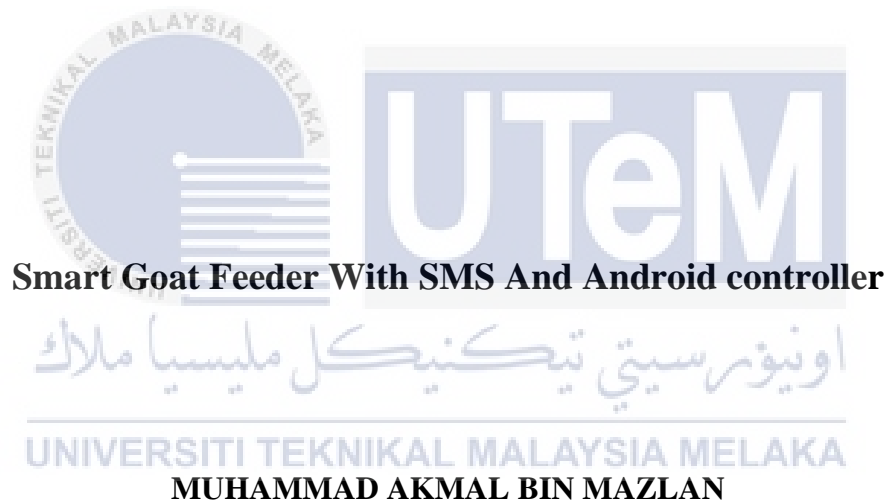




## **Faculty of Electrical and Electronic Engineering Technology**



**Bachelor of Electrical Engineering Technology (Industrial Automation & Robotics)  
with Honours**

**2021**

**Smart Goat Feeder With SMS And Android controller**

**MUHAMMAD AKMAL BIN MAZLAN**

**A project report submitted  
in partial fulfillment of the requirements for the degree of  
Bachelor of Electronics Engineering Technology with Honours**



**Faculty of Electrical and Electronic Engineering Technology**

اويورسي تي بيكنيكل مليسيا ملاك

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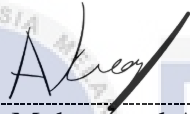
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## DECLARATION

I declare that this project report entitled “Smart Goat Feeder With SMS And Android controller” is the result of my own research except as cited in the references. The project report has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

Signature

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Student Name

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## APPROVAL

I hereby declare that I have checked this project report and in my opinion, this project report is adequate in terms of scope and quality for the award of the degree of Bachelor of Electrical Engineering Technology (Industrial Automation & Robotics) with Honours.

Signature :



Supervisor Name : Mr Muhammad Fareq Bin Ibrahim

Date : 11 Januari 2021

Signature :



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Co-Supervisor :

Name (if any)

Date :

## DEDICATION

*To my beloved mother, Nor Asidah Binti Osman, my beloved father, Mazlan Bin Shoib  
And my supervisor, Mr Muhammad Fareq Bin Ibrahim*



## ABSTRACT

Taken care of goat is a hard job for shepherd, especially during feeding time. So, this project proposes that an automated machine that can be used to feed the goat is needed to ease the shepherd. The title for the project is Smart Goat Feeder With SMS And Android Controller. This paper will presented problem that arise that make the shepherd needed to have this machine. Many shepherds especially in Malaysia still uses traditional way of feeding the goat as not many machines design for goat feeding purpose. So, this project was design to make almost fully automated food distributor that will distribute the food to the food tray so that goat will eat the food there. The project also designed to be able to coordinate with android application that can connect with the Arduino, the brain of the system for control purpose. In other words, the user can setup the machine using only their smartphone. Other purpose for the project is to be able receive notification about the food shortage through SMS medium. This will make the shepherd to have less worry as the machine able to monitor the food capacity in tank. With the help of this machine, the productivity of the goat produce will increase, thus making the shepherd happy and satisfy.



## ***ABSTRAK***

Menjaga kambing adalah pekerjaan yang sukar bagi pengembala, terutama semasa waktu makan. Oleh itu, projek ini mencadangkan agar mesin automatik yang dapat digunakan untuk memberi makan kambing diperlukan untuk mengurangkan keresahan pengembala. Tajuk untuk projek ini adalah Mesin Memberi Makan Kambing Pintar Bersama SMS dan Alat Kawalan Android. Laporan ini akan mengemukakan masalah yang timbul yang membuat pengembala perlu memiliki mesin ini. Banyak pengembala terutamanya di Malaysia masih menggunakan cara tradisional untuk memberi makan kepada kambing kerana tidak banyak reka bentuk mesin untuk tujuan memberi makan kambing. Oleh itu, projek ini dirancang untuk membuat mesin pengedar makanan hampir automatik yang akan mengedarkan makanan ke dulang makanan di mana kambing akan memakan makanan di sana. Projek ini juga dirancang untuk dapat berkoordinasi dengan aplikasi android yang dapat berhubung dengan Arduino, otak system bagi projek ini untuk tujuan kawalan. Dengan kata lain, pengguna boleh melaksanakan pelarasan terhadap mesin hanya menggunakan telefon pintar mereka. Tujuan lain untuk projek ini adalah untuk dapat menerima pemberitahuan mengenai kekurangan makanan melalui media SMS. Ini akan menjadikan pengembala kurang risau kerana mesin dapat memantau kapasiti makanan di dalam tangki. Dengan penghasilan mesin ini, produktiviti kambing akan meningkat justeru, memberi kegembiraan kepada pengembala.





