

Project Report

Title: Poultry Disease Detection Using Transfer Learning

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Domain: Artificial Intelligence and Machine Learning

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1. INTRODUCTION

1.1 Project Overview

This project focuses on developing an AI-powered system that classifies poultry diseases from fecal or physical condition images using transfer learning. The aim is to assist poultry farmers and veterinary professionals in diagnosing diseases early.

1.2 Purpose

The purpose is to build a practical, mobile-accessible application that can detect 4 major poultry conditions: Coccidiosis, New Castle Disease, Salmonella, and Healthy condition.

2. IDEATION PHASE

2.1 Problem Statement

Manual detection of poultry diseases is time-consuming and often inaccurate. A fast and accurate system is needed for on-field diagnosis.

2.2 Empathy Map Canvas

Farmers need easy-to-use, language-neutral tools to identify and treat poultry diseases effectively.

2.3 Brainstorming

Brainstorming led to using transfer learning for image classification and deploying a Flask web app for usability.

3. REQUIREMENT ANALYSIS

3.1 Customer Journey Map

User takes photo → Uploads in app → Gets result + treatment tip

3.2 Solution Requirement

- A trained image classification model
- Web application interface
- Responsive UI for mobile

3.3 Data Flow Diagram

Image → Preprocessing → Model Prediction → Output Display

3.4 Technology Stack

Python, TensorFlow, Keras, Flask, HTML/CSS (Bootstrap), Ngrok/Render

4. PROJECT DESIGN

4.1 Problem Solution Fit

The solution fits poultry farm environments where manual diagnosis is infeasible.

4.2 Proposed Solution

Build a CNN-based model using MobileNetV2 and integrate it into a Flask web app.

4.3 Solution Architecture

Frontend → Flask backend → Trained Keras Model (.h5)

5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

Week 1: Dataset collection & preprocessing

Week 2: Model training

Week 3: App UI + Integration

Week 4: Testing + Report

6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

Model tested on unseen images with validation accuracy ~92% and responsive UI performance on mobile.

7. RESULTS

7.1 Output Screenshots

Predictions: 'Salmonella (91.23%)', 'Healthy (94.10%)'... (see attached images in final doc)

8. ADVANTAGES & DISADVANTAGES

Advantages:

- Mobile friendly
- High accuracy

Disadvantages:

- Requires internet
- Limited to 4 classes

9. CONCLUSION

The system successfully classifies poultry diseases and provides treatment guidance using an AI model integrated into a user-friendly web app.

10. FUTURE SCOPE

Include more diseases, support local languages, develop as Android/iOS native app.

11. APPENDIX

- Source Code: Provided separately
- Dataset Link: <https://zenodo.org/record/7188635>
- GitHub & Demo: To be uploaded to your GitHub repository