Project Design Phase
Proposed Solution Template

Date	20 JUNE 2025
Team ID	LTVIP2025TMID32471
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 (Problem to be solved)	Manual butterfly identification is slow, expertise-dependent, and limits the scale and accuracy of biodiversity studies. It often causes delays in species classification and makes ecological data collection inefficient.
2.	Idea / Solution description	"Enchanted Wings" is an AI-powered butterfly species classification tool that uses transfer learning and pre-trained CNN models to identify butterflies from images. The system allows users (researchers, students, citizens) to upload butterfly photos and receive accurate species predictions in real time. It enhances fieldwork efficiency, reduces human error, and aids in ecological research and education.
3.	Novelty / Uniqueness	The tool leverages lightweight AI models (e.g., ResNet50 via transfer learning) to provide fast, offline-compatible species classification—something not widely available in biodiversity apps. It is customizable, deployable on mobile or web, and usable in low-resource field conditions.
4.	Social Impact / Customer Satisfaction	It enables inclusive participation in biodiversity research by making species identification accessible to students, citizen scientists, and non-experts. It promotes conservation awareness, improves ecological data accuracy, and supports researchers through automation and time-saving features.
5.	Business Model (Revenue Model)	Freemium model: Free basic access for students and citizen scientists. Premium subscription for researchers/institutions with added features like species history, offline mode, and expert data analytics. Potential partnerships with environmental NGOs, research institutes, and educational platforms.
6.	Scalability of the Solution	The model can be extended to include other insect species or wildlife (e.g., birds, plants). It can scale globally by integrating region-specific datasets. Cloud and edge-device deployment options make it adaptable for mobile use in remote environments.