**Ideation Phase**

**Define the Problem Statements**

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| --- | --- |
| Date | 23June 2025 |
| Team ID | LTVIP2025TMID35088 |
| Project Name | **Enchanted Wings: Marvels of Butterfly Species** |
| Maximum Marks | 2 Marks |

**🦋 Customer Problem Statement – Enhanced Wings**

Butterflies are not only beautiful creatures but also vital indicators of ecological balance and biodiversity. Accurate identification of butterfly species is essential for ecological research, conservation efforts, and education. However, manual classification by experts is time-consuming and often inaccessible to students, nature enthusiasts, and citizen scientists.

**Enhanced Wings** is an AI-powered butterfly classification system that uses deep learning to identify butterfly species from uploaded images. By leveraging a trained convolutional neural network (CNN) model (e.g., VGG16), the system classifies images into one of 75 known butterfly species with high accuracy.

This project bridges the gap between biodiversity data collection and modern technology, enabling users to:

* Instantly identify butterfly species
* Raise awareness about conservation
* Support research and ecological monitoring

The tool is accessible via a user-friendly web interface, making butterfly classification fast, interactive, and educational.

**🧠 Example Use Case: Real-Time Butterfly Species Prediction**

**📷 Use Case: Wildlife Enthusiast Classifying a Butterfly in the Field**

A wildlife enthusiast or biology student spots a butterfly in a garden. They snap a picture and use the **Enhanced Wings Web App** to identify it.

**📝 Image Upload:**

They upload the photo of the butterfly via the input form.

**⚙️ Behind the Scenes:**

The uploaded image is:

* Preprocessed and resized (224x224)
* Fed into the VGG16 CNN model
* Compared against a trained dataset of 75 butterfly species

**🎯 Model Output:**

* **Prediction**: CRIMSON PATCH
* **Confidence**: 96.7%
* **Class Index**: 24

**🖼️ Visual Output:**

* Name of the butterfly: **Crimson Patch**
* Confidence Meter: **96.7% match**
* Uplifting quote:

“Just when the caterpillar thought the world was over, it became a butterfly.”

* 🎨 Elegant interface with butterfly-themed background and soft animations
* Option to **classify another butterfly**

**✅ Outcome:**

* **Students** can learn species names quickly.
* **Researchers** can automate biodiversity tracking.
* **Conservationists** get more accessible tools for species observation.
* **The general public** becomes more engaged with nature using AI.