# 🐔Poultry Disease Prediction using Deep Learning

Internship Project Report

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## 📖Abstract

This project aims to develop a deep learning-based web application for predicting poultry diseases from images.   
Farmers often struggle with identifying diseases early, which can lead to widespread infection and economic loss.   
Using a pre-trained deep learning model integrated with a Flask backend and a simple HTML frontend,   
this application enables users to upload an image of an infected poultry and receive a disease prediction in real-time.

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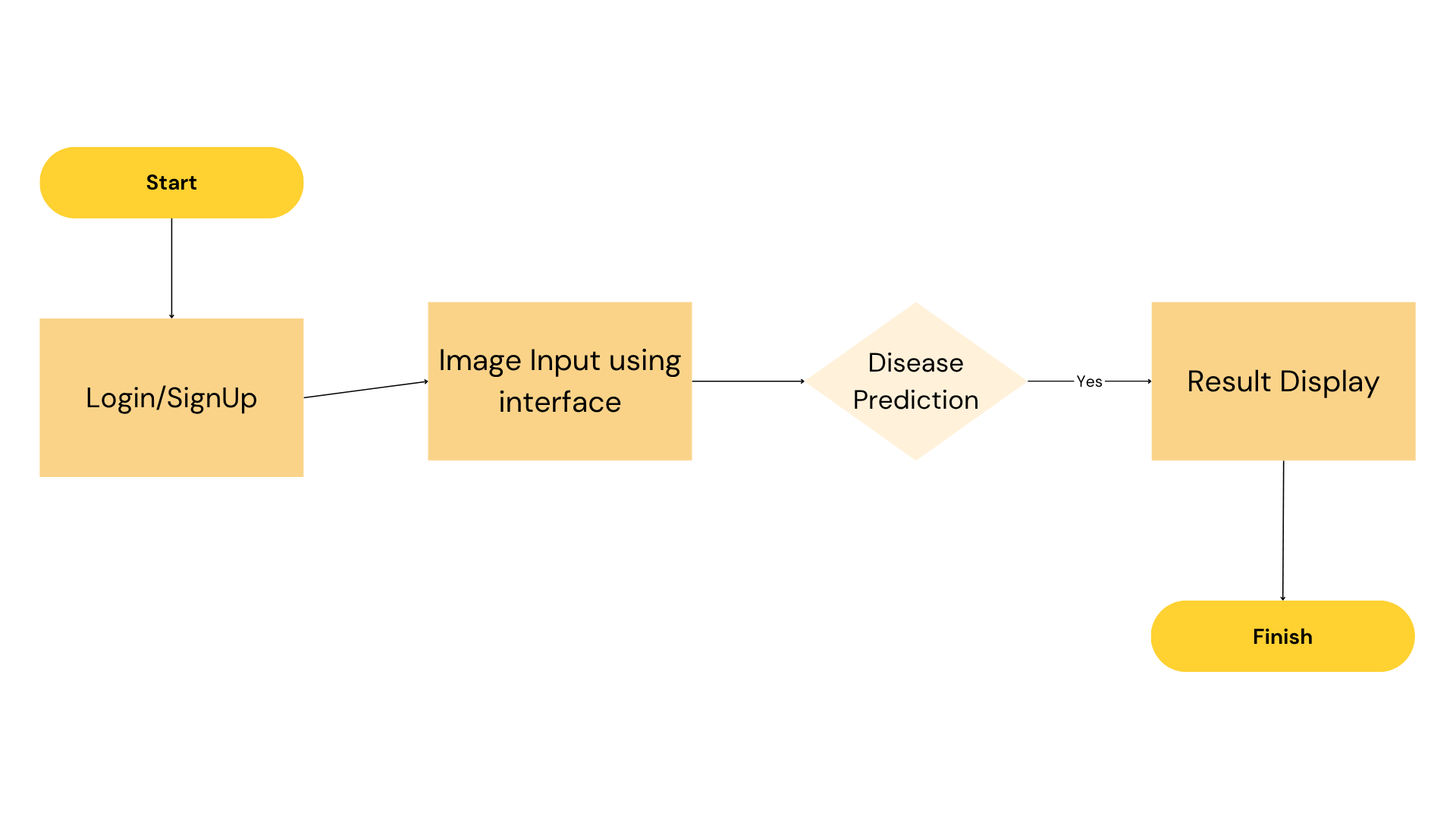
## 1. 🔍Introduction

Poultry farming is a significant sector in agriculture and plays a crucial role in food production and rural economy.   
However, poultry are susceptible to a variety of diseases, which can spread rapidly and lead to high mortality rates.   
This project introduces a deep learning-based solution that assists in the early identification of poultry diseases through image analysis.

## 2. 🔍 Objectives

- To develop a web-based system that can predict poultry diseases from images.  
  
- To integrate a deep learning model into a user-friendly web interface.  
  
- To assist farmers and researchers in early detection and prevention of poultry diseases.

## 3. System Architecture

The system consists of the following components:  
  
1. Frontend for image upload.  
  
2. Flask backend to process requests.  
  
3. Pre-trained deep learning model for disease classification.  
  
4. Result display with disease name.  


## 4. 🧰 Technology Stack

- Python  
- Flask  
- TensorFlow / Keras  
- HTML, CSS  
- OpenCV (optional for preprocessing)  
- Jupyter Notebook (for training)

## 5. 📁 Dataset

The dataset consists of poultry images categorized by different disease types. Each image is labeled, and preprocessing includes resizing, normalization, and augmentation.

## 6. Model Architecture

The model used is a Convolutional Neural Network (CNN), optionally based on a pretrained ResNet50. It includes several convolutional layers followed by dense layers.   
The final output layer uses Softmax activation to classify into disease categories.

## 7. Implementation

- The frontend is built using HTML and CSS for image upload.  
  
- Flask backend handles image submission and prediction.  
  
- The model is loaded using TensorFlow's load\_model function.  
  
- Predictions are returned and displayed on the result page.

## 8. Results and Screenshots

The application predicts diseases with high ~ 90% accuracy and provides real-time feedback.

## 9. Challenges Faced

- Dataset imbalance  
- Image noise and varying lighting  
- Deployment issues on cloud  
- Integrating model with web interface

## 10. Future Enhancements

- Add more disease classes  
- Improve model accuracy with more data  
- Provide treatment suggestions  
- Enable multi-language support

## 11. Conclusion

This project demonstrates the practical application of deep learning in agriculture, particularly in poultry health monitoring. The web app is a helpful tool for farmers to detect diseases early and take preventive measures.