UNIVERSITI TEKNIKAL MALAYSIA MELAKA

PET FEEDER SYSTEM USING ANDROID APPS

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

by

MAS ELIYA BINTI A. HAMID
B071310091
900519075468

FACULTY OF ENGINEERING TECHNOLOGY
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TAJUK: **Pet Feeder System Using Android Apps**

SESI PENGAJIAN: **2016/17 Semester 1**

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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 (Telecommunications) with Honours. The member of the supervisory is as follow:

……

(Mr. Ahmad Nizamuddin Bin Muhammad Mustafa)

ABSTRAK

Projek ini menerangkan tentang bagaimana mencipta sebuah alat pemberi makanan binatang peliharaan secara automatik dengan menggunakan aplikasi Android. Tidak seperti alat pemberi makanan binatang peliharaan secara automatik yang kini berada di pasaran yang memudahkan pengguna untuk menetapkan masa pemberian makanan, alat pemberi makanan secara automatik ini menggunakan 'proximity sensor' untuk mengesan takat makanan dalam bekas makanan untuk memudahkan pengguna menerima mesej. Tujuan dan konsep projek ini adalah sama seperti alat lain iaitu memberi makanan kepada binatang peliharaan tanpa kehadiran pemilik. Projek ini dibangunkan dengan menggunakan Arduino Uno sebagai pengawal mikro yang memainkan peranan sebagai pengawal utama keseluruhan sistem. Pengawal mikro yang digunakan dalam projek ini telah diaturcarakan dengan menggunakan bahasa pengaturacara. Pengawal mikro yang digunakan untuk mengawal pusingan 'servo motor' dan menghantar isyarat kepada telefon mudah alih untuk mengemaskini data didalamnya. Aplikasi Android untuk projek ini dibangunkan dengan menggunakan perisian 'MIT Inventor'. Akhir sekali, projek ini membenarkan pengguna untuk mendapatkan informasi tentang proses pemberian makanan dengan menggunakan telefon mudah alih lain dimana sambungan Bluetooth menjadi perantaraan

ABSTRACT

This project explains about the designing and developing an automatic pet feeder that comes with the android application. Not like the ordinary pet feeding product in the market today that requires the user to set the times of feeding, this automatic pet feeder use the proximity sensor that to detect the level of food in the hopper. The purpose and concept of this project is the same with other device like it, to feed the pet without the present of the owner. This project was developed using the Arduino UNO as a microcontroller the role as the main controller system. The microcontroller used in this project is programmed using the assembly language. The microcontroller also make a control the rotation of the servo motor and send signal between on the device and Bluetooth module to make connection of the for the operation. The android application it used for this project is developed using MIT Inventor software. Finally, this project allows the user to view the information about the feeding from other gadget where the Android apps that connect Bluetooth become to transmission medium.

DEDICATION

Thank gratitude to Allah S.W.T for giving me change to finish my final year project in my Bachelors of Electronic Engineering (Telecommunication) at Universiti Teknikal Malaysia Melaka.A special dedicated to my beloved family who had strongly, encourage and supported in my entire journey of learning. I also dedicate this project to my supervisor Encik Ahmad Nizamuddin Bin Muhammad Mustafa who have supported and always give me the good advice throughout the process. I will always appreciate all they have done, especially Mohd Alif Bin Mohd Yosop for helping me on my process project technology skill and for the many hour of proofreading. Then, I dedicated and give special thanks to my classmate member that most helping me in my project.

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LIST OF ABBREVIATIONS, SYMBOLS AND NOMENCLATURE

AC	-	Alternating Current
APPS	-	Applications
AVR	-	Automatic Voltage Regulator
DC	-	Direct Current
FM	-	Frequency Modulation
IDE	-	Integrated Development Environment
LCD	-	Liquid Crystal Display
LED	-	Light Emitting Diode
MIT	-	Master of Information Technology
PC	-	Personal Computer
PCB	-	Program Control Block
UART	-	Universal Asynchronous Receiver-Transmitter
USB	-	Universal Serial Bus

CHAPTER 1
INTRODUCTION

1.0 Overview

This chapter will briefly discuss on the project background. This chapter also elaborates the problem statement, the objective of this project, and the scope of this project.