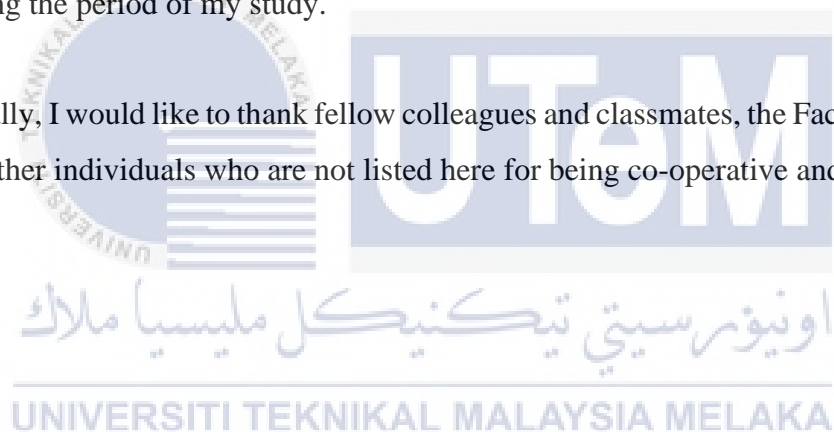
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I am also indebted to Universiti Teknikal Malaysia Melaka (UTeM) for the financial support which enables me to accomplish the project. Not forgetting my fellow colleagues, for the willingness of sharing their thoughts and ideas regarding the project.

My highest appreciation goes to my parents, and family members for their love and prayer during the period of my study.

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## LIST OF SYMBOLS

%	-	Percentage
V	-	Voltage
Kg	-	Kilogram
Hz	-	Hertz(frequency)
KB	-	Kilobyte
%	-	Percentage
V	-	Voltage
Kg	-	Kilogram
cm <sup>3</sup>	-	Cubic centimeter
sec	-	second



## LIST OF ABBREVIATIONS

SMS	-	Short Message Service
UTeM	-	Universiti Teknikal Malaysia Melaka
IDE	-	Intergrated Development Environment
GSM	-	Global System For Mobile Communications
I/O	-	Input And Output
RAM	-	Random Access Memory
PLC	-	Programmable Logic Control
PIC	-	Programmable Interface Controller
ROM	-	Read-only Memory
LED	-	Light Emitting Diode
SRAM	-	Static Random Access Memory
EEPROM	-	Electrically Erasable Programmable Read-only Memory
DC	-	Direct Current



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# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

This chapter will introduce the general background of the Smart Goat Feeder With SMS and Android Controller. This chapter also will show problem statement that can be used as source of inspiration for the project. Other than that, objective and scope and limitation will be also shown in this chapter.

### 1.2 Background

Nowadays, many people have migrated from traditional ways of living to the modern lifestyle. The uses of technology such as electrical and electronic devices are widely utilize by humans regardless how hard the job that needs to be done. Since the industry revolution era hit the world, a lot of innovation were created in order to help humans in their chores. Some of the aspects that the industrial revolution had bring to a new light are agriculture, communication, education and stock breeding.

As all other aspects are important, stock breeding in particular, have been something that is crucially needed innovation in order for us, the consumer to have not only healthy food but also can enjoy quality meat. To have that kind of meat, the things that we needed to look into the way the stock is eating. One of the major types of animal that breed and taken care by stock breeders also known as shepherd as stocks is goats.

In order to make sure all goat eating well, not only shepherd, but researcher, technologist and other experts have been constantly thought of the ways to take care of the goat's meal. Go back to early humans' civilization, the feeding of the goats only involving the shepherd to let the goat eat anything edible by them such as grass, fruits even the tree barks. Day by day, decade by decade and century by century, the civilization getting expanded, and so does the way of feeding goat also become little by little changes

throughout all those times. Humans now develop a lot of nutritional food that delicious and healthy for the goats. Even though the kind of food feed for the goat is changing but the way of shepherd feeding them, especially in Asian countries like Malaysia still using the traditional ways of serve them which is more onto labour works that hard on the shepherd themselves.



**Figure 1.1:Shepherd Feeding The Goats With Grass Using Traditional Ways**



**Figure 1.2:shepherd Giving Hays Towards The Goats Inside A Barrel.**

The Figure 1.1 and Figure 1.2 shows that the goats is serve the food in a traditional ways which will need an improvement.

