

Project Design Phase

Solution Architecture

Date	25 JUNE 2025
Team ID	LTVIP2025TMID34941
Project Name	Disease Recognition in Chickens
Maximum Marks	4 Marks

Solution Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

Overview

The **Solution Architecture** for the "Disease Recognition in Chickens" project defines the components, technologies, data flow, and integration points used to achieve efficient disease detection in poultry using deep learning.

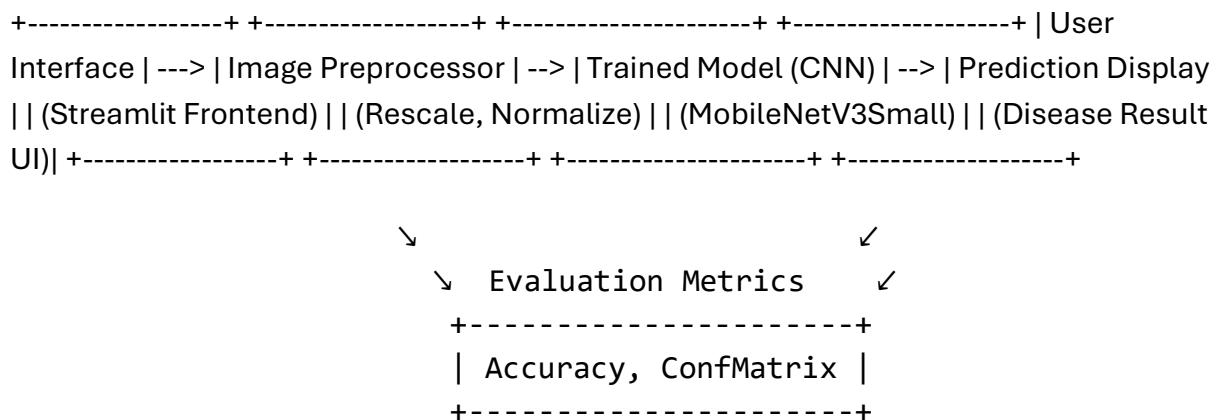
Objectives of the Solution Architecture

- Identify the most efficient and cost-effective tech stack to solve the poultry disease identification problem.
- Illustrate how different system components interact.
- Define input/output formats, feature components, and deployment environment.
- Ensure scalability, reliability, and usability of the overall solution.

Key Components

Component	Description
User Interface	Built using Streamlit , allowing users to upload images easily.
Model Layer	MobileNetV3Small (transfer learning) trained on chicken fecal images.
Preprocessing Module	Resizes and normalizes the input image before feeding into the model.
API Layer	Flask/Keras backend to serve predictions via REST API.
Storage	Image data stored temporarily in memory; optionally linked to cloud (e.g., S3 or local FS).
Evaluation Metrics	Accuracy, Precision, Recall, F1-Score, Confusion Matrix.

Architecture and Data Flow



Technology Stack

Layer	Technology
Frontend	Streamlit
Backend	Flask, TensorFlow/Keras
Model	MobileNetV3Small (Pretrained)
Programming Lang	Python
Dataset Format	CSV + Image folders
Data Augmentation	Keras ImageDataGenerator
Deployment	Localhost or Streamlit Sharing

Key Design Features

- Modular architecture: Easy to test, replace, and upgrade components.
- Lightweight UI: Works in low-resource systems.
- Scalable: Model and backend can be deployed on cloud in future.
- Accurate: Leverages transfer learning for high prediction performance.