



**BUSITEMA
UNIVERSITY**
Pursuing Excellence

P.O. Box 236, Tororo, Uganda
Gen: +256 - 45 444 8838
Fax: +256 - 45 4436517
Email: info@adm.busitema.ac.ug

www.busitema.ac.ug

FACULTY OF ENGINEERING

DEPARTMENT OF COMPUTER ENGINEERING

FINAL YEAR PROJECT REPORT

STUDENT NAME: IKONDE NEKEMIAH ARNOLD

Email: arnoldnek@gmail.com

Tel: 0700388074/0789370238

Project Title:

**MOBILE-BASED MACHINE LEARNING SYSTEM TO RECOGNIZE POULTRY
DISEASES.**

CASE: NEW CASTLE DISEASE, SALMONELLA, AND COCCIDIOSIS

SUPERVISOR: DR. GODLIVER OWOMUGISHA

**PROJECT REPORT SUBMITTED TO THE DEPARTMENT OF COMPUTER
ENGINEERING IN PARTIAL FULFILLMENT FOR THE AWARD OF A
BACHELOR'S DEGREE IN COMPUTER ENGINEERING OF**

BUSITEMA UNIVERSITY

ACKNOWLEDGEMENT

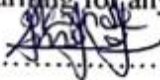
With gratitude, I thank the almighty God for his love towards me and the unending guidance and protection he has provided me throughout the entire duration of my study while at Busitema University. I also continue to thank him for his support which has enabled me to carry out this project successfully.

Appreciation also goes to my Supervisor Dr. Godliver Owomugisha for her help and continued support while carrying out my research.

My appreciation also goes to my fellow students for the help and ideas offered.

DECLARATION

I **IKONDE NEKEMIAH ARNOLD** Reg No. **BU/UP/2018/2913** hereby declare that this project is my original work except where explicit citation has been made and has never been published or submitted for any other degree award to any other university or institution of higher learning for any academic award.

Sign: 

Date: 1/02/2023

APPROVAL

This is to certify that the project report entitled “MOBILE-BASED MACHINE LEARNING SYSTEM TO RECOGNIZE POULTRY DISEASES” has been done under the supervision and is submitted to the board of Examiners with my approval.

Signature



Date:.....31/01/2023.....

DR. GODLIVER OWOMUGISHA

DEPARTMENT OF COMPUTER ENGINEERING

ABSTRACT

This project focuses on the design of a mobile-based machine learning system for the recognition of poultry diseases in Uganda. The livestock sector in Uganda is on the rise and the fast-growing population requires improved poultry production. However, several constraints, including diseases, lack of drugs, improper farm management, and wrong motives, affect increased production. The use of artificial intelligence for real-time disease recognition in poultry is promising due to its non-intrusive properties and ability to provide a wide range of information. The system uses TensorFlow to analyze and train the model which is later deployed into a mobile application with the help of Android Studio. The literature review highlights the main concepts of poultry diseases and the use of machine learning methods in poultry. The result is a system that will have reduced operating costs and improved disease detection for farmers.

LIST OF FIGURES

Figure 1. Block Diagram.....	7
Figure 2. Flow Chart.....	8
Figure 3.Salmonera recognized	11
Figure 4.Healthy	11
Figure 5.Training process of the model	24
Figure 6.Graph showing both Training Vs Validation Loss and Training Vs Validation Accuracy	26
Figure 7. Confusion Matrix.....	27
Figure 8. Classification Report	27

TABLE OF CONTENTS

Table of Contents	
ACKNOWLEDGEMENT	i
DECLARATION	ii
APPROVAL	iii
ABSTRACT.....	iv
LIST OF FIGURES	v
TABLE OF CONTENTS	vi
CHAPTER ONE	1
1.1 BACKGROUND	1
1.2 Problem Statement.....	1
1.2 Objectives	1
1.2.1 Main Objective.....	1
1.2.2 Specific Objectives	2
1.3 Justification	2
1.4 Scope	2
1.4.1 Geographical scope.....	2
1.4.2 Technical Scope	2
1.5.3 Time Scope	2
CHAPTER TWO: LITERATURE REVIEW	3
2.1 MAIN CONCEPTS OF THE PROJECT	3
2.1.1 Poultry Diseases overview	3
2.1.2 Machine learning methods in poultry	3
2.2 Existing System Comparison Table	5
2.3 Proposed System	5
CHAPTER THREE: METHODOLOGY	6
3.1 Requirement Collection (data gathering)	6
3.1.1 Online Resources	6
3.2 Requirement Analysis	6
3.2.1 Functional Requirements.	6
3.2.2 Non-functional requirements.	6
3.3 System design	7
3.3.1 Conceptual Design for the System.	7
3.3.2 System Flow Chat	8
CHAPTER FIVE: IMPLEMENTATION AND TESTING	9

5.1 DESIGN AND DEVELOPMENT PLATFORMS	9
5.1.1 Google Colab	9
5.1.2 Kaggle	9
5.1.3 Android Studio	9
5.2 Testing and Validation	9
5.2.1 Unit testing	9
5.2.2 Integration Testing	9
5.2.3 System Testing	10
5.2.4 Verification	10
5.2.5 Validation	10
5.3 System validation	10
5.3.1 Results	11
CHAPTER SIX: DISCUSSIONS AND RECOMMENDATIONS	12
6.1 Introduction	12
6.2 Summary of the work done	12
6.3 Critical Analysis and Comparison with other Systems	12
6.4 Recommendations	12
6.5 Challenges	12
6.6 Conclusions	13
7.0. References	14
8.0 APPENDICES	15

CHAPTER ONE

1.1 BACKGROUND

The livestock sector in Uganda contributes 3.2% to the national gross domestic product (GDP) and is projected to be rising [1]. A report in 2009 showed that 4.5 million households (70.8%) owned livestock or poultry

In the recent past, a large number of people in and around Kampala and other major towns have taken up poultry farming. To meet the requirements of the country's fast-growing population, there is a need for improved and increased poultry production. However, several factors put a great constraint on increased production in the country. These factors are mainly disease, lack of appropriate drugs and vaccines, improper management of farms, and wrong motives for poultry farming. Diseases and pathological conditions affecting poultry are many and varied. [3]

Some of the common diseases that bring a setback in poultry farming include;

Newcastle, Coccidiosis [4][5], Salmonella, Aspergillosis, Gumboro disease, and so on.

Respiratory diseases such as Newcastle require early detection so the whole poultry farm is not lost in a short time. Having a system that would detect the disease increases production. [6]

With the current development in information technologies, Artificial intelligence has become a promising tool in the real-time recognition of poultry disease monitoring systems due to its non-intrusive and non-invasive properties and ability to present a wide range of information. Hence, we will use the Tensor flow to deploy the d into the mobile application, we will be able to identify some of the most common poultry diseases.[7]

1.2 Problem Statement

Whether you're raising a large flock of chickens, or only a few, the process can be extremely rewarding. Being able to detect the disease outbreak in the livestock at earlier stages allows the farmer to find the best solution as soon as possible.

There is a need to develop a system that would recognize which disease is responsible for the outbreak. We need this system to be as accessible as possible for the farmers. This will enable the farmer to take action as soon as possible, hence curbing the outbreak as soon as possible.

Also, to help prevent these popular diseases, a scheduler will be included in the mobile application to enable the farmer to know the vaccination patterns so they can save the date on Google calendar.

1.2 Objectives

1.2.1 Main Objective

- To design a mobile-based machine learning system that will recognize poultry diseases.