BUSITEMA UNIVERSITY
Pursuing Excellence

PROJECT TITLE	An Android Based Poultry Manure Cleaning System
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Operation

This system automatically detects poultry manure beneath the conveyor belt, sends a message to the farmer who starts it wirelessly using his android phone. Once started the system cleans, dries the poultry manure and then stops.

ABSTRACT

The trend in poultry production has been toward large commercial flocks. With this trend has come an increase in using of mechanization to save time and labour, this includes mechanical cleaning equipment; automatic and semi-automatic feeding and watering equipment's are common in poultry enterprises. The use of these types of equipment's makes it possible for large number of birds to be handled in the operation (Gillespie, 2002).

Battery cage system is one of the modern methods used to keep poultry on a large scale. Battery cages are also used for keeping animals such as rabbits, cats, among others. But this study majorly focuses on poultry. Battery cage systems are used to keep birds on a large scale because they are easy to setup, manage and monitor by farmers both in rural and urban areas. Moreover, the author visited some poultry farms and watched the feeding systems, watering systems, manure handling systems.

In this system, the weight sensor/load cell is used to detect increase in the weight of droppings then the system reports over weight to the farmer using a GSM. A GSM modem is used to notify the user about the dropping's accumulation in the battery cage so that the necessary actions are taken to clean these droppings. This system will reduce the fear that most farmers have to adopt large scale poultry farming and improve the agricultural sector in Uganda as well.

Key words: Android-based, Poultry manure, Bluetooth, Poultry farming, Battery cages, Arduino, Global System for Mobile Communications (GSM).

DECLARATION

I, MUKOOVA JUMA, an undergraduate student of a Bachelor of Computer Engineering solemnly declare that this research is my original work that has been done and prepared by myself. It has not been previously or concurrently submitted for the award of any academic degree, diploma or certificate of Busitema University or any other university. The materials borrowed from other sources and included herein have been properly cited and acknowledged. All information in this document has been obtained and presented in accordance with academic rules and ethical standards of the Busitema University Senate.

SIGN: ……..

DATE: ……

APPROVAL

This is to approve that this Final Year Project Report has been fully and consistently worked on and submitted to the Department of Computer Engineering under the supervision of the undersigned supervisor.

SIGN: ……..

DATE: ……

Mr. MATOVU DAVIS

Department of Computer Engineering

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DEDICATION

I dedicate this project report to my brothers Munuulo Faizo, Ibanda Akilam, Mutonelwa Alaziyah for the love and support they have provided to me throughout this project period. I also dedicate it to my project supervisor Mr. Matovu Davis for his tremendous effort and guidance in relation to my project report, the courage, moral and support he offered to me during my research period may the almighty bless him.

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Above all, I thank Allah the almighty for the gift of life, wisdom and guidance for without Him, nothing would have happened and I wouldn't be able to accomplish my project.

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LIST OF ACRONYMS AND SYMBOLS

ADT- Android Development Toolkit

GSM- Global System for Mobile Communications

ICT-Information and communication technology.

IDE- Integrated Development Environment

LCD-Liquid Crystal Display

LMP-Link Manager Protocol

PCB-Printed Circuit Board

PVC -Polyvinyl chloride

SDK- Software Development Kit

SIG - Special Interest Group

SIM- Subscriber identity module.

SMS-Short Message Service

WSN-Wireless Sensor Network

CHAPTER ONE
INTRODUCTION

1.1 Background

The production poultry birds and eggs has been identified as one of the most influential enterprises to be undertaken to mitigate the increasing demand for food in Ugandan urban areas and abroad[1]. The population growth rate and increases in urban migration and wealth have greatly pressurized the land and other resources for high food demands. The poultry industry majorly focuses on meat and egg production[1]. Currently, the poultry industry is slowly growing, This is observed when the Uganda Bureau of Statistics(UBS) 2013 recently revealed that the Egg production increased to 27,057 tonnes (807,634 eggs) compared to 26,269 tonnes (784,111 eggs) reported back in 2011 [1].

Chicken production is the main type of poultry production in Uganda. Turkeys, guinea, fowls, ducks, pigeons, geese and ostriches are also kept[1]. Poultry production in the country is categorized into two namely; commercial or free-range. There are wide variations within these two systems in terms of numbers, types of birds, bio-security and management[1]. The commercial system covers production with improved hybrid breeds (and recently also with local breeds) under intensive confined management of uniform stocks and age-groups primarily for commercial purposes than the free-range system.

cc This system is convenient in a way that greater number of birds is reared per unit area, Easy control of parasitic disease like coccidiosis and worm infestation, Prompt steps to control feed wastage and many others[2].

The major challenge with it is the removal process of poultry droppings wastes from the birds , this work tiresome and unhygienic [2]. Poultry droppings contains excreta, bedding material, waste feed, dead birds, broken eggs, feathers and offal could cause flies and also emerge into major environmental pollutants[3]. Poultry droppings begins to decompose immediately after excretion giving off ammonia which, in high concentrations and can have adverse effects on the health and the productivity of birds as well as the health of the farm workers and the environment[4]. The adverse reactions in people include; emotional stress, headaches, acedia, insomnia, vomiting, irritation and depression[5]. Strong odours also have been reported to intensify the symptoms of people with asthma or allergies.[5]

However, farmers now are using methods such as cage deep pits, cage shallow pit systems and many others[6], to overcome this problem but these methods are costly to implement and still have human

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