

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

Project Documentation

1. Introduction

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

Team Members:

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2. Project Overview

- **Purpose:**
- PoultryDetect is a deep learning-powered web application built using Flask and designed in Visual Studio Code. The application classifies poultry droppings to detect potential infections and help farmers take prompt action. The aim is to improve poultry health outcomes and minimize economic loss through early detection.
- **Features**
 - Image-based disease classification
 - User-friendly image upload interface
 - Real-time prediction and feedback
 - Mobile-accessible web app
- **Supported Classes**
 - Coccidiosis
 - Newcastle Disease
 - Salmonella
 - Healthy
 -

3. Architecture

Application Stack:

- - Frontend: HTML/CSS + Bootstrap
- - Backend: Python with Flask
- - Model: Pretrained CNN (Transfer Learning)
- - IDE: Visual Studio Code

4. Workflow

- User uploads an image of poultry droppings.
- Flask backend preprocesses and sends the image to the trained model.
- Model returns predicted class.
- Result is displayed in a readable format

5. Folder Structure

```
PoultryDetect/  
├── static/           # CSS, JS, images  
├── templates/       # HTML templates  
│   ├── index.html  
│   ├── predict.html  
│   └── about.html  
├── model/  
│   └── poultry_model.h5 # Trained CNN model  
├── app.py           # Main Flask app  
├── requirements.txt  # Python dependencies  
└── README.md
```

6. Setup Instructions

Prerequisites

- Python 3.8+
- Flask
- TensorFlow / Keras
- NumPy, OpenCV (if used)
- Visual Studio Code

Installation Steps

Clone the repository

```
git clone https://github.com/your-repo/PoultryDetect
```

Navigate to the project

```
cd PoultryDetect
```

```
# Create and activate virtual environment (optional)

python -m venv venv

source venv/bin/activate # or .\venv\Scripts\activate on Windows


# Install dependencies

pip install -r requirements.txt


# Run the application

python app.py
```

7. Web Interface Details

- **Home Page**
 - Welcome message- Overview images of poultry
 - Navigation: Home | Prediction Page | About
- **Prediction Page**
 - upload image input
 - Predict button
 - Model response displayed with:
 - Predicted infection class
 - Sample image preview
- **About Page**
 - Description of the AI model, dataset, and benefits for farmers

Model Info

- - Model Type: Convolutional Neural Network
 - Technique: Transfer Learning
 - Dataset: Poultry droppings images (classified manually)
 - Output Classes: 4
 - Input Format: .jpg or .png images

Testing & Evaluation

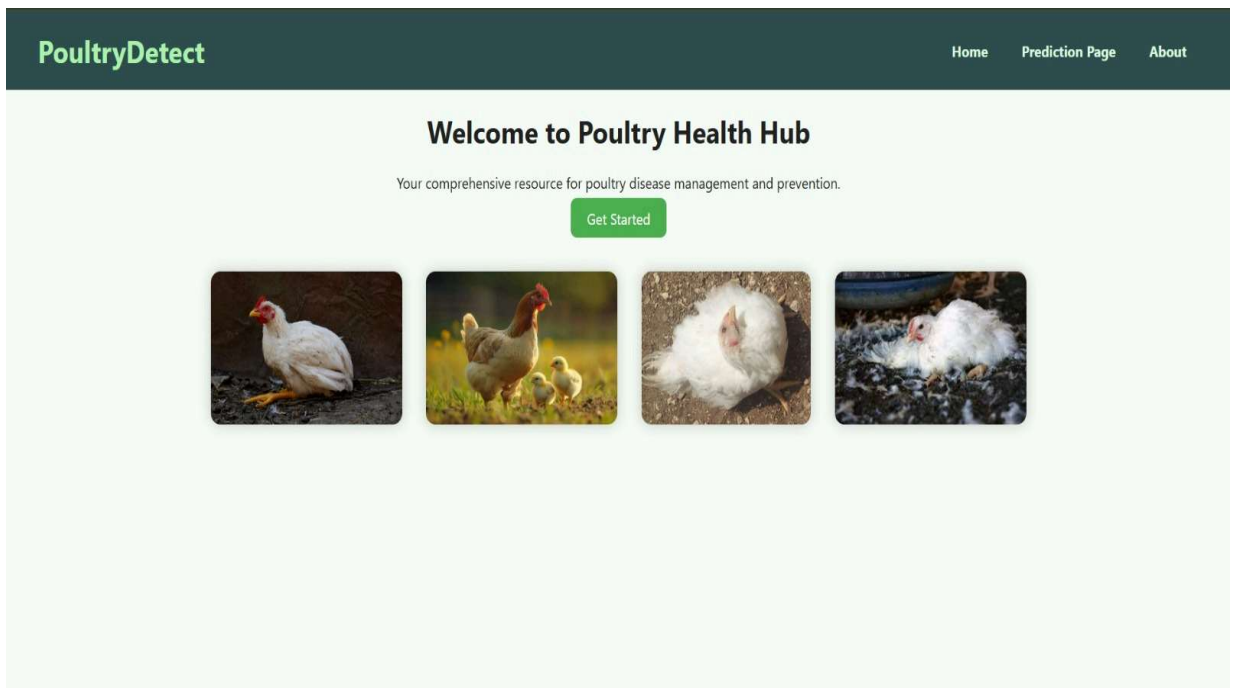
- **Testing Performed**
 - Manual testing via GUI
 - Model accuracy evaluated on test dataset
 - Various infection types tested through UI

