

# Data Poultry Disease Classifier: AI Vision into Poultry Farm Health

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## 1.1 1. INTRODUCTION

### 1.1 Project Overview

**Poultry Disease Classifier: AI Vision into Poultry Farm Health** is an AI-powered image classification project leveraging Convolutional Neural Networks (CNN) to automatically identify poultry diseases from images. The model helps veterinarians and farm managers detect conditions such as Coccidiosis, Newcastle Disease, Salmonella, and Healthy states rapidly and accurately. A user-friendly Flask web application enables farmers to upload images and receive instant predictions.

### 1.2 Purpose

The purpose of this project is to build a deep learning-based image classification system to automate poultry disease diagnosis. This improves early detection, speeds up treatment decisions, and reduces economic losses in poultry farming.

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## Submitted

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## 1.2 2. IDEATION PHASE

### 2.1 Problem Statement

Poultry farmers often struggle to detect diseases early due to lack of veterinary access, leading to delayed treatments and high mortality. Manual diagnosis is slow, inconsistent, and resource-intensive.

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### 2.2 Empathy Map Canvas

- **Says:**  
"We need fast and reliable disease detection to protect our flocks."
- **Thinks:**  
"Are we missing early signs that could save our birds?"

- **Does:**  
Inspects poultry manually, consults veterinarians after symptoms escalate.
  - **Feels:**  
Worried, overwhelmed, and hopeful for technological support.
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## 2.3 Brainstorming

- Collect and curate poultry disease image datasets.
  - Use CNN models (e.g., VGG16) for feature extraction.
  - Build a Flask web app for easy farmer access.
  - Evaluate model accuracy and optimize prediction performance.
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## 1.3 3. REQUIREMENT ANALYSIS

### 3.1 Customer Journey Map

Farmers take photos of poultry showing symptoms, upload images to the platform, receive AI-powered predictions, and take appropriate action (quarantine, treatment, or monitoring).

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### 3.2 Solution Requirements

- **Tool:** TensorFlow / Keras for deep learning, Flask for web deployment
  - **Dataset:** Poultry disease images (Kaggle)
  - **Data Needs:** Labeled image data with disease categories
  - **Functionality:** Image classification API with web UI
  - **Goals:** Accurate, fast, and user-friendly diagnosis system
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### 3.3 Data Flow Diagram

Image data collected from dataset → Preprocessing and resizing → CNN model training → Model saved in .keras format → Flask app loads model → User uploads new image → Model predicts label → Result displayed on web UI

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### 3.4 Technology Stack

- **Data Source:** Kaggle poultry disease dataset
  - **Backend Processing:** TensorFlow/Keras CNN
  - **Web Application:** Flask
  - **Frontend:** HTML/CSS
  - **Deployment:** Local server / cloud server
  - **Supporting Tools:** OpenCV, Pandas, Numpy
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1.4 4. PROJECT DESIGN

4.1 Problem-Solution Fit

Farmers lack quick, reliable diagnostics. The project provides an AI model integrated with a web interface to deliver rapid, accurate predictions, bridging the gap between farm needs and veterinary expertise.

4.2 Proposed Solution

Develop a Convolutional Neural Network trained on labeled images and deploy it via Flask. The system allows uploading images and instantly classifying them into disease categories.

4.3 Solution Architecture

Dataset → Image preprocessing → CNN model training (VGG16) → Model saved (.keras) → Flask application → User uploads image → Prediction returned in browser

1.5 5. PROJECT PLANNING & SCHEDULING

Date	Task	Output / Prediction
June 10–11	Defined problem statement	Identified poultry disease classification goal
June 12–13	Selected technology stack	Chose TensorFlow, Keras, Flask
June 14–16	Collected and organized dataset	Images labeled and structured
June 17–18	Data cleaning and preprocessing	Removed corrupt files, resized images
June 19–20	Image augmentation	Generated additional training samples
June 21–22	Implemented VGG16 base model	Initial training with pre-trained weights
June 23–24	Switched to MobileNetV2 for experimentation	Compared accuracy vs. VGG16
June 25–26	Model evaluation and hyperparameter tuning	Improved accuracy and reduced overfitting

June 27	Flask integration setup	app.py created and verified
June 28	Frontend HTML template creation	index.html and result.html completed
June 29	Connected model predictions to UI	Tested end-to-end workflow
June 30	Final evaluation, screenshots, documentation	Project report completed, GitHub updated

