

Project Documentation:

Transfer Learning-Based Classification of Poultry Diseases For Enhanced Health Management

1. Introduction

- **Project Title:**

Transfer Learning-Based Classification of Poultry Diseases for Enhanced Health Management

- **Team Members:**

- Muppala Vaishnavi
- Midde Harsha Vardhan
- Mullangi Lakshmi Prasanna
- N Swathi

2. Project Overview

- **Purpose:**

This project aims to assist poultry farmers by providing an AI-powered mobile/web application capable of identifying poultry diseases from images using deep learning models.

- **Features:**

- Image-based disease prediction
- Webcam and file upload support
- Offline usage after deployment
- Immediate treatment suggestions
- User-friendly UI

3. Architecture

- **Frontend:**

The frontend is built using HTML5, CSS3, and Javascript for responsiveness. JavaScript handles webcam functionality.

- **Backend:**

Implemented using Flask, a lightweight Python framework. It loads the model, handles prediction logic, and serves HTML templates.

- **Database:**

Currently, no database is used. The system is designed for direct input and prediction. Future enhancement could include MongoDB to store prediction logs and user history.

4. Setup Instructions

- **Prerequisites:**

- Python 3.x
- Flask
- TensorFlow / Keras
- PIL, NumPy, OpenCV
- Virtual environment (optional)

- **Installation:**

1. Clone the repository
2. Set up a virtual environment (optional)
3. Install required packages using ``pip install -r requirements.txt``
4. Place the trained model as ``model.h5`` in the root directory
5. Run the app using ``python app.py``

5. Folder Structure

- **Client:**

- /templates: HTML templates
- /static/uploads: Stores uploaded images
- /static/css: Custom styles

- **Server:**

- app.py: Flask backend logic
- model.h5: Trained Keras model

6. Running the Application

- **Frontend:**

- Handled by Flask with HTML templates.

- **Backend:**

- Run ``python app.py`` to start the server.
- Access via `http://127.0.0.1:5000`

7. API Documentation

- **POST /predict:**

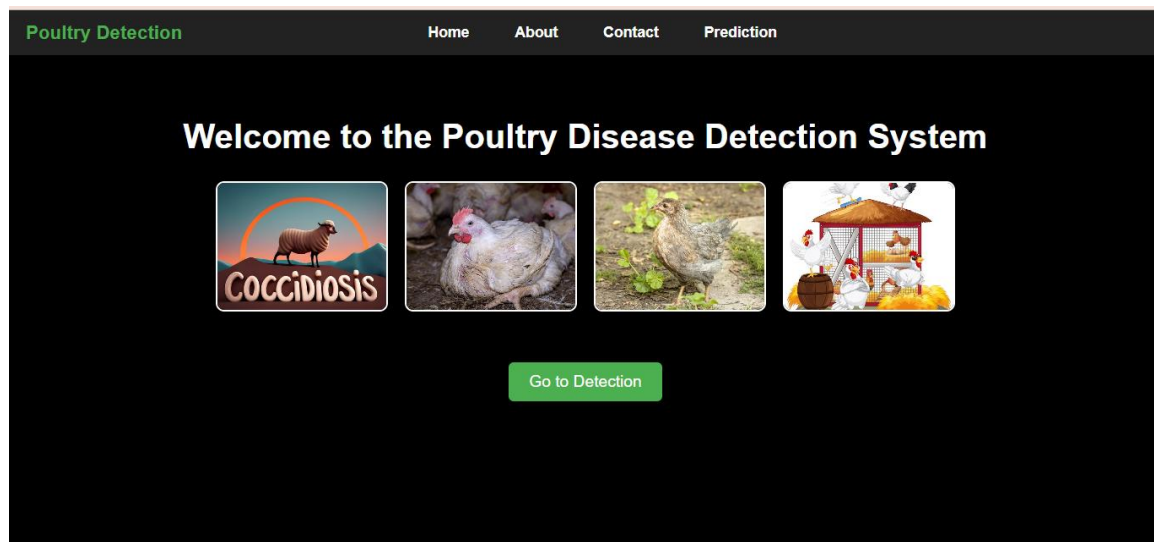
- Parameters: image (via upload or webcam)
- Returns: predicted disease label and suggested treatment.

8. Authentication

- Not implemented in the current version. Future versions may include user login, prediction history, and access control.

9. User Interface

- The UI includes a dark-themed prediction page with upload and camera capture support. Navbar links to Home, About, Contact, and Predict.



10. Testing

- **Functional Testing:**

Feature	Test Description	Expected Outcome
Image Upload	Test uploading images from file system	Image loads and displays for Prediction
Camera Capture	Test image capture via webcam	Live image is captured and sent for Prediction
Model Prediction	Test classification of input image	Correct disease label (e.g., Coccidiosis, Healthy) is displayed

