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

# 1. Introduction

Poultry farming is a vital sector in agriculture, contributing significantly to food production and the economy. However, poultry diseases can cause substantial losses if not detected early. This project utilizes transfer learning, a deep learning technique, to classify poultry diseases from images. The web application provides an easy-to-use interface for farmers and veterinarians to upload poultry images and receive instant diagnostic predictions.

# 2. Objectives

* • Develop an image classification model using transfer learning.
* • Integrate the model into a web application using Flask.
* • Facilitate easy diagnosis of poultry diseases via image uploads.

# 3. Project Structure

The directory structure includes the following:

* • static/: Stores static files such as assets, form data, and uploaded images.
* • templates/: Contains HTML templates for the web interface.
* • app.py: The main Flask backend that serves web pages and processes image predictions.
* • healthy\_vs\_rotten.h5: The pre-trained model file for disease classification.
* • ipython.html: A supplementary HTML file, possibly for testing.
* • Readme.txt: Documentation with setup and usage instructions.

# 4. HTML Templates

* • index.html: Home page for the application interface.
* • blog.html / blog-single.html: Informational pages about poultry diseases and project updates.
* • portfolio-details.html: Highlights specific case studies or results.

# 5. Model Overview

The classification model is built using transfer learning from a pre-trained convolutional neural network (CNN), such as MobileNetV2 or ResNet50. It is fine-tuned on a dataset of poultry images categorized by disease type, enabling accurate predictions with minimal training time.

# 6. Flask Application (app.py)

The Flask app handles the following functionalities:  
• Image upload and validation  
• Prediction using the loaded model  
• Display of results on a web page

# 7. How to Run the Application

1. 1. Install required packages from requirements.txt (if provided).
2. 2. Run the app with: python app.py
3. 3. Open the browser and go to http://127.0.0.1:5000/
4. 4. Upload a poultry image and get the prediction result.

# 8. Future Enhancements

* • Expand model to include more poultry diseases.
* • Provide multilingual support for wider accessibility.
* • Integrate treatment suggestions based on predicted diseases.