BUSITEMA UNIVERSITY

FACULTY OF ENGINEERING

DEPARTMENT OF COMPUTER ENGINEERING

REMOTE WEIGHT MONITORING SYSTEM FOR AN INTENSIVE ANIMAL FARM

By

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DECLARATION

I, **BWIRE JOHN BOSCO** do hereby declare that this project report was done by me and has never been submitted to any Academic Institution of Higher learning for an academic award.

Signature:

Date: 31/01/2023

APPROVAL

This is to certify that this project report was carried out under my supervision. It is now ready for submission to the Board of Examiners of Busitema University with my due approval.

Signature: .....

Date: 31/01/2023

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DEDICATION

I dedicate this report to my beloved mother Ms. ADONDA JACKLINE for the unrelenting financial, material and emotional support and my excellent supervisor Mr. LUSIBA BADRU.

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Great appreciation goes to the Almighty God, for giving me a gift of Life and a chance to education. I greatly appreciate my mother, brothers and sisters plus my beloved Friend Ajambo Sylivia for the support, encouragement and motivation towards this achievement.

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ABSTRACT

Livestock production today has to combine several requirements such as food safety, animal welfare, animal health, environment and sustainability in a wide sense. The consequence is a growing need to monitor many variables during the production process. However, the number of animals in a farm has increased so much that visual observation cannot be done continuously during 24 hours a day[1].

Livestock production today is no longer limited to obtaining economic goals. Modern Society is concerned about food safety and quality, efficient and Sustainable animal farming, healthy animals, guaranteed animal wellbeing and acceptable environmental impact of livestock production[2]. As a consequence, there is a growing need to monitor many variables during the entire production process in order to satisfy these targets. In the past, livestock management decisions have been based almost entirely on the observation, judgment and experience of the farmer[3].

The remote weight monitoring system is a digital measurement system for checking and registering the weight of the animals during their growth. The system connects directly to the measurement device and displays the result automatically. The load cell is applied as the measurement sensor. The interface allows the users to interact with the system. A software user interface along with the signal conditioning and data acquisition hardware is fabricated. The system is now a user friendly and less costly and thus there is a great potential for this system to be used on numerous farms.

The system is composed of both hardware and software. The hardware part is the electronic scale designed and programmed using the Arduino technology. It measures and displays the animal weight in Arduino. The software part is an application that reads and records the measured weight. The software compiles and evaluates the data collected and shows the level of uniformity.
I recommend it to be used by farmers for the proper decision management in order to increase productivity.

LIST OF ACRONYMS

NaLIRRI	National Livestock Resources Research Institute
WiFi	Wireless Fidelity
WLAN	Wireless Local Area Network
LCD	Liquid Crystal Display
PHP	Hypertext Preprocessor
CSS	Cascading Style Sheets
MySQL	My Structured Query Language
HTML	HyperText Markup Language
JS	Javascript
XAMPP	X-operating system, Apache, Mysql, Php, Perl.
IDE	Integrated Development Environment
SQL	Structured Query Language

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CHAPTER ONE: INTRODUCTION

1.1 Background of study

Livestock is an important source of income for more than 80 percent of the households classified as poor in sub-Saharan Africa. In Uganda, more than 50 percent of the households depend on livestock for their livelihoods[4].

A large number of people in Africa being less literate and unskilled depend upon agriculture for their livelihoods. But agriculture being seasonal in nature could provide employment for a maximum of 180 days in a year. The land less and less land people depend upon livestock for utilizing their labour during lean agricultural season[5].

Measuring the progressive weight gain of the animals is an important and essential part of the animal farming[6]. It is crucial to have accurate weight measurements as small errors, occurring repeatedly, can lead to substantial loss of revenue. There is also constant need for knowing the exact weight of the animals such that the farmer can control their feeding to reach optimum weight and classification of meat percentage at the slaughterhouse, animal health status, growth rates, time when animals are sent to market and drug dosages. Ideally, the weight of the animal should be registered gradually.

Weigh scales are integral to the operation of farms both big and small, whether the specialty is livestock or cash crop. According to Andrew Izaara, a senior research officer in aquaculture at the Mukono Zonal Agricultural Research and Development Institute (MuZardi), weigh scales "are essential for day-to-day operations of the farm. Izaara, an aquaculturist, says weighing is a relevant part in determining the live weight of animals as well as offering the right amounts of feeds. "Profits in agriculture are determined by small margins and being accurate[7].

Weighing the animals is critical in any farm. Accurate weighing helps in keeping a check on the health of animals at different stages of their growth. The data collected is invaluable in herd management and helps in knowing when to increase or reduce feed. The information collected can also be used by the veterinarian to propose any change in diet or recommend more nutrients. When you have the right feed conversion rate, you will come up with the right food portions to help you achieve particular growth rates within a set period of time.

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