**Project Design Phase**

**Proposed Solution**

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| Date | 28 June 2025 |
| Team ID | LTVIP2025TMID35088 |
| Project Name | Enhanced Wings: Marvels of Butterfly Species |
| Maximum Marks | 2 Marks |

**Proposed Solution:**

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| **S.No.** | **Parameter** | **Description** |
|  | Problem Statement (Problem to be solved) | Butterfly species show incredible diversity in wing patterns and structures, but many remain undocumented or hard to identify. This limits ecological research, conservation efforts, and public awareness. There is a need for an accessible, intelligent tool to identify and showcase the unique features of butterfly wings. |
|  | Idea / Solution description | **Enhanced Wings** is an AI-powered web platform that identifies butterfly species based on wing patterns and colors using image recognition. It provides detailed visual and scientific insights about each species, highlighting their unique features, adaptations, and ecological roles. The tool supports biodiversity research, conservation awareness, and makes butterfly identification easy and engaging for researchers, students, and nature enthusiasts. |
|  | Novelty / Uniqueness | **Enhanced Wings** stands out by combining artificial intelligence with biodiversity research to automatically identify butterfly species through wing pattern recognition. Unlike traditional field guides or static databases, it offers:   * 🦋 Real-time image-based identification * 🧠 AI-driven insights on evolutionary wing adaptations * 🌍 Accessibility for both researchers and the general public * 📱 Mobile-friendly interface to support citizen science   This innovative blend of technology and ecology makes butterfly exploration interactive, educational, and scalable. |
|  | Social Impact / Customer Satisfaction | **Enhanced Wings** helps people connect with nature by making butterfly identification easy and fun. It supports conservation, encourages learning, and involves communities in protecting biodiversity. The simple, user-friendly design ensures a satisfying experience for both experts and nature lovers. |
|  | Business Model (Revenue Model) | **Enhanced Wings** will offer free basic access for butterfly identification and learning. Revenue will be generated through premium subscriptions for advanced features, partnerships with educational and conservation groups, eco-friendly advertisements, and sales of butterfly-themed merchandise. This model supports both accessibility and sustainability. |
|  | Scalability of the Solution | **Enhanced Wings** is highly scalable, as it can be expanded to cover more butterfly species globally by training the AI model with additional image data. The platform can easily support multiple languages, regional databases, and mobile accessibility, making it adaptable for schools, researchers, and citizen scientists worldwide. Cloud-based infrastructure ensures smooth performance as user demand grows. |