1.1 Project Background

Pet care is supposed to be fun and not have the feeling that a burden to care for the pet. Therefore, from a system that has been created is one of the aims to assist and facilitate pet owners feed pets with them automatic. The aim this project was created to facilitate pet owners feed their pets at any time either at home or outside the home. In addition, with this automated system it also can help owners to monitor their pet's diet. With this, pet owners can find the animal diet and nutrition of their pet is under control. Pet owners like pet are in good health. Therefore, this system will help pet owners to feed the pet regularly set by the owners themselves. The system automatically provides the food is also operated by the control of the mobile phone that would connect to a Bluetooth connection using android application which has created. Besides that, pet owners can track their pets from a distance and control the feeding of the animals these pets. Then, the quantity of food that has been set for each dish on cat feeding time is at a rate of 1/2 cup per meal.

1.2 Objectives

The objectives of this project are:

(i) To develop the pet feeder system.
(ii) To study the pet feeder system interface with Android apps.
(iii) To analyse the connection between Android and device through the Bluetooth module and functionality of the feeder system.

1.3 Problems Statement

It is common to find that pet care is not a burden to the pet owner. Therefore, care of pets must be committed to ensuring that some pets need to be the owner of the pets to care. At the same time, there are some pets cannot control their diet and will eat food as long as there is for them. Most pet also has a different way of eating, it depends on how pet owners to feed the animals. And from this, it has a problem in which the animals are forced to leave their pets at a certain time. Therefore, to solve this problem, we need to develop a system that automatically moves that can be controlled by the owner of the animals to control the situation in the absence of their pets. This system will also guarantee to the owners of these pets in the presence of this system can ensure that the pets are in good condition and healthy during the period of absence of the owners.

1.4 Scopes of Project

The system is built using:

(i) Arduino Uno as a programmable microcontroller
(ii) The Servo Motor as the output from the controller.
(iii) Android apps a develop software program.

(iv) Proximity sensor as the input of the system.

1.5 Thesis Outline

This chapter have contains five chapters. In this chapter is about the introduction of the project which consists of project background, objectives of project which needs to be achieved, problem statement, scope of project, 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 undertaking.

CHAPTER 2
LITERATURE REVIEW

2.0 Introduction

In this chapter, the information and related previous projects will be explained and discussed. This information is retrieved from the journal published and previous thesis.

2.1 Controlling Automated Pet Feeder using Bluetooth Enable Device

According to the study of (Bin Rahim, 2010), he had proposed a project system that uses mobile phones via Bluetooth wireless protocol for controlling the automatic pet feeder. The system is built to allow users to control or monitor the automatic pet feeder through hardware that used as an intermediary between the user and the pets as a user-friendly system. The system consists of three main parts which are used Bluetooth device, Android applications and users. In the first part, any device such as smartphones equipped with Bluetooth must be installed with the application to control the system. And on top of Android applications, consisting of a Bluetooth transceiver and an FM receiver and transmitter acting on the circuit and relay control circuit. Both are connected via the customer ports to the control circuit.

