BUSITEMA UNIVERSITY

FACULTY OF ENGINEERING

DEPARTMENT OF COMPUTER ENGINEERING

FINAL YEAR PROJECT REPORT

TOPIC:

AN AUTOMATIC FOOD FEEDER AND WATERING SYSTEM FOR RABBITS

BY

NAMUGWERE FLORENCE

REGNO: BU/UP/2015/349

florencenamugwere@gmail.com

TEL NO: 0757920661/0786532769

SUPERVISOR: MR. ARINEITWE JOSHUA.

A project report submitted to the Department of Computer Engineering in Partial fulfillment of the requirements for the award of Bachelor of Science degree in Computer Engineering of Busitema University.

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DECLARATION

I **Namugwere Florence BU/UP/2015/349** do hereby declare that this project report is original and has not been submitted for any other degree award to any university before.

Signature:

....

Date

.............30th |05/2019.......................:

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ACKNOWLEDGEMENT

First and foremost, I thank the almighty God for His grace and unending love that gave me the courage and perfect health to complete this project report. God is the center of everything and without his grace and power nothing is possible. Thank you God for being the headline in my life journey and it's by your mercy that this project was a success.

I would like to sincerely and wholeheartedly appreciate Mr. Arineitwe Joshua for his hard work and tireless efforts in guiding me and making sure that i successfully completed this project that subsequently led to the production of this project report. I sincerely appreciate your guidance and advice and also acknowledge all the other department lecturers who have always given me time for consultation, thank you for the helping attitude.

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DEDICATION

I dedicate this project report to my beloved parents Mr. Mpyangu Wilson and Mrs. Katooko Aida for the love and support they have provided to me throughout this project period, my sisters Mudondo Esther, Woola Eliz, Namajja Irene, and Naula Jane for the advice and financial support they rendered to me during the research period.

I also dedicate it to my project supervisor Mr. Arineitwe Joshua for his tremendous effort and guidance in relation to my project report, the courage, and the moral & support he offered to me during my research period MAY the almighty GOD BLESS him.

APPROVAL

This is to certify that the project under the title "**Automatic food feeder and watering system** has been under my supervision and is now ready for examination.

Mr. Arineitwe Joshua

Signature........................

Date.......30.05.2019.........

LIST OF ACRONYMS

GSM: Global system for mobile

LCD: Liquid crystal display

LED: Light Emitting Diode

PCB: Printed Circuit Board

RTC: Real time clock

TDMA: Time Division Multiple Access

URDA: Uganda Rabbitry Development Association

ABSTRACT

Rabbit farming is the practice of breeding and raising domestic rabbits for their meat, fur and wool. Feeding rabbits is most importantly needed for survival, growth, and good health. There are many kinds of feeders for example Super Kaytee Hay N Food Bin Rabbit Feeder and Precision Pet Hay Manger which are manual and not favorable for farmers with busy schedules. These systems are labor intensive and also cause pests due to contamination of food and water therefore; it requires an automatic system to solve those problems.

The main objective of this project was to design and implement an automatic food feeder and watering system that could supply food at regular intervals and the timings are preprogrammed in the program of the microcontroller, it has one servo motor which is used to open and close the food outlet. This system also supplies water to the rabbits and therefore it ensures that water is always available in the trough.

The system has the capability of alerting the farmer about every activity which takes place that is to say supplying feeds, pump on, and when the level of feeds and water have reduced therefore the farmer is updated about what is happening in the farm by use of GSM technology. This system uses two ultrasonic sensors to detect the level of feeds and water, if the water level is low, pump turns on, green LED is lit and for feeds yellow LED is lit whenever the system is supplying feeds.

The designed system is able to supply food and water in the absence of the farmer and it is accurate that is to say supplies food depending on time. It's automatic and therefore labor is reduced and it is also safe from pests.

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CHARPTER ONE: INTRODUNCTION

1.1 BACKGROUND

Agriculture is an important sector of the Ugandan economy; with more than 80% of the population deriving their livelihood from the sector [1]. Rabbit farming is the practice of breeding and raising domestic rabbits for meat, fur and wool [2].

Rabbit rearing has been practiced in Uganda since the 1870's when Christian missionaries first introduced the long-eared animals. The Government of Uganda in the 1970's imported exotic breeds mainly New Zealand White as an attempt to promote rabbitry but the efforts were unsuccessful. In the 1990's however, there was a phenomenal growth in rabbit farming when various organizations and institutions promoted rabbit for food and income generation. Beginning 1995, a phenomenal growth in rabbitry occurred when a group of farmers interested in rabbitry formed the Uganda Rabbitry Development Association [3].

Rabbits mature very quickly and reproduce rapidly and in a year, a single female rabbit (doe) can produce 60 kittens. A rabbit breeds eight times in a year and its life span is about seven to eight years [2]. Rabbit's diets include lucerne, grass, green maize leaves, carrots, turnips, cabbage and lettuce. They also enjoy food such as maize meal, porridge, bread, weeds and leaves of fruit trees [4].Rabbit Meat is white meat, rich in Protein with low fat and provides an excellent option to people who are conscious about health dieting and are avoiding high fats as much as possible. [5]. Rabbit's manure is used to fertilize gardens, thus forming a profitable cycle and aiding the balance of nature[6]. The most common rabbit breeds available in Uganda are; Dutch rabbit, Chinchiia rabbit, New Zealand white, New Zealand red and Californian rabbit [4].

There are three possible feeding systems and the choice of each depends on the capability of the Rabbit farmer and the market conditions of the Rabbits; Extensive system, Intensive system and Semi-intensive system. Extensive system is system where farmers keep a large number of rabbits and, intensive system is a system where farmers keep a small number of rabbits mainly for home consumption [7].

The existing systems for feeding rabbits are manual and thus time wasting, labor intensive and many don't have mechanisms to prevent feeds and water contamination. Therefore there was need for an automatic food feeder and watering system to supply food and water to the rabbits on time and regular intervals, regardless of the presence of the farmer.

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