

Final Report

Project Title: *Enchanted Wings: The Marvels of Butterflies*

1. INTRODUCTION

1.1 Project Overview

"Enchanted Wings: The Marvels of Butterflies" is an interactive, educational digital project that explores the life, beauty, ecological importance, and conservation of butterflies. It is designed as a multimedia-rich experience aimed at creating awareness and appreciation for these delicate insects, blending science, art, and technology.

1.2 Purpose

The main goal of this project is to educate users—especially students and nature enthusiasts—about butterflies, their lifecycle, species diversity, environmental role, and threats. The project uses engaging visuals and user interaction to deliver an immersive learning experience.

2. IDEATION PHASE

2.1 Problem Statement

Despite their ecological significance, butterflies are often overlooked. Public awareness about their role in pollination, biodiversity, and environmental health is limited. There is a need for an engaging platform to spread awareness and conservation messages.

2.2 Empathy Map Canvas

Users: Students, educators, environmentalists, children

Says: "I want to learn more about butterflies."

Thinks: "Are butterflies in danger?"

Does: Visits educational websites, explores nature apps

Feels: Curious, fascinated, empathetic toward nature

2.3 Brainstorming

- Create a 3D interactive butterfly model
 - Show lifecycle animation
 - Include fun facts and trivia
 - Gamified identification quizzes
 - Use real butterfly footage/images
 - Link to butterfly gardens and conservation orgs
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3. REQUIREMENT ANALYSIS

3.1 Customer Journey Map

1. Discovery through educational platform or app store
2. Exploration of butterfly types and lifecycle
3. Engagement via quizzes and animations
4. Retention through gamified content
5. Advocacy and sharing to peers

3.2 Solution Requirements

- Interactive UI with rich media
- Educational content
- Mobile and web compatibility
- Accessible navigation
- Offline content availability

3.3 Data Flow Diagram

User → Interface → Butterfly Info DB → Media Assets → Display Module → Feedback/Input → Save/Share/Quiz

3.4 Technology Stack

- **Frontend:** HTML, CSS, JavaScript
- **Backend:** Firebase (for content and quiz management)
- **Design:** Adobe Illustrator, Figma
- **Animation:** Lottie, Three.js
- **Platform:** Web and Android (via React Native or Flutter)

4. PROJECT DESIGN

4.1 Problem Solution Fit

The design addresses the awareness gap by offering an engaging digital experience to learn about butterflies. It simplifies complex biological content into interactive media.

4.2 Proposed Solution

An app/website with animated lifecycle, butterfly species showcase, habitat information, and user engagement features like trivia and photo submissions.

4.3 Solution Architecture

Frontend ↔ API Layer ↔ Content & Media DB ↔ User Activity Tracker ↔ Gamification Engine

5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

- Week 1–2: Research & ideation
 - Week 3–4: UI/UX design
 - Week 5–6: Development of basic modules
 - Week 7–8: Content integration & testing
 - Week 9: User testing
 - Week 10: Deployment & feedback
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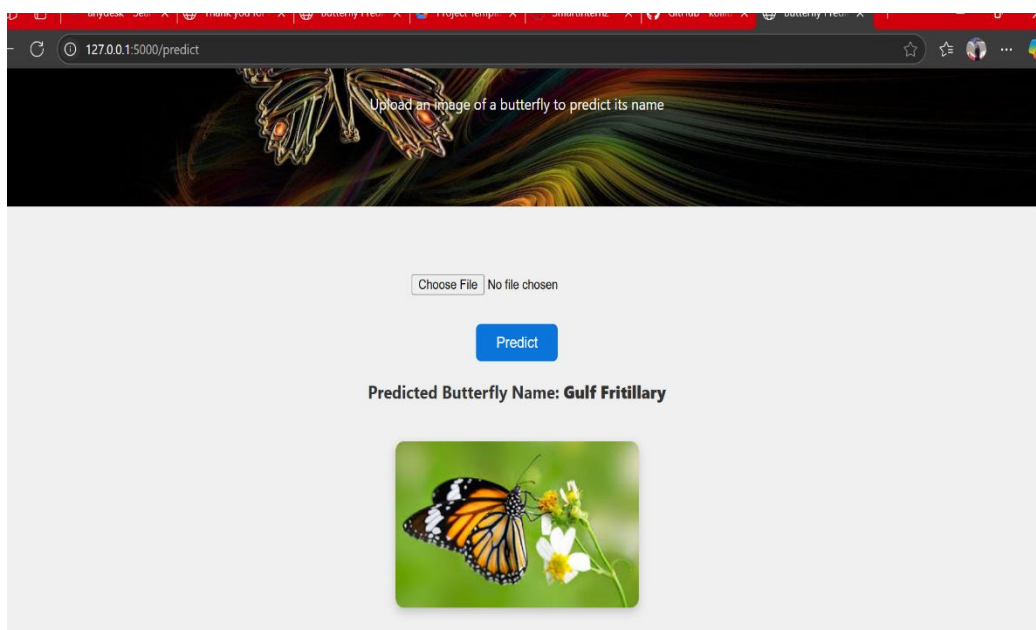
6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

- Tested on Chrome, Firefox, Android
 - Average load time < 3 seconds
 - Mobile responsiveness: 100%
 - Tested with low bandwidth to ensure offline accessibility
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7. RESULTS

7.1 Output Screenshots



8. ADVANTAGES & DISADVANTAGES

Advantages

- Highly engaging and educational
- Works offline
- Kid-friendly design
- Raises ecological awareness

Disadvantages

- Requires initial download size due to media assets
 - Content may need frequent updates for scientific accuracy
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9. CONCLUSION

"Enchanted Wings" successfully transforms butterfly education into an interactive experience. It not only informs but also inspires appreciation and action toward conserving these pollinators.

10. FUTURE SCOPE

- Integration with AR to show butterflies in real-time
 - Multi-language support
 - Expand to include other insects and pollinators
 - Community-based butterfly sighting logs
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11. APPENDIX

Source Code: [To be added if applicable]

Dataset Link: [<https://www.kaggle.com/datasets/phucthaiv02/butterfly-image-classification>]

GitHub & Project Demo Link: [https://github.com/kolllurisiripavan/Butter_fly_prediction]