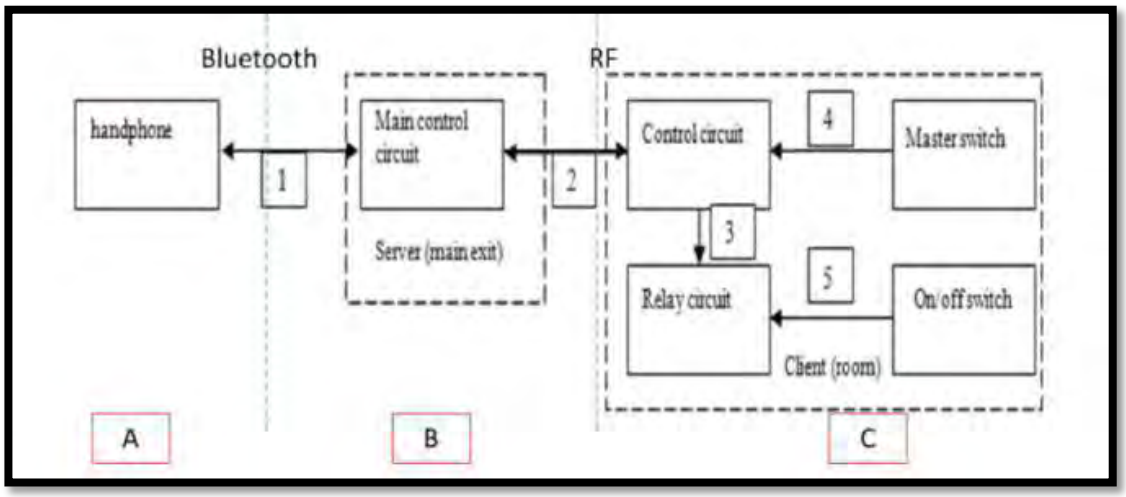

Figure 2.1: Smartphone Pet Feeder Automation Systems

2.2 Door Automated System using Bluetooth Based Android for Mobile Phone

In the study, retrieved with (L. Kamelia,2014). He has proposed a project entitled systems using Bluetooth Smart Home Based on Android Mobile. Projects that have been created are have the same functionality as Smart Home, Smart Home is where the term used to define residential use residential home controller to integrate a variety of home automation systems. Most Home Smart ever made nearly connected with the use of Windows-based PC. Then, based on the study of literature, it refers to the use by the control system with Bluetooth, where it will be more convenient and effective to use. Furthermore, it is also applied based on Android and Arduino platform, as both are open source software is free and easy to install. In this paper, a system designed and developed is called the door lock automation system using Bluetooth on Android-based smartphones. The functions of this system are the lock / unlock doors Smart Home automatically using applications that have been created. In this project, the hardware will be the design of the door lock system is a combination of Android Smartphone as a parent task, so the Bluetooth module as agent referrals, as Arduino Uno microcontroller and solenoid programmed as output for door lock

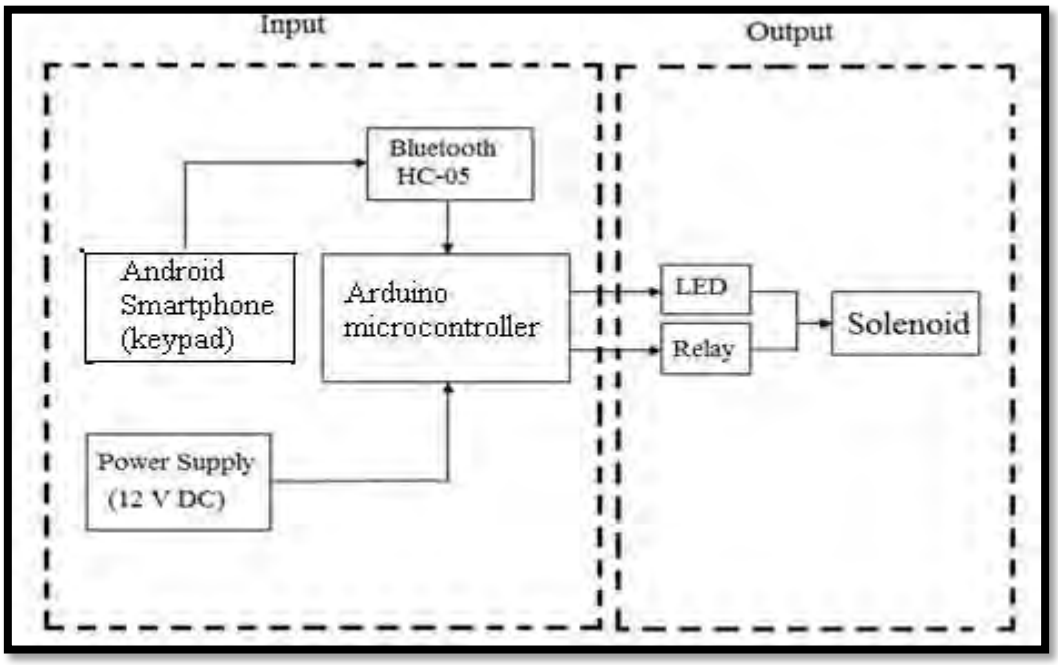

Figure 2.2: Basic architecture of door automation system

2.3 Phone Controlled Automatic Pet Feeder

According to the thesis project was made by Fan Ling and Zhao Zhuokai. They were purposed for the project using mobile phones control automatic pet feeder for using Bluetooth module as the main connection. This project is composed of two parts, hardware and software as the actual feeder that is compatible to run on Android. They also use software to allow users to type information about the pet such as name, weight, gender and quantity of food at the pet for every day. The information has been entered by the user will then be sent to the hardware on which the system will operate as directed. Furthermore, in order to develop this project using the software interface with the Android operating system and built a connection between the user and the pet feeder. On Android, users can choose an animal that only sends a signal at a time is a requirement (maximum 2) for pet feeder conveyor is achieved through Bluetooth.

