UNIVERSITI TEKNIKAL MALAYSIA MELAKA

DEVELOPMENT OF AUTOMATIC MEAL DISPENSER FOR PET DIETARY VIA INTERNET OF THINGS (IOT)

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

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I hereby, declared this report entitled "Development of Automatic Meal Dispenser for Pet Dietary via Internet of Things (IoT)" is the results of my own research except as cited in references.

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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

Pengawal mikro merupakan cip yang berteknologi tinggi yang mampu menyimpan dan melaksanakan sesuatu aturcara program. Projek ini dibina adalah untuk mengawal makanan binatang peliharaan tiga kali sehari secara automatic menggunakan pengawal NODEMCU. Ia digunakan untuk mengawal bukaan pada alat pemakanan secara automatik. Tempoh masa untuk bukaan telah ditetapkan. Tujuan projek ini adalah ntuk memastikan tiada makanan yang melimpah keluar dari mangkuk makanan, alat pengesan tekanan diletakkan dibawah mangkuk makanan. Ia akan mengesan berat makan yang dituangkn ke dalam mangkuk makanan seperti yang telah di programkan di dalam microcontroller. 'Automated Pet Feeder' akan menganalysiskan sukatan makanan yang dimakan oleh binatang peliharaan. Bagi merealisasikan projek ini, kajian latar belakang yang luas telah dilakukan pada sukatan makanan kucing mengikut jenis peringkat kucing, NOCEMCU dan juga Internet of Things(IoT). Metodologi asas dan penting yang telah digunakan dalam projek ini adalah kajian literatur, pembangunan sistem, ujian lapangan dan membina perisian. Projek ini boleh dilaksanakan di rumah dan veterinar.

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ABSTRACT

Microcontroller is a high-tech chips capable of storing and implementing program programs. The project was built to control the pet food three times a day automatically using NODEMCU guards. It is used to control the openings on the feeding tool automatically. Time period for openings has been set. The purpose of this project is to ensure that no food is abundant out of the food bowl, the pressure detector is placed below the food bowl. It will detect the weight of the feed that is taken into the bowl as it has been programmed in the microcontroller. 'Automated Pet Feeder' will analyze the food measure consumed by pets. In order to realize this project, extensive background studies have been conducted on cat food scales according to the cation type, NOCEMCU and Internet of Things (IoT). The basic and important methodology used in this project is literature review, system development, field testing and software development. This project can be implemented at home and veterinary.

DEDICATION

This thesis is dedicated to my husband, who taught me that the best kind of knowledge to have is that which is learned for its own sake. It is also dedicated to my mother, who taught me that even the largest task can be accomplished if it is done one step at a time. They also helped me financially and supported throughout finishing this project report.

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LIST OF ABBREVIATIONS, SYMBOLS AND NOMENCLATURE

IoT	-	Internet of Things
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 Engineers
FYP	-	Final Year Project

CHAPTER 1
INTRODUCTION

This chapter covers the introduction of the project, background study, the problem statement, and the project objective, the scope of work, the project significance and the summary of this project.

1.1   Background

Keeping pets is a hobby for everybody regardless of age and gender. In addition, hobbies are considered to meet the needs of people to care for animals such as birds, snakes, rabbits and so forth. However, for some pet owners, they produce a method in which their pet is set as an additional income. There is a center for keeping pets in our country contributing to a new dimension in animal care. Do not know the age and the race Animal lovers are ready to gamble the soul and money against their interests. Animal features are also closely related to humans, animals also eat and drink and undergo reproductive processes. These animal features should be considered to meet the needs and needs of their lives.

Typically, people prefer to keep cats as pets pet pets they are also considered to be aggressive but bloated hot mammals. In general, cats love to eat fish or raw meat regardless or cook. Now, there are many cat foods available in the market like Friskies and so on. Fast food supply is very convenient and saves time for cat lovers.

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In addition, fast food life is longer than fresh fish or meat. Successful careers carrying pet cats often forget to feed. This cat causes us to be hungry and thirsty in the absence of guards. For these reasons, there is a concept idea to help pet lovers, especially cat dietary aspects.

Figure 1.1: Type of Food Cat

1.2   Problem Statement

The problem statement of this project is to help pet owners feed their animals on time although they are not at home and have no time to care for their pets. Any pet needs to be kept and the owner needs to be there to take care of them. Some pets cannot control their diet and will eat while there is food for them. Other pets will only eat certain types of food. In other words, the owner cannot leave his own pet to keep their pets healthy at all times. Therefore, to solve problems that can automatically feed animals without the necessary owners to keep the pets healthy. Pet owners around the world are aware of that having a pet means having extra commitment to provide the best care and support to them. (Dog Boarding Malaysia, 2015)

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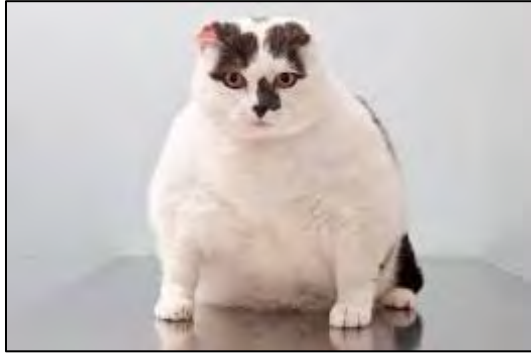
Figure 1.2: The Example of Obesity Cat

1.3   Objective

There are few purposes need to be achieve from the completion of this project. The main purpose of this project is:

I.   To develop an Internet of Things (IoT) automatic meal dispenser system for cat dietary.

II.   To analyze system performance accuracy for cat health such pet meal consumption and pet dietary food.

1.4   Scope

The scope of works in this project is to develop pet feeder by NodeMCU and Internet of Things (IoT). The user will just use Database to depressed predetermined amount of food at one time. In order to implement this design, both software and hardware will be use. In this project focuses on software focus on the networking connected to the WiFi by using NodeMCU. The data will save in the web server.