### **1.3 Problem Statement**

Feeding the goats is one of the jobs that needed to be done by the shepherd. It is crucially to feed all the goats that the shepherd taken care equally. But, to do that, the shepherd needed to spend more times and energy in feeding them. Usually, the shepherd will take half to one hour if they take care of the goats themselves to feed all the goats. The time of eating for each goat depend on their age. Normal adult goats only needed to be served only 1kg up until 2 kg of food while the milkers which is the goat that serve milk to the infant needed up to 3.5 kg of food daily. The time needed to serve all this food vary with the behaviour of the goats themselves. If active, the food time for them should be 2 to 3 times a day while for the unactive goats needed to be serve 1 time to 2 time per day only.

For the shepherd, the daily intake of the food for the goat will make them even more exhaust as they not only needed to take care of the goat's meal but also the well being of those animals such as cleaning the barn or the pens, doing daily health check-up and keeping the goats from running away. Not only the time and energy will be taken a lot from the shepherd, but the hygiene of the food serve will be in high risk of being spoiled. This is because the interaction of shepherd outside of the pen will affect the food given by them thus leading towards the animals to be sick since they are very delicate.

Through those statement from above, the researcher for this BDP project believes that the innovation is needed in order for the shepherd to take care of the food for the goats better as we are reaching an era that solve those kind of problem in a creative and meticulous ways possible.

## 1.4 Objectives

At the end of this project, there is a few objectives that must be achieved. For automatic goat feeding machine with SMS and android controller these projects are able to:

- 1)Design and develop an automatic goat feeding machine with SMS and android controller
- 2)Analyse the distribution feeding amount and cycle for the automatic goat feeding machine

## 1.5 Scope of Project

In order to achieve the objectives of this project, there are several scopes that had been outlined to be focused on. This project will use Blynk application to create an app to control the system, Arduino Uno microcontroller as the main brain for the system will be programmed inside Arduino IDE, GSM module to make sure that it can connect to application and sending message notification to the user. This is to allow the project to be relevant to the industrial 4.0 where most machines are automatic.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Introduction

To understand the project better, a lot of research required which could be found from many resources. In this chapter, necessary topic that relatable towards the research of the project will be discussed. Inside this chapter also will be shown the rough knowledge of the system and devices that will be used to realise the project.

#### 2.2 Type Of Goat Food

One of the most important in taking care of a goat and any farm animal is the food that their taker's feed. Goat just like cow like to eat grass. By just eating grass or hay (dried grass), the goat and other farm animals will not gain enough nutrient and become less productive. Inadequate nutrient supply to livestock especially during scarcity period is a matter of concern (Balwinder, Brar, Verma, Kumar , & Singh , 2019). So, in this topic, the type of nutrient that that the goat and possible other farm animals needed and being feed nowadays will be shown.

##### 2.2.1 Alfalfa Pellet

Alfalfa or its scientific name, *Medicago sativa* is a type of plant that has low-calorie and nutrient-dense type of food. According to (Ensminger , 1992),alfalfa as a meal is rich in protein, mineral and vitamin. So, many shepherds had turn to this as the extra nutrition needed for the goat. To make the food became easy to obtain and easy to handle, the alfalfa plant had been manufactured to pellets for control the dietary of the goats. The alfalfa pellets will make the goats and any farm animals to produce less waste. Besides the alfalfa pellets provide dust and mold-free which is good for older animal that have problems with their teeth.





**Figure 2.1: Alfalfa Pellet**

### 2.2.2 Grass Hay Pellet

Since the grass and hays is the synonym food for goats, the manufacturer has develop pellets from this particular resource to make shepherd to be able to gives the goats that same taste as the normal hays and grass. But not many goats exited towards the grass or hay pellet compared towards forages (Nieman,2020). But there are still towards the liking of this type of pellets.



**Figure 2.2: Fresh Grass Pellets and Dried Grass Pellets**

### 2.2.3 Sweet Feed Pellet

This type of nutrient supply is a combination of whole grain pellet with molasses. The addition of molasses will make goat becomes obsessed as it is become sweet. This proves that not only human like sweet thing, so does animals. The molasses added towards this pellet will gives iron and sugar which is good for the growth of the goats. The goats also can be train using this type of extra nutrient such as during check-up, milking and even making them easily to call for feeding time (Sartell,2016).



Figure 2.3: Molasses Pellets

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## 2.3 Current Method Of Goat Feeding

The method of feeding is a very important topic regarding the research as it will gives insight on how the shepherd nowadays feeding their goats whether it is hard or easy and how it will affected the time and energy spend by them.

### 2.3.1 Manual Feeding

This type of feeding method is being done by giving the food towards the farm animal using manual labour. This method actually widely done practically by many shepherds just like most shepherd in Malaysia. This type of method utilises the stall which