



PROTECTION OF ENDANGERED SPECIES



A PROJECT REPORT

Submitted by

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in partial fulfilment of requirements for the award of the course

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ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

K. RAMAKRISHNAN COLLEGE OF TECHNOLOGY

(An Autonomous Institution, affiliated to Anna University Chennai and Approved by
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K. RAMAKRISHNAN COLLEGE OF TECHNOLOGY

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BONAFIDE CERTIFICATE

Certified that this project report on **“PROTECTION OF ENDANGERED SPECIES”** is the bonafide work of **MANASA SHREE RM (2303811724322064), MUTHU MEENA K (2303811724322073), NAMETHA K (2303811724322074)** who carried out the project work during the academic year 2024 - 2025 under my supervision.

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Submitted for the viva-voce examination held on 06.12.24

INTERNAL EXAMINER

EXTERNAL EXAMINER

DECLARATION

I declare that the project report on “**PROTECTION OF ENDANGERED SPECIES**” is the result of original work done by us and best of our knowledge, similar work has not been submitted to “**ANNA UNIVERSITY CHENNAI**” for the requirement of Degree of **BACHELOR OF TECHNOLOGY**. This project report is submitted on the partial fulfillment of the requirement of the award of the **AGB1211 – DESIGN THINKING**.

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VISION OF THE INSTITUTION

To serve the society by offering top-notch technical education on par with global standards.

MISSION OF THE INSTITUTION

- Be a centre of excellence for technical education in emerging technologies by exceeding the needs of industry and society.
- Be an institute with world class research facilities.
- Be an institute nurturing talent and enhancing competency of students to transform them as all- round personalities respecting moral and ethical values.

VISION AND MISSION OF THE DEPARTMENT

To excel in education, innovation and research in Artificial Intelligence and Data Science to fulfil industrial demands and societal expectations.

Mission 1: To educate future engineers with solid fundamentals, continually improving teaching methods using modern tools.

Mission 2: To collaborate with industry and offer top-notch facilities in a conducive learning environment.

Mission 3: To foster skilled engineers and ethical innovation in AI and Data Science for global recognition and impactful research.

Mission 4: To tackle the societal challenge of producing capable professionals by instilling employability skills and human values.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO 1: Compete on a global scale for a professional career in Artificial Intelligence and Data Science.

PEO 2: Provide industry-specific solutions for the society with effective communication and ethics.

PEO 3: Hone their professional skills through research and lifelong learning initiatives.

PROGRAM OUTCOMES

Engineering students will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

- **PSO 1:** Capable of working on data-related methodologies and providing industry-focussed solutions.
- **PSO2:** Capable of analysing and providing a solution to a given real-world problem by designing an effective program.

ABSTRACT

The Protection of Endangered Species App is an all-in-one platform designed to promote biodiversity conservation through user-friendly modules that encourage awareness, participation, and collaboration. The app features a **Species List and Details** module, providing a comprehensive database of endangered species with information on conservation status, habitat, threats, and key characteristics. The **Tracking** module uses GPS and real-time data to monitor species and habitats, offering insights into migration patterns and population changes. The **Report** module empowers users to contribute to citizen science by submitting sightings, photographs, and habitat observations, supported by AI-powered image recognition for accuracy. The **Education** module delivers interactive content, including articles, videos, quizzes, and conservation tips, to raise awareness and inspire action. By integrating these modules, the app fosters a global community committed to preserving endangered species and supporting sustainable ecosystems.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

The Protection of Endangered Species App is an innovative platform that leverages technology to address the urgent need for biodiversity conservation. By integrating key modules such as Species List and Details, Tracking, Report, and Education, the app provides a comprehensive solution for raising awareness, fostering engagement, and empowering communities to actively participate in conservation efforts. With features that offer real-time insights, user interaction, and educational resources, the app bridges the gap between conservation experts and the general public, creating a unified approach to protect endangered species and their habitats.

1.2 PROBLEM STATEMENT

The decline in biodiversity due to habitat loss, climate change, poaching, and other human activities has created an urgent need for effective conservation solutions. However, the lack of accessible tools for public involvement, real-time species tracking, and educational resources hinders efforts to protect endangered species. Additionally, limited citizen science participation and gaps in data reporting make it challenging to monitor and address threats effectively. A solution that combines technology, education, and citizen engagement is critical to addressing these challenges and fostering a global commitment to conservation.

1.3 OBJECTIVE

The primary objective of the app is to provide a comprehensive, user-friendly platform for protecting endangered species through the integration of four key modules:

1. **Species List and Details:** Create a detailed database of endangered species, including their conservation status, habitat, threats, and ecological importance, to raise awareness and inform users.
2. **Tracking:** Enable real-time monitoring of species and habitats using GPS and satellite data to provide insights into population trends and migration patterns.
3. **Report:** Empower users to contribute to citizen science by reporting sightings, submitting habitat observations, and using AI tools for species identification.
4. **Donate:** The user can donate money for the welfare of the animals through online payments.
5. **Education:** Offer interactive resources, such as articles, videos, quizzes, and conservation tips, to educate users and inspire active participation in biodiversity protection.

The app aims to facilitate collaboration between individuals, researchers, and conservation organizations, fostering a global movement to protect endangered species and their ecosystems.

CHAPTER 2

PROJECT METHODOLOGY

2.1 BLOCK DIAGRAM



CHAPTER 3

KEY PHASES OF DESIGN THINKING

3.1 Empathize

- **Objective:** Understand the needs, challenges, and motivations of the stakeholders involved in biodiversity conservation, including the general public, conservation organizations, and researchers.
- **Approach:** Conduct interviews, surveys, and workshops with end-users to gather insights on their experiences with conservation tools and their expectations. Observe how users interact with current platforms, identifying pain points and opportunities.