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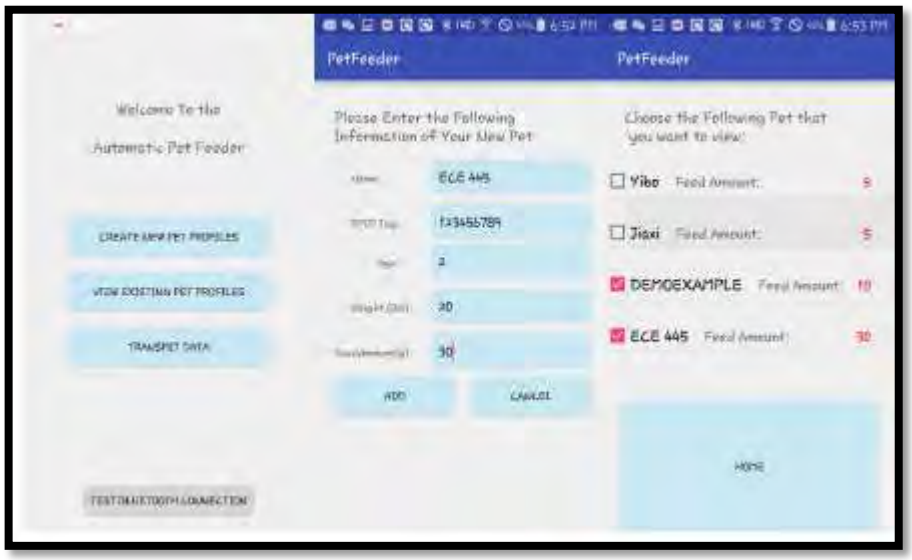

Figure 2.3: Software Interface

The Figure 2.3 as a software interface that develops under Android Studio Environment and it also support for the Smartphone. For the transmit data to the hardware it using the Bluetooth apps.

2.4 Exploiting Bluetooth on Android Mobile Devices for Pet Feeder System

The project is proposed by (Potts and Sukittanon, 2012) that performs automatic pet feeder controlled security through Bluetooth wireless protocol via Android Smartphone. Bluetooth module allows wirelessly transmit and receive information signals that have been taken in any programming. Modules are used for this project is Bluetooth V2.0, where the range of the protocol used between 10 meters and operate in the 2.4GHz frequency modulation with maximum data transfer rate of 2.1Mbps. This project allows users to lock and unlock their food bowl lid by using applications installed on your Android smartphone. In addition, the bowl protection status can be display on the phone screen. Programming used by them in the project Android Automated Pet Feeder Security is using Eclipse as shown in Figure 2.4

Figure 2.4: Application of Smartphone Based Automation Pet Feeder System

2.5 Automatic Pet Feeder Project

According to a thesis project by (Henry Duwe, 2016), he had proposed this project using a Bluetooth module that will be implemented by the module HC-06 Bluetooth wireless transceiver. HC-06 Bluetooth module is used widely nodules supports Bluetooth 4.0 technology and can also provide a significant latency is approximately 3ms. Then, the module HC-06, it can be connected directly to 5V 8bit AVR microcontroller it is most effective for the device is 10m, which will meet easy connection and pairing. Based on the operation of the project that controls automation pet feeder, users will be able to give the food to their pets with the right amount. Users can also set the quantity of food and nutrition tables on mobile phone applications. Data will be transferred to the PCB via Bluetooth, which will send a signal to the dispensing of food.

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2.6 Design and Build an Automated Pet Feeder

According to the (Heil et al. 2008). They had the idea to create the shape of the pet food dispenser. Where it can be developed through in the market. In a while, in the market there are various forms of pet food containers are either cheap or expensive only. Then, they also have a wide range of feeder pet on the market today are trying to solve the problem to ensure that every pet can use this tool to determine the quantity of each part that has been provided to ensure that animals maintain the healthy supply of food that is given throughout the day. pet feeder design is where the foundation operates using gravity, which consists of a container filled full of food will fall into the bowl that has been provided. (see Figure 2.6). This type of feeder can control the serving size.

Figure 2.5: Petmate Café Feeder

Feeder in the figure above it allows the pet owner to make sure that your pet has access to food during the day or for longer periods of time and that the food that comes out is not damaged as a result of exposure to air before the animals eat it, but did nothing to control the amount of food consumed by the animal. This feeder is designed to be a simple form of the free feed for free and user reviews for this type of feeder is positive for the most part. Generally, this system can prevent other animals come to eat food that is exposed. Therefore, the existence of this form can help users control how the nutrition table.