**Project Design Phase**

**Proposed Solution Template**

|  |  |
| --- | --- |
| Date | 30 June 2025 |
| Team ID | LTVIP2025TMID44229 |
| 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** |
|  | Problem Statement (Problem to be solved) | Manual identification of butterfly species is time-consuming, error-prone, and impractical for large-scale biodiversity monitoring and research. |
|  | Idea / Solution description | Develop a deep learning–based image classification model using transfer learning (VGG16) to automatically identify butterfly species from images. |
|  | Novelty / Uniqueness | Uses real-world butterfly image dataset with 75 species; leverages pre-trained CNNs for better accuracy and reduced training time. User-friendly web UI for interaction. |
|  | Social Impact / Customer Satisfaction | Enables researchers, ecologists, and citizen scientists to monitor biodiversity and endangered species, contributing to environmental conservation. |
|  | Business Model (Revenue Model) | Can be extended as a paid web-based service for environmental agencies, educational institutions, and biodiversity researchers. |
|  | Scalability of the Solution | The solution can be scaled to include more species, mobile deployment, and integration with field monitoring tools for real-time predictions. |