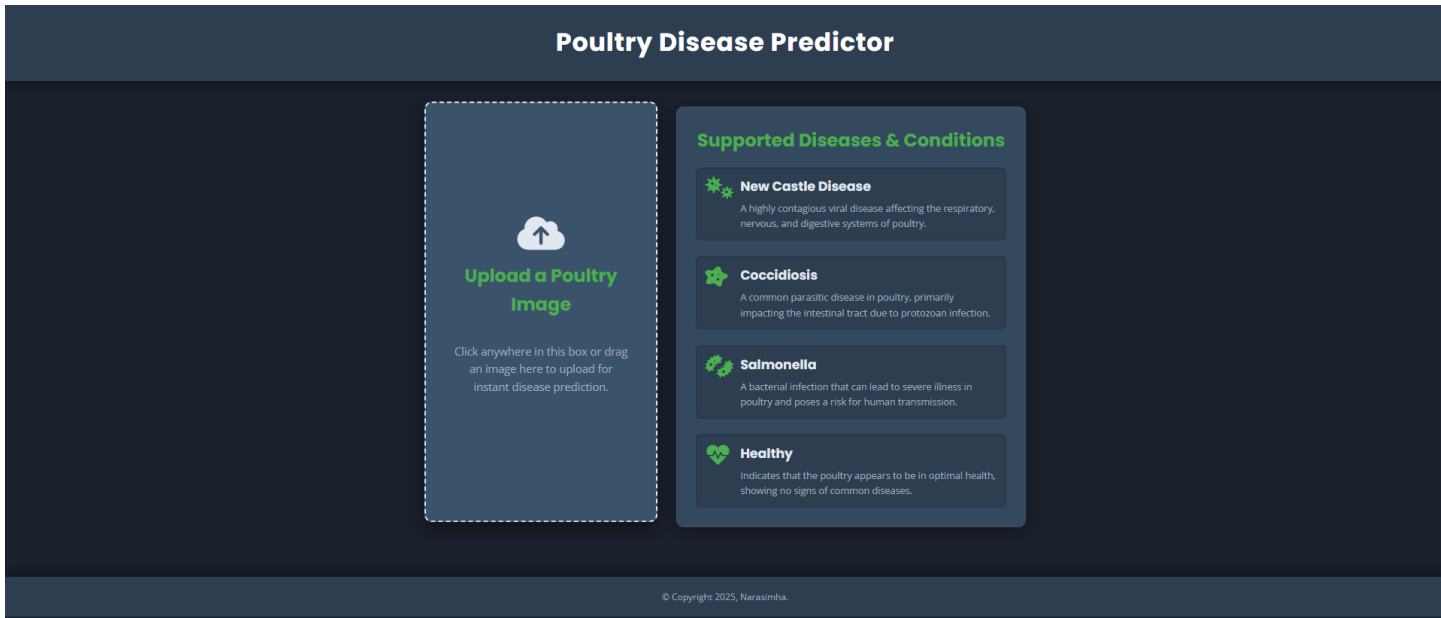
## 1.6 6. FUNCTIONAL AND PERFORMANCE TESTING

