**Project Design Phase**

**Problem – Solution**

|  |  |
| --- | --- |
| Date | 26-06-2025 |
| Team ID | LTVIP2025TMID59656 |
| Project Name | Enchanted Wings: Marvels of Butterfly Species |
| Maximum Marks | 2 Marks |

**Problem – Solution Fit Overview:**

The Problem–Solution Fit ensures that *Enchanted Wings* effectively addresses key challenges in butterfly species identification and biodiversity conservation through AI/ML innovations. This validation is crucial before expanding the solution for research, education, and ecological monitoring.

**Purpose:**

* Enable accurate identification of butterfly species using image recognition.
* Facilitate easy access to butterfly data for researchers, educators, and enthusiasts.
* Support conservation efforts with predictive insights about species distribution.
* Encourage citizen science and public engagement through interactive tools.

### **Problem Statement:**

**Researchers, educators, and nature enthusiasts often face:**

* Difficulty in identifying butterfly species due to visual similarities.
* Lack of centralized and accessible databases for butterfly information.
* Time-consuming manual classification processes.
* Insufficient data insights to monitor biodiversity and migration trends.
* Limited tools to engage the public in ecological tracking and awareness.

### **Solution:**

**Enchanted Wings** offers a comprehensive AIML-based platform that provides:

* Automated Species Identification through deep learning on butterfly images.
* Intelligent Database Access enriched with taxonomic, ecological, and visual data.
* Predictive Analysis of population and migration using historical patterns.
* Interactive Visualization Tools to explore biodiversity hotspots and seasonal trends.
* Citizen Science Integration through mobile and web apps that allow butterfly logging and real-time feedback.