Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	27 June 2025
Team ID	LTVIP2025TMID44008
Project Name	Transfer Learning-based Classification of Poultry Diseases for Enhanced Health Management
Maximum Marks	4 Marks

Technical Architecture:

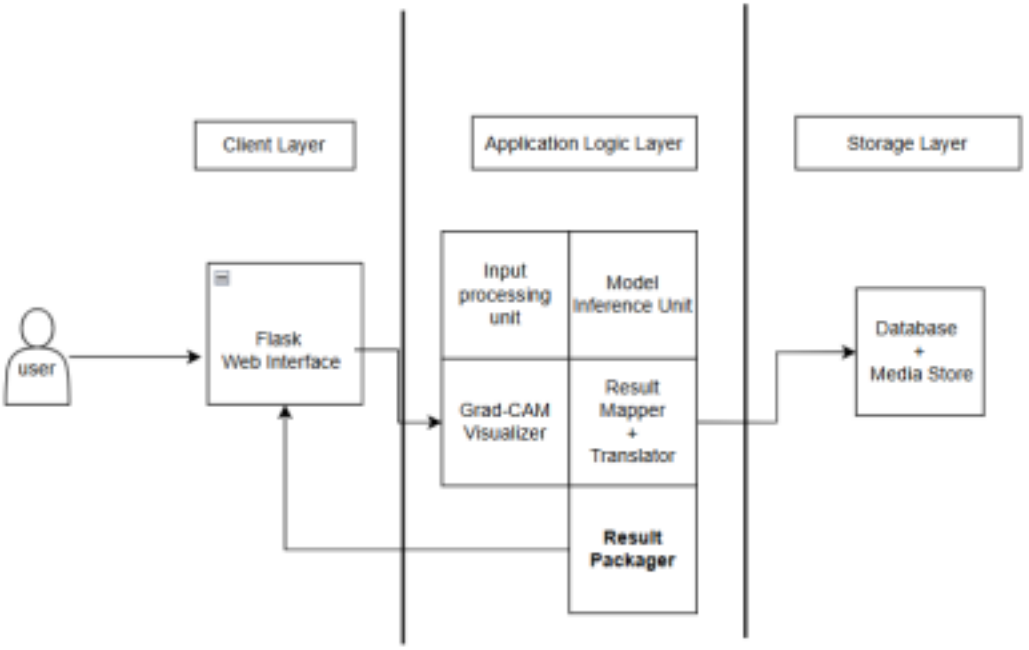

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web interface for farmers and vets to upload images and input symptoms	HTML, CSS, Bootstrap, JavaScript
2.	Application Logic-1	Backend logic for routing, form handling, and inference calling	Python with Flask Framework
3.	Application Logic-2	Disease prediction logic using transfer learning	TensorFlow / Keras

			(ResNet50 / EfficientNetB0)
4.	Application Logic-3	Explainable AI output using Grad-CAM	OpenCV, Matplotlib
5.	Database	Store user info, logs, history, and feedback	SQLite (Local) or MongoDB
6.	File Storage	Storage of uploaded images and Grad-CAM outputs	Local File System / AWS S3 / Firebase Storage
7.	External API-1	For language translation and multilingual support	Google Translate API
8.	Machine Learning Model	Used for poultry disease classification into 4 categories	Pre-trained CNN + Fine-tuned ResNet50 Model

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Web, AI, and Visualization frameworks used	Flask, TensorFlow, Keras, Bootstrap
2.	Security Implementations	Login/Authentication, HTTPS, input validation, secure data handling	Flask Login, SHA-256, HTTPS (TLS)
3.	Scalable Architecture	3-tier structure: UI → Application Server → Model & DB	Flask App with modular MVC separation
4.	Availability	Can be deployed on cloud or offline; availability depends on hosting medium	Heroku / AWS / Firebase with fallback
5.	Performance	Optimized ML model, image compression, caching for Grad-CAM outputs, fast REST calls	Model quantization, local cache, Flask