Chapter 1

The first chapter is about to provides an introduction about this project. It will be explaining the planning and objective of this project briefly from start to end of the project process.

Chapter 2

This chapter is about literature review of the Automatic body cleaning system for pet via Iot. The clarifications on the method and the procedure of software and hardware development is discussed in this chapter. Research of journal and comparing the exists product within the similarities of handled project would be debated.

Chapter 3

This chapter will focus on the methodology and process used to develop and analyzing the project. System, plans, devices, procedure, equipment utilization and programming are a major factor to a virtuous methodology process. The main point of this chapter is to develop an automatic body cleaning system for pet via IoT. This methodology must be all around actualized to create outcome result of the system.

Chapter 4

This chapter discusses about the predicted outcome of the result and it contain explanation about actual design that is conducted to achieve the expected product. In this chapter result and discussion about experimental procedures and challenges within to complete this project will be discuss.

Chapter 5

This chapter is about conclusion and recommendation. In this part is the summary and analyzing part is will be done. The conclusion is referring to the designing and integration between hardware and software. Lastly the recommendation for the future developments of the project that can be add in further improvement are included in this chapter.

CHAPTER 2

LITERATURE REVIEW

2.0   Introduction

Numerous of people keep cats for companionship. For a family, having a cat in their house will provide a certain amount of enjoyment and entertainment value for children. However, most cats carry germs and parasites that are easily passed on to human through handling and play. Ringworm, lyme disease and food poisoning are just some of the example of the conditions that animals may spread. These germs and parasites live in infected pets, and are spread through contact with the animal's faces and this is the reasons why pet owners should take care of their own pet hygiene. Cats are indeed independent by nature, but they're not able to take care of themselves. Before adopting, make sure that owner lifestyle can make room for a cat. A very busy people may find it difficult to find the time for a cat that needs a lot of grooming and attention. To counter this problem, an automatic body cleaning system for pet via IoT is capable to solve this problem.

2.1   Cat Healthcare

Helping your cat maintain his coat is essential for certain reasons. Grooming time will enable you to maintain a close bond with your cat and will also give you a chance to check his body for health problems. Some cats, especially those selectively bred for their long, soft hair, such as Persians is having difficulty to keeping their coat clean and tangle-free on their own. When you groom your cat, you will help reduce the amount of hair he swallows while grooming himself. This hair is usually coughed up as fur balls. Some fur balls, however, pass through the stomach and get lodged in the intestine, causing major problems. Cats become less efficient at grooming themselves as they get older, so adult cats benefit greatly from a helping hand.

2.2   Types of Breeds

Cats are mostly can be categorize in two popular breeds that is Shorthairs and Longhairs Breed. Most cats have short hair, whether they are big or small, wild or local. A hunting cat is more efficient in a short coat because it can glide free through solid terrain and move freely for a quick pounce in a tight corner. While longhair in domestic cats ascended as a natural genetic mutation, most likely in response to cold climates. Where this advantageous gene was passed on among cats living in isolated areas, such as mountain regions.

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2.2.1   Asian Tabby Cat

The example for Shorthairs breed is first Tabby, this type of cat is mostly found in Asian countries. The variety of stripes, rings and spots occur a wide range of choice of its colors. The most usual seen in this breed is ticked tabby, in which each of this cat has contrasting bands of color. Asian Tabby has the graceful, muscular lines and extrovert personality and this breed makes a lovely family pet and became popular nowadays.

Figure 2. 1 The Asian Tabby Cat

2.2.2   British shorthair Cat

Another example of Shorthairs breed is British shorthair, it is another popular breed type. British shorthair has large, powerful body and it also have short, dense black coat with no any markings except black. It also has massive, round head, broad cheeks, and large, open eyes are characteristic features of the breed.

Figure 2. 2 The British Shorthair Cat

2.2.3 British Longhair Cat

British longhair also known as the Lowlander in the States and Britain. This breed has identical body shape, sturdy build, massive head, and round face with the British shorthair and both come in the same range of colors. Not all pedigree cat registries regard the British Longhair as a separate breed. Regardless of its official status, this cat makes a popular choice pet, since it has a calm, easygoing, people loving character. The long coat needs moderate grooming to keep it tangle-free

Figure 2. 3 The British Longhair Cat

2.3 Grooming and Hygiene

Helping cat maintain his coat is essential for several reasons. Grooming sessions will enable to maintain a close relationship with cat and give chance to check his health problems. Some of cats, especially for those selectively bred for their long, soft hair, such as Persians having difficulties to keep their coat clean and tangle free on their own. While grooming cat, owners will help reducing the amount of hair that cat swallows while their grooming by himself. This hair is usually coughed up as fur balls. Some fur balls and it will pass through the stomach and get lodged in the intestine, causing serious problems. Cats become less efficient at grooming themselves as they get older, so elderly cats benefit greatly from a helping hand.

2.3.1 Time and planning

Outdoor cats sometimes give themselves a dirty condition when playing This is the responsibilities for their owners to bath their cats. When bathing your cat, long time is needed to bath the cats. Shampoo need to be applies and must spray the cats with waters. However, some of cats is not easily to bath because they extremely dislike to bath and this would lead the

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