GC-448

xNature: Discover, Learn, and Protect - A Mobile App for Informal STEM Learning about Local Biodiversity and Environmental Issues

Abstract

Our team's project involved developing a mobile app for informal STEM learning on local biodiversity and environmental issues. Spearheaded by Dr. Ying Xie, a Professor in the College of Computing and Software Engineering (CCSE), the app empowers users to explore and identify native plant and animal species. Utilizing their smartphone cameras, users can seamlessly scan, record, and locate local wildlife. The app integrates AI, including ChatGPT, to provide detailed information about the identified species. Following Dr. Xie's guidance, a GPS feature has been incorporated, revealing both zip codes and approximate locations of identified species, enhancing the depth and context of user discoveries.

Introduction

Artificial Intelligence (AI) has emerged as a powerful force in the realm of technology, offering innovative solutions and capabilities across various industries. As it relates to the xNature app, AI plays an essential role in redefining how we interact with and learn from the natural world. This revolutionary technology is connected to enable users with the ability to seamlessly identify and gain insights into the various plant and animal species found in their local environment. By integrating AI, specifically ChatGPT, xNature provides users with a seamless and informative experience, offering widespread details about the species they encounter through the lens of their smartphone camera.

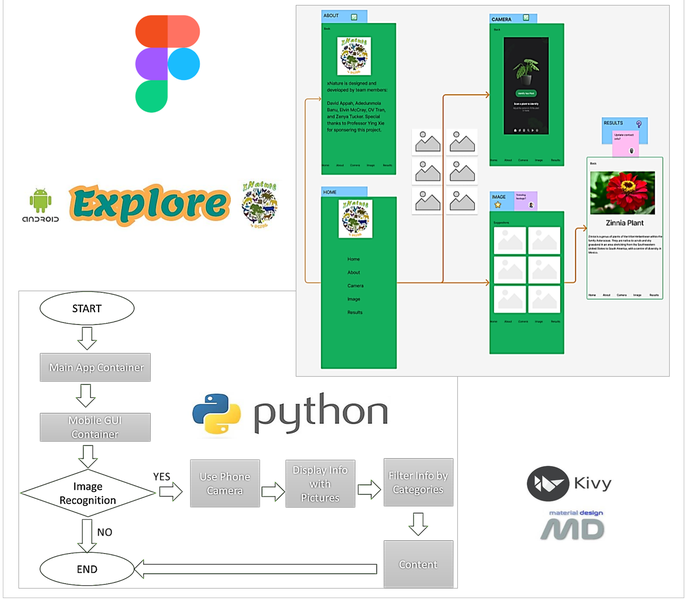
Objective

Our objective is to develop a user-friendly and immersive app to educate users on the rich biodiversity of our planet, offering a seamless experience for identifying and learning about various plant and animal species. We aspire to forge a connection between users and the fascinating world of nature through informative and engaging educational content. The goal is to provide a comprehensive tool that enhances understanding and appreciation for the abundance diversity of life on earth.

Materials and Technologies

- ❖ OS: Android
- ❖ IDE: Visual Studio Code
- ❖ Languages: Python 3.10 (KivyMD)
- ❖ Services: Figman, ChatGPT 3.5 | Salesforce – BLIP | OpenAI, LangChain

App Flow



Societal Benefits

Empowering local communities, a mobile app promotes informal STEM discovery learning, enhancing climate change awareness. Offering insights into local biodiversity and environmental issues, it cultivates a sense of responsibility. Fostering collaboration, the app transforms users into citizen scientists, contributing to conservation efforts. Ultimately, it empowers locals to protect their environment, creating informed and resilient communities in the face of climate challenges.