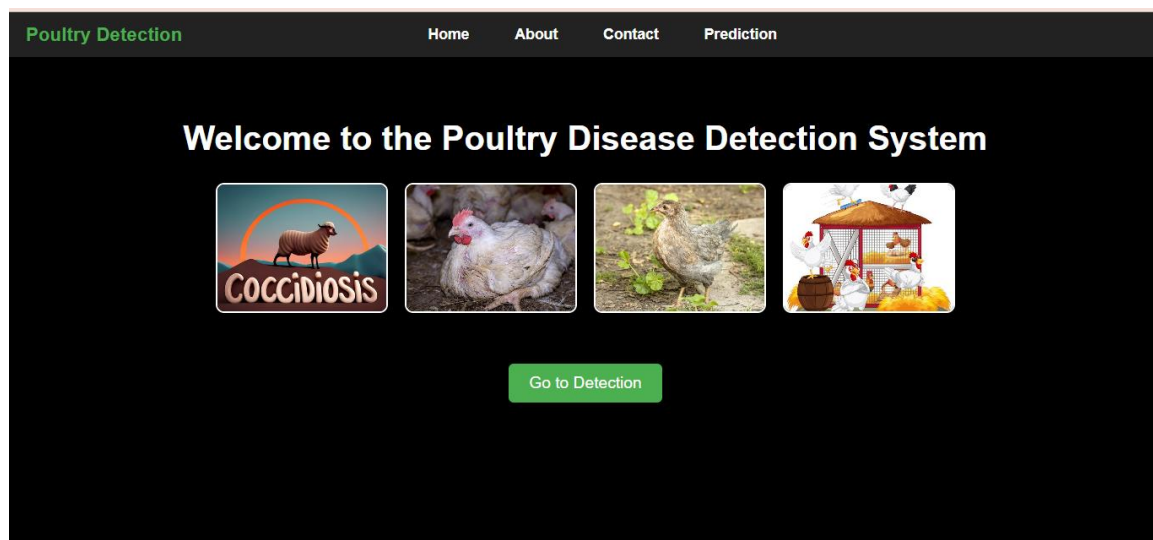
Feature	Test Description	Expected Outcome
Treatment Suggestion	Verify if treatment advice matches predicted disease	Proper message (e.g., "Use Amprolium for 3–5 days") shown
Navigation	Check if navigation links (Home, About, Predict) work properly	Smooth navigation across pages
Error Handling	Upload no image and click Predict	Show message: "No image received."
Offline Access (if built-in)	Test image prediction without internet	Model still works locally via Flask

- **Performance Testing:**

- Model response time tested (< 2 seconds per prediction)

- **Accuracy:** 95%+
- **Precision & Recall:** Evaluated per disease
- **Model Latency:** Below 1.5 sec per image
- **Device Compatibility:** Tested on Android 10+

11. Screenshots or Demo



About PoultryDetect

PoultryDetect is an AI-powered web application designed to identify poultry diseases such as **Coccidiosis**, **Healthy**, **Newcastle Disease** and **Salmonella** using image and symptom inputs.

Contact Us

If you have any questions, suggestions, or would like to get involved with our Poultry Disease Detection project, please reach out to us using the form below.

Make a Prediction

Or Upload an Image

 No file chosen

Poultry Detection

Home About Contact Prediction

Make a Prediction

Start Camera

Or Upload an Image

Choose File

 No file chosen

Predict from Upload

Prediction Result

Predicted Disease: Coccidiosis

Hence, The infection type detected as: **Coccidiosis**

Treatment: Give Amprolium in water for 3–5 days.

Poultry Detection

Home About Contact Prediction

Make a Prediction

Start Camera

Or Upload an Image

Choose File

 No file chosen

Predict from Upload

Prediction Result

Predicted Disease: Healthy

Hence, The infection type detected as: **Healthy**

Treatment: No disease detected. Maintain hygiene.

Poultry Detection

Home About Contact Prediction

Make a Prediction

Start Camera

Or Upload an Image

Choose File

 No file chosen

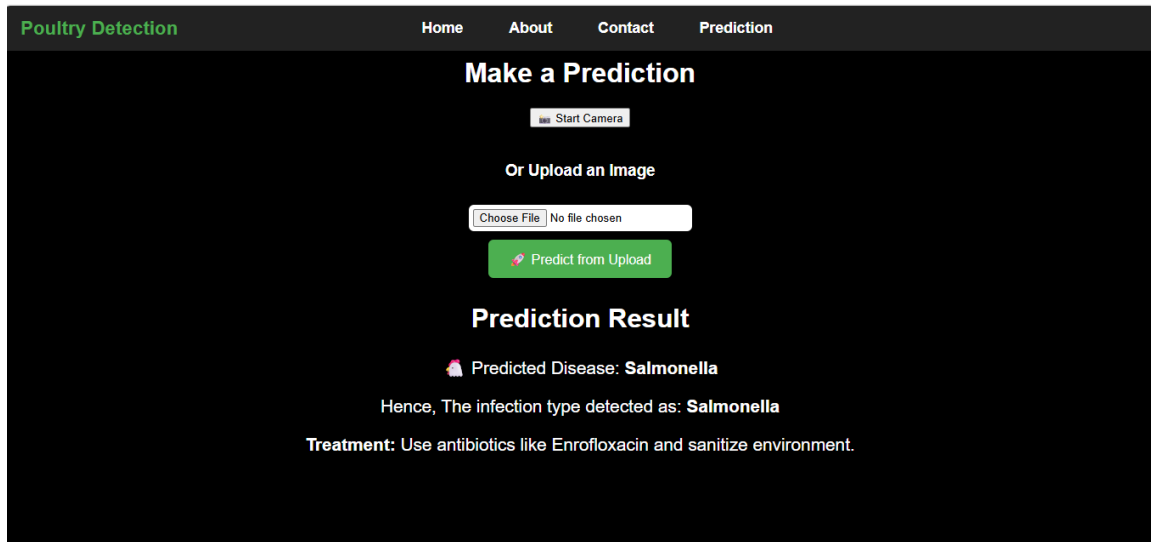
Predict from Upload

Prediction Result

Predicted Disease: New Castle

Hence, The infection type detected as: **New Castle**

Treatment: Isolate birds and apply ND vaccine immediately.



12. Known Issues

- Model may misclassify similar-looking symptoms.
- Class 1 prediction accuracy lower; requires more balanced data.
- Mobile responsiveness may be limited.

13. Future Enhancements

- Add database integration (e.g., MongoDB)
- User login and history tracking
- Multilingual support for rural outreach
- Extend model to cover more poultry diseases
- Improve accuracy through data augmentation