The resulting animal feeding system requires NodeMCU and the Internet of Things (IoT) to communicate with each other to perform the tasks required by the system. Good programming will allow modules to drop food and store information into Web servers.

The function of the animal nutrition system will be verified by testing different pet with the cooperation of a neighboring pet. System weaknesses may also be confirmed at that time and improvements will be made if possible.

As the project focuses on the performance of NodeMCU and the Internet of Things (IoT), the hardware endurance itself will not be judged as programming.

1.5   Project Methodology

This project will provide the most benefits to consumers in various industries, especially to food and nutrient companies. Food and nutrient companies can develop and implement this project to deliver better product performance and facilitate consumers. This project is easy to implement as well as low cost. Living in this great time, most people spend most of their time out of their homes to earn their own living. Pressure pressure will make one need friends like pets needed to reduce some of the daily stresses. It's ironic that, while a pet can provide what the owner needs, the owner himself can not give them basic necessities like food for being too busy with everyday life. The animal nutrition system will be able to help both pets and their owners happy. With the possibility that the same pet food system is unusual in Malaysia, this project will provide awareness to pet owners about their feasibility and benefits that may be available in the future.

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1.6 Thesis Structure

This thesis represents by five chapters. The following is the outline for this project in order to understand the whole report.

Chapter 1 of the thesis will explain briefly about the project background, objective of the project which needs to be achieved, problem statement of the project, scope of works regarding the project and methodology of the project.

Chapter 2 describes about literature review involved gather information of the project in order to complete the whole project. This study is focused especially on microcontroller that been used and others component that important for this project.

Chapter 3 explains about the project methodology where how the project is implemented. The approach for meeting the goals and objectives and project life cycle phase is described in this chapter, along with the tasks needed to complete it.

Chapter 4 describes the project finding which includes the simulation design. This chapter also discusses and analyze about the project and operation of the software such as the programmed for the microcontroller.

Chapter 5 will be the conclusion and suggestion to the project in future undertakings.

1.5 Summary

In short, the animal nutrition system uses NodeMCU and the Internet of Things (IoT) together with some components that will help the system to do better. The purpose of this project is to eliminate the problems faced by all pet owners in terms of feeding their pet while they are busy with everyday life such as working or traveling

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CHAPTER 2
LITERATURE REVIEW

Automated pet feeder is one of the new technologies that can help pet owner to manage their pet dietary well. So, in terms of made an automatic pet feeder, some research about the characteristics and some information of the equipment and materials being used in the project are discussed in this chapter. This chapter explains literature review based on current and exist technologies and information has been done in order to create a specific research about this project. Research hypothesis is being described clearly. From literature review, there will be an analysis regarding the advantages and disadvantages for each phase of this project. The research topics that had been discussed in this chapter are about basic dietary application such as equipment, software and so on.

2.1   Detail Information of Pet (Type and Characteristic)

2.1.1 Persian Cat

The Persian feline is a since quite a while ago haired type of feline described by the head is round with substantial, round eyes and short gag. It likewise outrageous looking breed. The body is short, yet thick with thick legs and a short, thick neck. The tail is short and the ears are little. The Persian feline now and again called as Longhair or Persian Longhair. The Persian is the most well known pedigreed feline in North America. He is a high support and he has some medical problems, however for some his looks and identity. The Persian is an antiquated type of feline and, as with other

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old breeds, her history is somewhat blurred. Longhaired felines were in Italy in the 1500s. These felines were transported in from Asia. In the seventeenth century, Pietro Della Valle conveyed a feline from Persia to Italy to add to the reproducing program. This feline may well have been a feline referred to in Persia as the Sand Cat, a feline who lived in the abandon. This Sand Cat had a wooly coat, much like a steel cleanser cushion, to shield her from the earth and allow her to live in the sand.

Figure 2.1: The Persian Cat

2.1.2 Asian cat

The term 'Asian' is utilized for felines of Burmese shape and coat surface, yet with non-Burmese coat shading, example or length. The Asian Group of felines started in Britain from the 1980s onwards, despite the fact that they are known as 'Malayans' in some different nations, and incorporates Asian Self's, Asian Smokes, and Asian Tabbies. This is a feline breed like the Burmese yet in a scope of various coat hues and examples. Since quite a while ago haired Asians of all assortments are called Tiffanies. The presence of this feline is a medium-sized feline with a solid and conservative body which is without of fat. Other than that, it has a wide, adjusted chest, slim legs and a medium length of straight tail. The Asian self wears a strong shaded coat. The most

mainstream Asian self is known as the Bombay, clad in a dark coat. Different shades of the Asian self-incorporate blue and chocolate.

Figure 2.2: The Asian Cat

2.1.3   Japanese Bobtail

The characteristic of Japanese Bobtail breeds is having a short bunny tail that can be flexible or rigid with one or more curves, angles or kinks. It is a medium-size cat. The Japanese Bobtail come many colors which is solid colors, mi-ke (calico), vans and bi-colors. Next, this cat like to communicate with people using soft chirpy noises. The Japanese Bobtail is highly attracted to water and they are very smart. They also known as playful behavior and always have a full of energy and mischief. Besides that, they enjoy climbing and can be prone to obesity. The average lifespan for this breed is 9-15 years. This breed has been known on Japan for centuries and it frequently appears in traditional folklore and art. The Japanese Bobtail is one of the oldest naturally occurring breeds of cat and is native to the islands of Japan. From written records it seems certain that the domestic cat first arrived in Japan from China or Korea at least one thousand years ago.

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