

# Project Design Phase

## Proposed Solution Template

Date	15 February 2025
Team ID	LTVIP2025TMID34696
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 identification of butterfly species is time-consuming, requires expert knowledge, and is not scalable for large biodiversity monitoring. There is a lack of AI-based tools to automate butterfly species classification.
2.	Idea / Solution description	The project proposes an AI-powered butterfly classification system using <b>Transfer Learning (VGG16)</b> that can accurately identify butterfly species from images. It helps automate the classification process, supporting research, education, and conservation efforts.
3.	Novelty / Uniqueness	Unlike generic image classifiers, this solution is fine-tuned specifically for butterflies with a large dataset of 75 species. It combines deep learning with a user-friendly interface (Flask + HTML) for use in mobile/web platforms.
4.	Social Impact / Customer Satisfaction	The system promotes <b>biodiversity conservation, citizen science, and environmental education</b> . It empowers researchers, students, and the public to learn about and monitor butterflies, contributing to ecological awareness.
5.	Business Model (Revenue Model)	The solution can be monetized through: <ul style="list-style-type: none"><li>- Freemium model (basic free version, paid pro features)</li><li>- API subscriptions for research organizations</li><li>- Educational packages for schools</li><li>- NGO/CSR partnerships for sustainability</li></ul>
6.	Scalability of the Solution	The model is scalable to include more species, support multiple languages, and integrate with mobile apps, conservation databases, and real-time citizen submissions via cloud APIs. It can also be extended to other insect species.