

Transfer Learning-Based Classification of Poultry Diseases

Introduction:

This project implements a Transfer Learning model using the VGG16 architecture for the classification of poultry diseases into four categories:

1. Salmonella
2. New Castle
3. Coccidiosis
4. Healthy

A flask web app is developed to allow users to upload poultry images and receive predictions in real-time. This tool is beneficial to farmers, researchers, and commercial poultry operations.

Objectives:

- Implements transfer learning with VGG16 on poultry disease dataset.
- Develop an web application for real time prediction.
- Provide early disease detection and management solution.

Dataset:

The dataset was sourced from Kaggle and includes four classes: Salmonella, New Castle, Coccidiosis, Healthy. Due to hardware constraints, 500 images per class were selected for traing, validation, and testing.

Model Architecture:

VGG16 was used as the base model. The top layers were removed, and custom fully connected layers were added. The model was trained in Google Colab with data augmentation using accuracy and loss metrics.

Project Structure:

The directory contains the following:

Static/: for static files like for uploading

Templates/: HTML templates(index, predict, about, contact)

App/: Python Flask backend

Healthy_vs_rotten.h5: trained VGG16 model

Application Flow:

User uploads an image on the web interface.

Flask backend processes the image and feeds it to the trained VGG16 model.

Prediction result is returned and displayed on the web page

Results:

The model achieved high training and validation accuracy with decreasing loss. It effectively poultry disease images

Conclusion:

This project demonstrates how transfer learning can be effectively used for real world disease detection. It provides practical solution for early poultry disease diagnosis and can be enhanced further by adding more datasets.