Project Design Phase
Proposed Solution Template

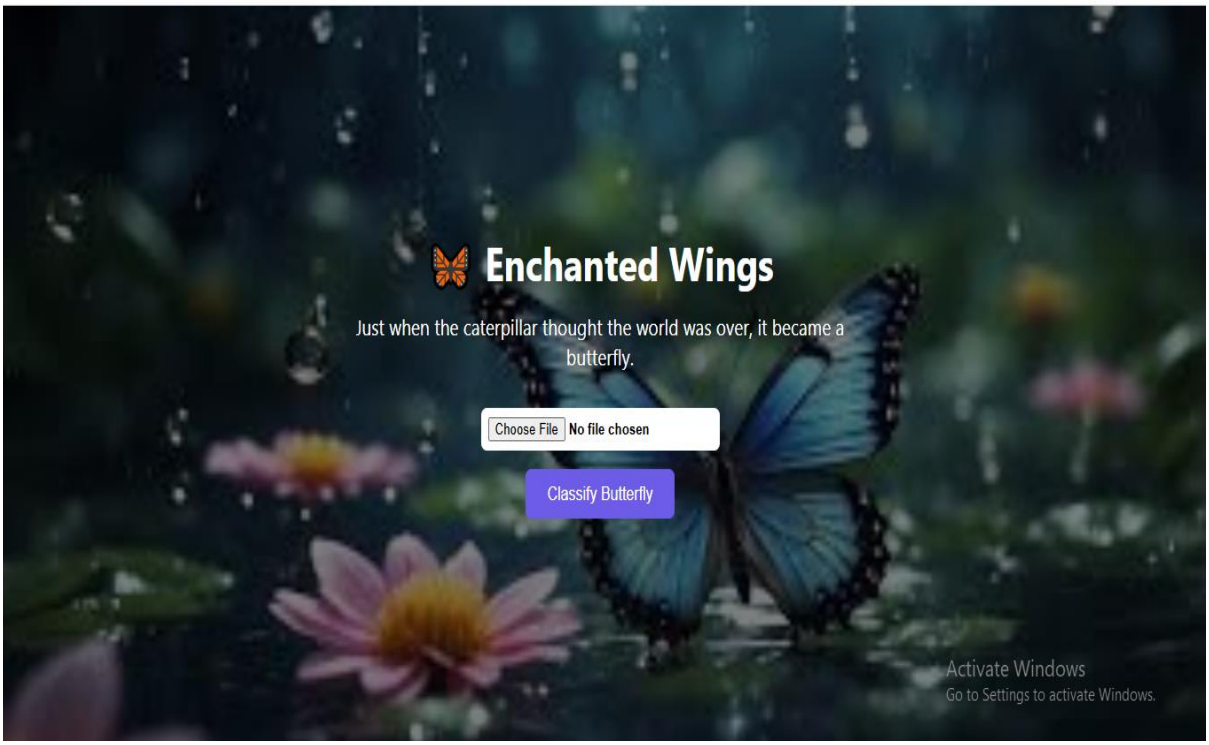
Team ID	LTVIP2025TMID38181
Project Name	Enchanted Wings :Marvels Of butterfly Species
Maximum Marks	2 Marks

Proposed Solution Template:

Project team shall fill the following information in the proposed solution template.

S.No.	Parameter	Description
1.	**Problem Statement**	Manual identification of butterfly species in biodiversity research is time-consuming, requires expert knowledge, and is impractical for field use or large-scale ecological monitoring.
2.	**Idea / Solution Description**	We propose an AI-powered butterfly image classification system using **transfer learning (VGG16)** to automate species identification. The model is trained on 6499 labeled images spanning 75 butterfly species and is deployed through a lightweight **Flask-based web app** that provides real-time identification in field or educational settings.
3.	**Novelty / Uniqueness**	This solution combines **deep learning with citizen science** by enabling real-time field identification via mobile devices, even in offline conditions. It leverages **transfer learning** for high accuracy with limited resources and is the first to integrate species-specific education and research-ready outputs.
4.	**Social Impact / Customer Satisfaction**	The tool empowers **conservationists, ecologists, and students**, making species identification faster, more accessible, and data-driven. It promotes **biodiversity education**, supports **habitat monitoring**, and fosters **citizen science engagement**.
5.	**Business Model (Revenue Model)**	The solution can follow a **freemium model**: free access for students and NGOs, with a paid version offering API access, large-scale dataset support, or integration with field sensors for research institutions.
6.	**Scalability of the Solution**	The model and app can be scaled to include other insect species or expanded to global butterfly datasets. It can also be integrated into **mobile apps, drone-based habitat scanning**, or **AR-assisted educational tools** in the future.

OUTPUT :-



Resultant Screen:-