**Ideation Phase**

**Enchanted Wings: Marvel Of Butterfly species project Template**

| Date | 27th june 2025 |
| --- | --- |
| Team ID | LTVIP2025TMID42332 |
| Project Name | Enchanted Wings: Marvel of Butterfly species |
| Maximum Marks | 4 Marks |

### St****ep 1: Team Gathering, Collaboration & Select the Problem Statement****

**Problem Statement:**  
In the face of biodiversity loss and ecological degradation, identifying butterfly species manually is time-consuming and prone to error. Our goal is to develop an AI/ML-based system that can automatically classify butterfly species from images with high accuracy, supporting conservation efforts, scientific research, and educational outreach.

### Step****2: Brainstorm, Idea Listing and Grouping****

During team brainstorming, we explored various approaches and grouped ideas under key themes:

* **Data Collection:**
* Use Kaggle or UCI datasets of butterfly images.
* Collaborate with butterfly sanctuaries or research bodies.
* Augment datasets using image transformation techniques.
* **AI/ML Model Development:**
* Train CNN-based deep learning models (e.g., ResNet, VGG, MobileNet).
* Leverage transfer learning to enhance performance with fewer resources.
* Evaluate models using precision, recall, and F1 score.
* **Application & User Interaction:**
* Create a web/mobile application for image input and prediction.
* Display species name, description, and conservation status.
* Add feedback options to improve predictions over time.
* **Educational & Research Use:**
* Add a learning module for users (fun facts, quizzes).
* Use output data for scientific research or tracking biodiversity.
* **Innovative Features:**
* Include AR visualization of butterfly species.
* Develop a multilingual interface.
* Introduce offline prediction mode for field researchers.

### Step****3: Idea Prioritization****

| **Priority Level** | **Key Ideas to Implement** |
| --- | --- |
| * **High Priority** | CNN with transfer learning, dataset curation, prediction app |
| * **Medium Priority** | UI/UX features, educational module, multilingual text |
| * **Innovative/Future** | AR visualization, gamification, offline access |