**Project Design Phase**

**Proposed Solution Template**

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| Date | 27-06-2025 |
| Team ID | LTVIP2025TMID59407 |
| 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 is time-consuming, prone to human error, and requires expert knowledge. An automated solution is needed for fast and accurate classification. |
| 2. | Idea / Solution Description | A butterfly image classification system using transfer learning (VGG16) deployed via a Flask-based web app. Users upload an image, and the model predicts the butterfly species in real time. |
| 3. | Novelty / Uniqueness | The system integrates high-accuracy deep learning with an intuitive web interface, making advanced classification technology accessible to researchers, students, and the public. |
| 4. | Social Impact / Customer Satisfaction | Helps biodiversity conservation efforts, supports ecological research, and promotes environmental education through citizen science initiatives. |
| 5. | Business Model (Revenue Model) | Free for educational use. Premium features like bulk uploads, detailed analytics, and offline models could be offered via subscriptions or institutional licensing. |
| 6. | Scalability of the Solution | Can scale by expanding the dataset (more species, regions), converting to mobile apps, integrating with IoT field devices, or offering APIs for researchers and developers. |