

Project Design Phase-II

Technology Stack (Architecture & Stack)

Date	15 February 2025
Team ID	LTVIP2025TMID42449
Project Name	Butterfly Species Classification System
Maximum Marks	4 Marks

1 Technical Architecture

The Deliverable shall include the architectural diagram and the information as per Table 1 & Table 2.

1.1 Table-1: Technology Stack

S.No	Component	Description	Technology
1	User Interface	Web interface for image uploads and predictions	Streamlit
2	Application Logic	Image preprocessing and model inference	Python, TensorFlow/Keras
3	API Management	Handles prediction requests	Flask
4	Database	Stores species metadata and facts	SQLite
5	Machine Learning Model	Pre-trained CNN for classification	MobileNetV2
6	Infrastructure	Cloud and local deployment	Streamlit Cloud, Google Colab

1.2 Table-2: Application Characteristics

S.No	Characteristics	Description	Technology
1	Open-Source Frameworks	Frameworks for app and model development	Streamlit, TensorFlow
2	Scalability	Supports multiple users with modular design	Docker, Cloud Hosting
3	Performance	Fast prediction with lightweight model	MobileNetV2, Caching
4	Usability	Intuitive interface for non-experts	Streamlit, Custom CSS

References:

<https://c4model.com/>

<https://aws.amazon.com/architecture>