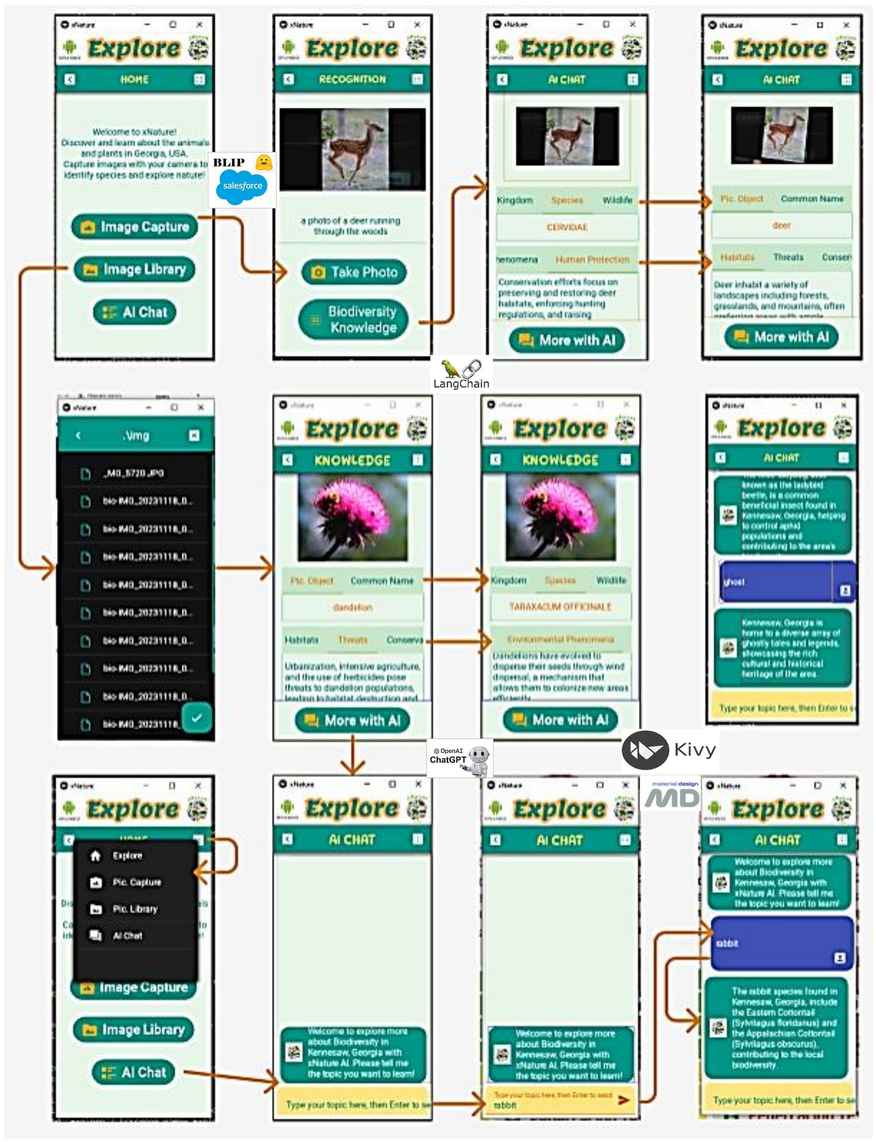
Conclusion

The app core functions to facilitate user's discovery of nature include image capturing and processing, image recognition, species identification, related bio-diverse and environmental information in an engaging and friendly manner with learning status and notifications.

References

1. https://platform.openai.com/
2. https://chat.openai.com/
3. https://www.w3schools.com/python
4. https://python.langchain.com/docs
5. https://kivy.org/doc/stable
6. https://kivymd.readthedocs.io/en/1.1.1/
7. https://huggingface.co/docs/transformers/model_doc/blip
8. https://www.figma.com
9. https://sites.google.com/view/explore-local-env-mobile-app

Results



Acknowledgment

Dr. Ying Xie, Professor of Computing Science, Kennesaw State University College of Computing and Software Engineering

Contact Information

KENNESAW STATE UNIVERSITY
COLLEGE OF COMPUTING AND SOFTWARE ENGINEERING

Author(s): Adedunmola Banu, David Appah, Elvin McCray, OV Tran, Zenya Tucker
Advisors(s): Dr. Ying Xie