3.2 Define

- **Objective:** Clearly articulate the problem statement based on insights gathered in the Empathize phase.
- **Key Problem Statement:** *"Lack of accessible, engaging, and comprehensive tools limits public awareness, real-time species tracking, effective reporting, and educational outreach for endangered species conservation."*
- **Outcome:** Define user personas, their specific needs, and prioritize features to address these challenges.

3.3 Ideate

- **Objective:** Brainstorm innovative solutions to address the problem statement and meet user needs.
- **Approach:** Host ideation sessions to explore possible features, including interactive species databases, GPS-based tracking, AI-powered reporting tools, and gamified educational content.
- **Outcome:** Identify the core modules—Species List and Details, Tracking, Report, and Education—as essential components of the app.

3.4 Prototype

- **Objective:** Develop low-fidelity and high-fidelity prototypes to visualize and test the app's functionality.
- **Approach:** Create wireframes and interactive mockups of the app, focusing on user flows, interface design, and feature integration.
- **Outcome:** Develop prototypes for the Species List, real-time Tracking dashboard, Reporting form with AI image recognition, and gamified educational content.

3.5 Test

- **Objective:** Validate the app's design and functionality with real users and refine it based on feedback.
- **Approach:** Conduct usability testing with target users, including conservationists, educators, and the general public. Collect feedback on the app's ease of use, relevance of information, and effectiveness of engagement tools.
- **Outcome:** Iterate and enhance the app's design to ensure it meets user expectations and achieves its conservation objectives.

Implement (Extension Phase)

While not a core Design Thinking phase, implementation ensures the app transitions from concept to reality. This involves collaborating with developers, deploying the app, and continuously gathering feedback for updates and improvements.

By following these phases, the app ensures a user-centered approach that effectively addresses conservation challenges while fostering public participation and awareness.

CHAPTER 4

MODULE DESCRIPTION

4.1 SPECIES LIST AND DETAILS

This module serves as a comprehensive database of endangered species, offering detailed profiles for each species. It includes information such as scientific and common names, conservation status (e.g., critically endangered, endangered, vulnerable), habitat details, threats, population trends, and ecological significance and engaging trivia to help users learn more about these species. Users can search, filter, and bookmark species of interest, making it an essential resource for education and awareness.

4.2 TRACKING

The Tracking module provides real-time data on the movements and populations of endangered species. Leveraging GPS, satellite imagery, and input from conservation organizations, this module visualizes migration patterns, habitat usage, and hotspots of human-wildlife conflict. Users can access interactive maps and receive notifications about changes in a species' status or location. This feature is particularly valuable for researchers, educators, and communities living near conservation areas.

4.3 REPORT

This citizen science tool allows users to contribute to conservation efforts by reporting sightings of endangered species. Verified reports are shared with conservation organizations and researchers to enrich biodiversity databases and guide conservation strategies. This module encourages active user participation and fosters a sense of contribution to the cause.

4.4 EDUCATION

The Education module is designed to raise awareness and inspire action by offering engaging and interactive learning resources. It includes articles, videos, quizzes, and

infographics on topics such as biodiversity, climate change, and sustainable practices. The module also features gamified challenges and rewards to motivate users to learn more about endangered species and conservation. Schools and educators can use this content to integrate biodiversity education into their curriculum.

4.5 DONATE

This module provides a secure and transparent platform for users to support conservation initiatives financially. Donations are directed toward verified organizations and projects, such as habitat restoration, anti-poaching efforts, and research programs. Blockchain technology ensures accountability, allowing donors to track how their contributions are used. The module also includes options for one-time or recurring donations and highlights ongoing campaigns, making it easy for users to contribute to the cause.

CHAPTER 5

CONCLUSION

The Protection of Endangered Species App stands as a comprehensive and innovative solution to one of the most pressing challenges of our time—biodiversity loss. By integrating advanced technologies and user-centered features, the app provides a dynamic platform for education, engagement, and conservation action. The **Species List and Details** module raises awareness by offering in-depth knowledge about endangered species, while the **Tracking** module leverages real-time data to enhance understanding of population dynamics and habitats. The **Report** module empowers citizens to contribute valuable data to conservation efforts, bridging the gap between researchers and the public. The **Education** module fosters long-term awareness and involvement, and the **Donate** module ensures that users can directly support impactful conservation projects with transparency and trust.

This app is not just a tool but a movement that brings together individuals, educators, scientists, and organizations to collaborate on protecting endangered species. Its holistic approach encourages active participation, inspires behavioral change, and promotes a culture of environmental stewardship. By connecting people to the natural world and empowering them with actionable insights, the app helps create a sustainable future for wildlife and ecosystems, reinforcing the critical role that every individual can play in the fight against extinction. Through continued innovation and widespread adoption, the app has the potential to become a cornerstone of global conservation efforts, ensuring that endangered species and their habitats are preserved for future generations.

REFERENCES:

1.Zooniverse

- A platform for citizen science projects that enables users to participate in research by classifying and analyzing data.
- Website: www.zooniverse.org

2.Blockchain for Social Good (e.g., GiveTrack by BitGive)

- Demonstrates the use of blockchain technology to ensure transparency in donations, aligning with the Donate module.
- Website: www.bitgivefoundation.org

3.Global Biodiversity Information Facility (GBIF)

- A database that provides access to biodiversity data from across the globe, useful for species lists and tracking.
- Website: www.gbif.org

4.Conservation International

- Focuses on protecting biodiversity hotspots and offers resources on conservation efforts.
- Website: www.conservation.org

APPENDIX A – SCREENSHOTS