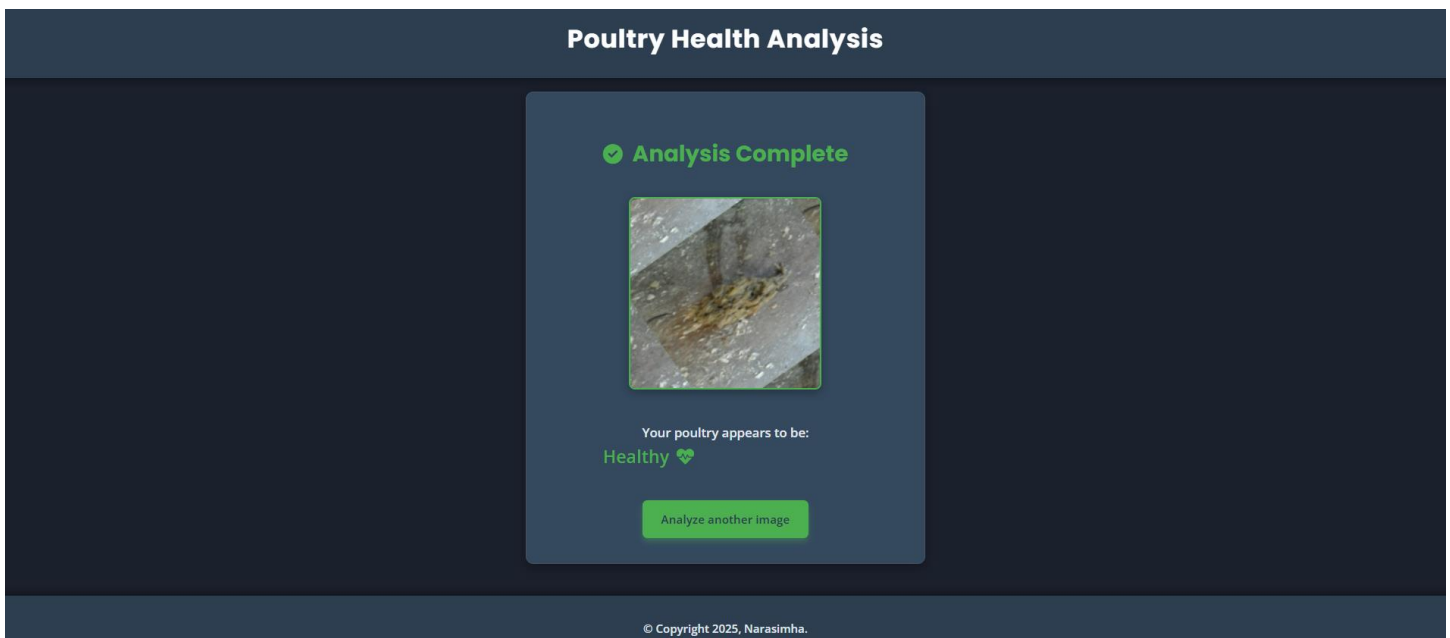
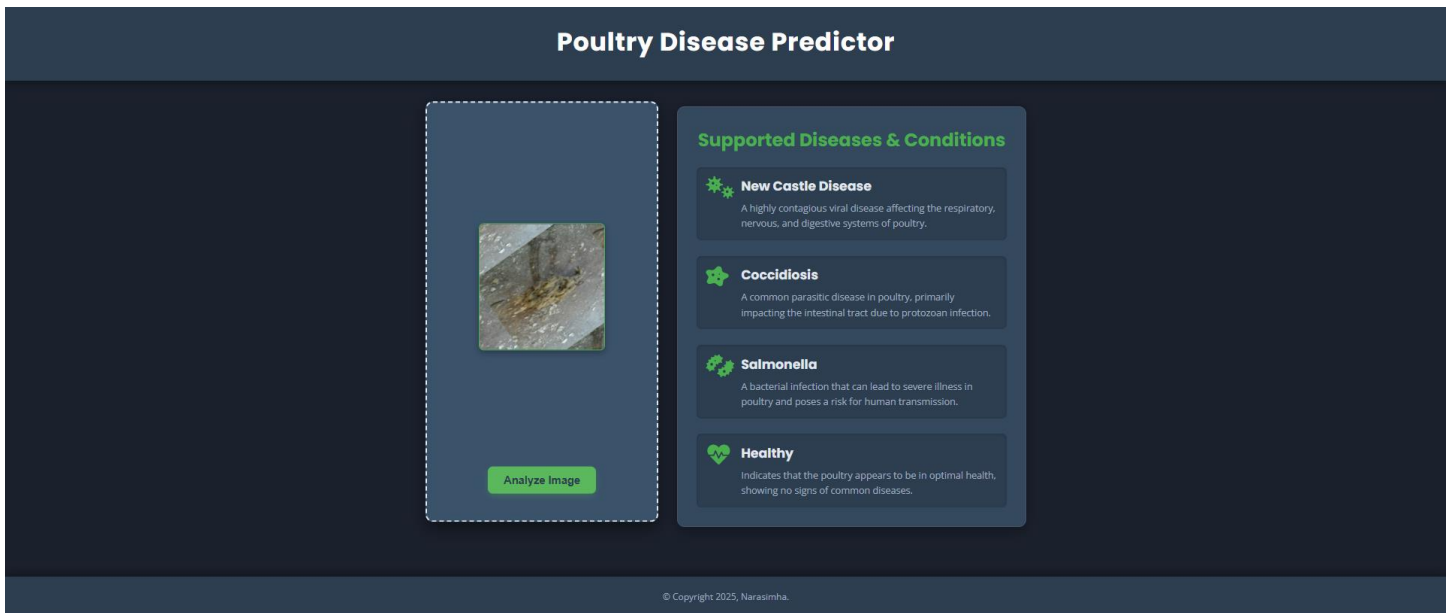
### 6.1 Performance Testing

- **Model Accuracy:** ~91% on test dataset
- **Prediction Speed:** ~2 seconds per image
- **Compatibility:** Tested on desktop and mobile browsers
- **Robustness:** Handles various image resolutions
- **Tool:** TensorFlow Evaluation APIs and Flask logs

## 1.7 7. RESULTS

### 7.1 Output Screenshots:





## 1.8 8. ADVANTAGES & DISADVANTAGES

### Advantages

- Automates poultry disease detection
- Reduces time to diagnosis
- Easy to use via web interface
- High prediction accuracy with CNN

### Disadvantages

- Requires good quality images
- Limited to trained disease categories
- Dependent on dataset diversity

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## 1.9 9. CONCLUSION

The **Poultry Disease Classifier** demonstrates how deep learning and Flask web technology can transform traditional poultry disease detection. The model achieves high accuracy in classifying diseases, and the web app makes the solution accessible and practical for farmers. This innovation can improve poultry health management and reduce economic losses.

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## 1.10 10. FUTURE SCOPE

- Integrate real-time camera feeds for live monitoring
- Add more disease classes
- Build mobile apps for field use
- Deploy on cloud for scalable access

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## 1.11 11. APPENDIX

### **Dataset Link :**

<https://www.kaggle.com/datasets/kausthubkannan/poultry-diseases-detection>

### **GitHub & Project Demo Links :**

<https://github.com/Narasimha-kambham/Poultry-Farm-Disease-Classfier>

### **Video Link :**

[https://drive.google.com/file/d/1V22xwUWkmn\\_Pg9JmwgiVIXZV5zzBqYJU/view?usp=drive\\_link](https://drive.google.com/file/d/1V22xwUWkmn_Pg9JmwgiVIXZV5zzBqYJU/view?usp=drive_link)