Sample Predictions

- | Image Type | Result

- | Yellow Droppings | Coccidiosis |
- | Greenish Droppings | Newcastle Disease |
- | White Watery Patch | Salmonella |
- | Normal Solid Droppings | Healthy

Screenshots



About This Project

This AI-based poultry disease detection system uses a deep learning model that is used to classify images of chicken droppings into four categories: Coccidiosis, Newcastle Disease, Salmonella, and Healthy. The project aims to assist farmers with quick, on-the-spot diagnosis using image input. It helps reduce the economic impact of delayed treatment and improves poultry health management efficiency. The model was trained using transfer learning with over so many images and tested for reliable accuracy. This web interface is user-friendly and mobile-accessible.

Prediction

Upload Your Image:

Choose File No file chosen

Predict

Prediction

Upload Your Image:

No file chosen



Hence, the infection type detected is: **Coccidiosis**

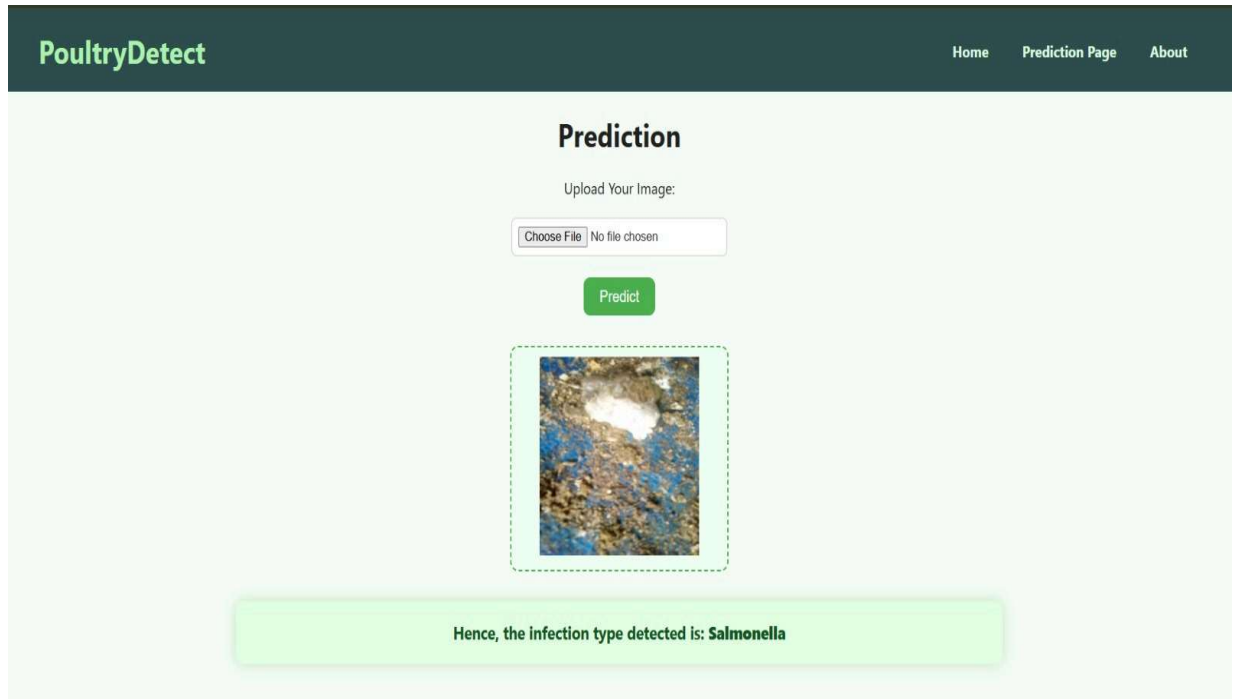
Prediction

Upload Your Image:

No file chosen



Hence, the infection type detected is: **Newcastle Disease**



Known Issues

- - Model accuracy may vary in poor lighting
 - Dataset limited to visually labeled classes
 - No user authentication
 - Limited mobile responsiveness (minor layout shifts)

Future Enhancements

- - Add user login and history tracking
 - Confidence score with predictions
 - Suggest preventive measures based on result
 - Expand dataset with more varied images
 - Add multi-language support
 - Improve mobile UX and camera integration

