DEVELOPMENT OF APP BASED SMART GOAT FEEDING SYSTEM USING MICROCONTROLLER

AIMAN AFEEQ BIN SALIMAN YURID

BACHELOR OF ELECTRICAL ENGINEERING

TECHNOLOGY (Industrial Automation & Robotics) WITH HONOURS

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This report is submitted in accordance with the requirement of the Universiti Teknikal Malaysia Melaka (UTeM) for the Bachelor of Electrical Engineering Technology (Industrial Automation and Robotics) with Honours.

by

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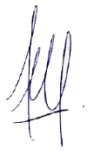

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APPROVAL

This report is submitted to the FTKEE Universiti Teknikal Malaysia Melaka (UTeM) as a partial fulfilment of the requirements for the degree of Bachelor of Electrical Engineering Technology (Industrial Automation and Robotics) with Honours. The member of the supervisory is as follow:

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ABSTRACT

This project is titled Development of Smart Goat Feeding System Using Microcontroller. The project main aim is to help farmer monitor and feed livestock remotely. With the industrial revolution 4.0 movement, it is only fair that all sectors should be able to grow and develop to ease the process. The simple process of feeding livestock has always been done the conventional way. But it requires manpower and costly. The integration of an app with the system will enable farmer to reduce the cost and monitor the feeding process with only their phone while doing other task that requires their full attention. The project key component will be a servo motor that will control the feeding mechanism, Arduino UNO that will act as the microcontroller for the whole system, and a NodeMCU ESP8266 that will provide the whole system connectivity to the internet.

ABSTRAK

Projek ini bertajuk Pembangunan Pemberi Makanan Pintar untuk kambing menggunakan mikrokontroler. Matlamat utama projek ini adalah untuk membantu peladang mengawasi dan memberi makanan kepada ternakan mereka dari jauh. Perkembangan revolusi industri 4.0 melihat pelbagai sektor berkembang secara pesat, sektor pertanian sewajarnya berkembang juga selari dengan revolusi ini. Proses mudah seperti memberi makan ini sering dilakukan secara manual dan memerlukan tenaga buruh. Tenaga buruh yang digunakan untuk melakukan kerja ini boleh dikurangkan dengan adanya projek ini. Integrasi sistem aplikasi bersama projek ini akan membenarkan peladang untuk mengurangkan perbelanjaan mereka untuk melakukan proses ini dan membenarkan mereka untuk melakukan semua ini melalui telefon pintar mereka sahaja dan memberikan tumpuan mereka kepada perkara yang lebih penting. Komponen utama projek ini merangkumi servo motor yang akan mengawal mekanisma pemberi makan, mikrokontroler Arduino UNO yang akan berfungsi sebagai otak dan juga NodeMCU ESP8266 yang menjadi penghubung diantara projek ini dan juga internet.

DEDICATION

I dedicate this report to my mother, Mrs. Zakiah Adibah Binti Satar@Suleiman and my older brother Aiman ‘Azeem Bin Saliman for the guidance and support they have given me throughout the process of completing this project. I would also like to dedicate this report to my respected supervisor Mr. Muhammad Fareq Bin Ibrahim for guiding and helping me completing this project.

ACKNOWLEDGEMENTS

Alhamdulillah and all praise are for Allah, whom with his willing for giving me the opportunities to complete this project. Not to forget my supervisor Mr. Muhammad Fareq Bin Ibrahim for the support, guidance and ensuring I was on track to finish this project within the time frame. Special thanks to my housemates and classmates for the comments and opinions given to help me improve the project. Also, i would like to thank to Universiti Teknikal Malaysia Melaka panels for their help in opinion and comments during producing this project.

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LIST OF SYMBOLS

cm	-	centimetre
ml	-	millilitre
g	-	grams
kg	-	kilograms
V	-	Volt
A	-	Ampere

LIST OF ABBREVIATIONS

UTeM	Universiti Teknikal Malaysia Melaka
BEEA	Bachelor Degree of Electrical Engineering Technology (Industrial Automation and Robotics)
IoT	Internet of Things
IDE	Integrated Development Environment
LCD	Liquid Crystal Display
I2C	Inter-Integrated Circuit
PWM	Pulse Width Modulation
DC	Direct Current
AC	Alternating Current
WiFi	Wireless Fidelity

CHAPTER 1

INTRODUCTION

1.1 Introduction

This first chapter introduces the subject matter and problems being studied for Development of Android Based Smart Goat Feeding System Using Microcontroller including project background, problem statement, objectives and scope of the project. The problem statement is the problem related to the current issues and problems faced in everyday life while the objectives are the targets or purposes for this developing this project in solving the problems. The limitation in developing this project will also be discussed in this chapter.

1.2 Project Background

Industrial revolutions have brought major changes to the manufacturing industries throughout the years. The innovation from these industrial revolutions helps diversify the countries manufacturing industry. Aside from that, industrial revolution also leads to the transition from using manual labour works to adopting the use of digital machines in factories. Approaching the fourth industrial revolution, factories will be able to run with autonomous machine with the use of modern control system. Machine interconnectivity is going to be the main aim of the fourth industrial revolution, where with the aid of the internet, these machines can communicate with each other thus optimizing the production of a factory.

Autonomous machine is a machine that can perform a certain task automatically without the control from human labour. These machines are embedded with a microcontroller that can then be programmed to allow the machines to do specific task independently. Inspired by the motivation of industrial revolution 4.0, autonomous machines can be implemented in farming industries. The process of watering plants and feeding animals can be simplified. Workers can just monitor the machines from one place without having to move from one place to another. With the use of this modern technology, human labour services in managing farms can be optimized, therefore boost the quality of produce.

1.3 Problem Statement

Animal feeding is without a doubt an easy job for a farmer. It is just an uncomplicated task of filling up food bowls in the barn. When it comes the time to feed the animal we simply go to the barn and start feeding the animals. However, having to walk from one cage to another during feeding time can be very tiring especially when it is a hot day. Furthermore, feeding animals is a job where attention is needed around-the-clock to monitor the foods given to the animals. This means farmers must constantly move around cages to overseer the process. When using manual labour, the tedious process will need at least two workers for a single task to ensure better quality of work. This will add up the cost of taking care of the animals, but if the task is to be done alone it can be very exhausting.

1.4 Objectives

The objectives of this project consist of these three targets which are:

1. To develop an autonomous feeding system that monitors the eating habit of the goats.
2. To monitor the amount of foods, consume by the goats at a specific interval time.
3. To analyze the effectiveness of proposed method for the smart goat feeding system.

1.5 Scopes

The focus of this project is to develop an autonomous goat feeding system that is relevant with industrial revolution 4.0. A silo will be connected to a motor attached with a segregator that will act as measurement cup for the food. The aim of this project is to ease the farmer on their task on taking care of their farm animals.

1.6 Project Significance

The purpose of the project is to develop smart goat feeder system using microcontroller. The project was designed to make it easier to feed the goat in farm. The novelty of this project is about automation feeding system. Finally, this project aims to optimize human labour in managing farm and boost quality of produce.