Google Developer Group
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TechSprint

Leveraging the power of AI

Team Details

a. Team name: Code Craft
b. Team leader name: Soumik Samanta
c. Problem Statement: Open Innovation

Brief about your solution and problem statement addressing : -

a. Upload a **snapshot** of your plastic waste through the platform.
b. **AI & ML** technology evaluates the **quality & quantity** of the plastic.
c. **Cashback points** are generated based on the assessment.
d. An **automated** system tracks the **user's location** and assigns the nearest trader for pickup. Users earn cashback points after selling plastic waste, redeemable for offers and prizes on third-party apps.
e. The platform also allows users to **purchase recycled plastic products**.
*f. The problem addresses **inefficient plastic waste management** and the lack of proper **tracking and recycling systems**.*
*g. It aims to **reduce plastic pollution** by promoting **reuse and responsible disposal** through technology.*

Opportunities

a. How different is it from any of the other existing ideas?

- ***Tracking*** – Identifying where plastic waste comes from, how much is generated, and where it ends up.
- ***Reducing*** – Using the tracked data to reduce plastic usage at the source (shops, homes, schools).
- ***Reusing*** – Converting collected plastic into reusable or eco-friendly products instead of throwing it away.

b. How will it be able to solve the problem?

- **AI-based identification** is used to identify biodegradable plastic waste through image screening, evaluate its quality and quantity, and make it reusable.
- Users earn **cashback points** by selling plastic waste, which can be redeemed as discounts, coupons, deals, or rewards across partner platforms.
- The nearest trader is assigned for **waste collection** using path optimization, and users can also buy low-cost recycled and DIY products made from **reusable plastics** via the app or website.

List of features offered by the solution

a. A multilingual android and web-based platform, based on ***32 different languages***, which serves the term “Waste Management” a proper and efficient structure
b. Providing a **secure employment** to those vendors who had unstable sources of income and were collecting recyclables door-to-door.
c. Automatic generation of cashback points according to the quality and quantity of plastic wastes through Machine Learning and Artificial Intelligence.
d. Once a trader is allocated to a user, an **AI-powered** 24/7 hotline chatbot is available, as well as **real-time tracking** of the trader's location.
e. By enabling an additional option to incorporate our platform at the end of their **online bill**, every e-commerce website will find it easier to recycle the plastics used in their product packaging.
f. Users can donate a set amount towards the **planting of a tree** at the end of each purchase of recycled plastic items, the geographical location of which will be shared with the user later.

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Google Technologies used in the solution

❑ **Powered by Google**

- **Google Cloud Vision** – Image recognition and screening of plastic waste
- **Artificial Intelligence & Machine Learning** – Classification, quality analysis and reward calculation

❖ **AI & Machine Learning**

✓ TensorFlow
✓ Keras
✓ OpenCV
✓ Python
✓ NumPy

❖ **Mobile & Web Development**

- Flutter
- Kotlin
- Android
- React

❖ **Backend & Data Management**

➢ Node.js
➢ MongoDB
➢ Firebase
➢ SQL

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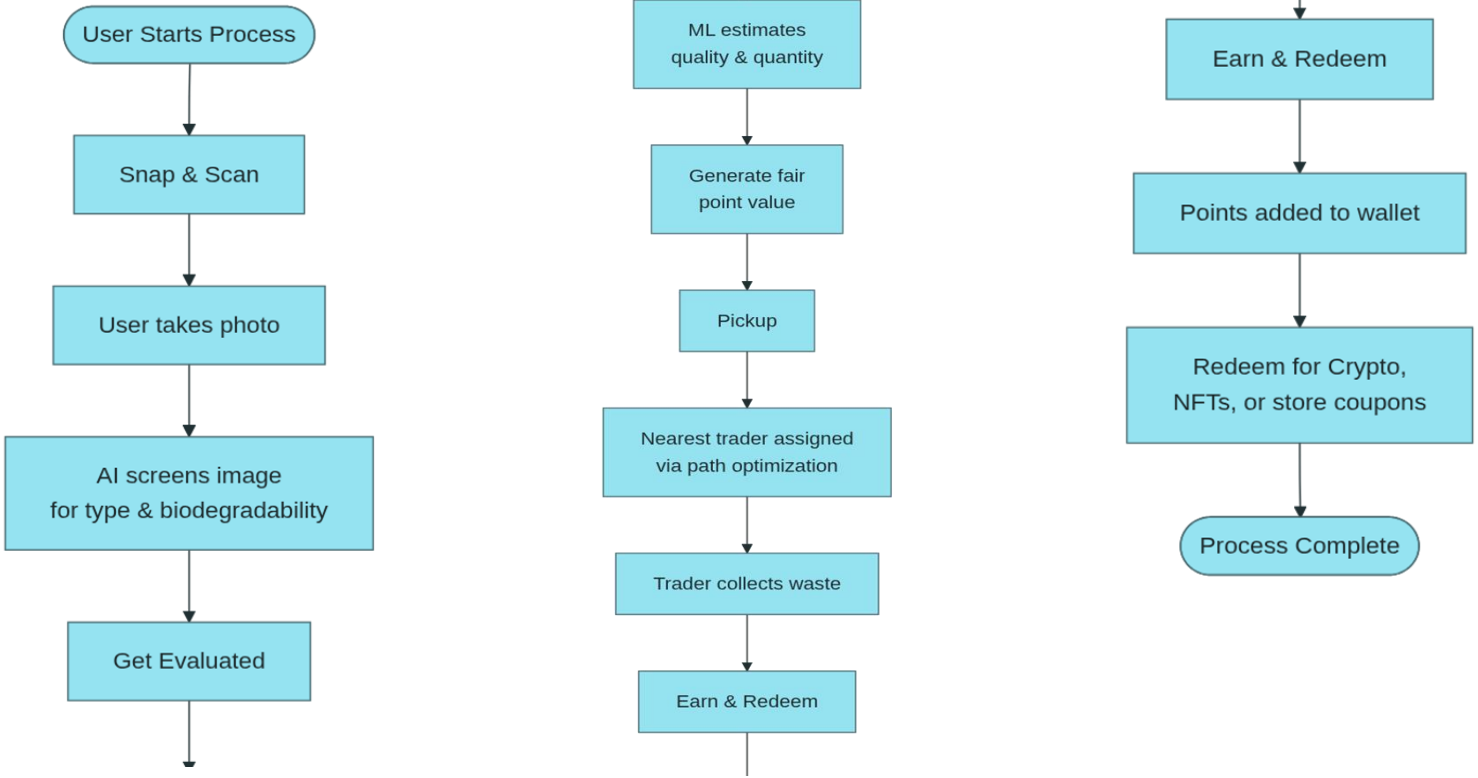
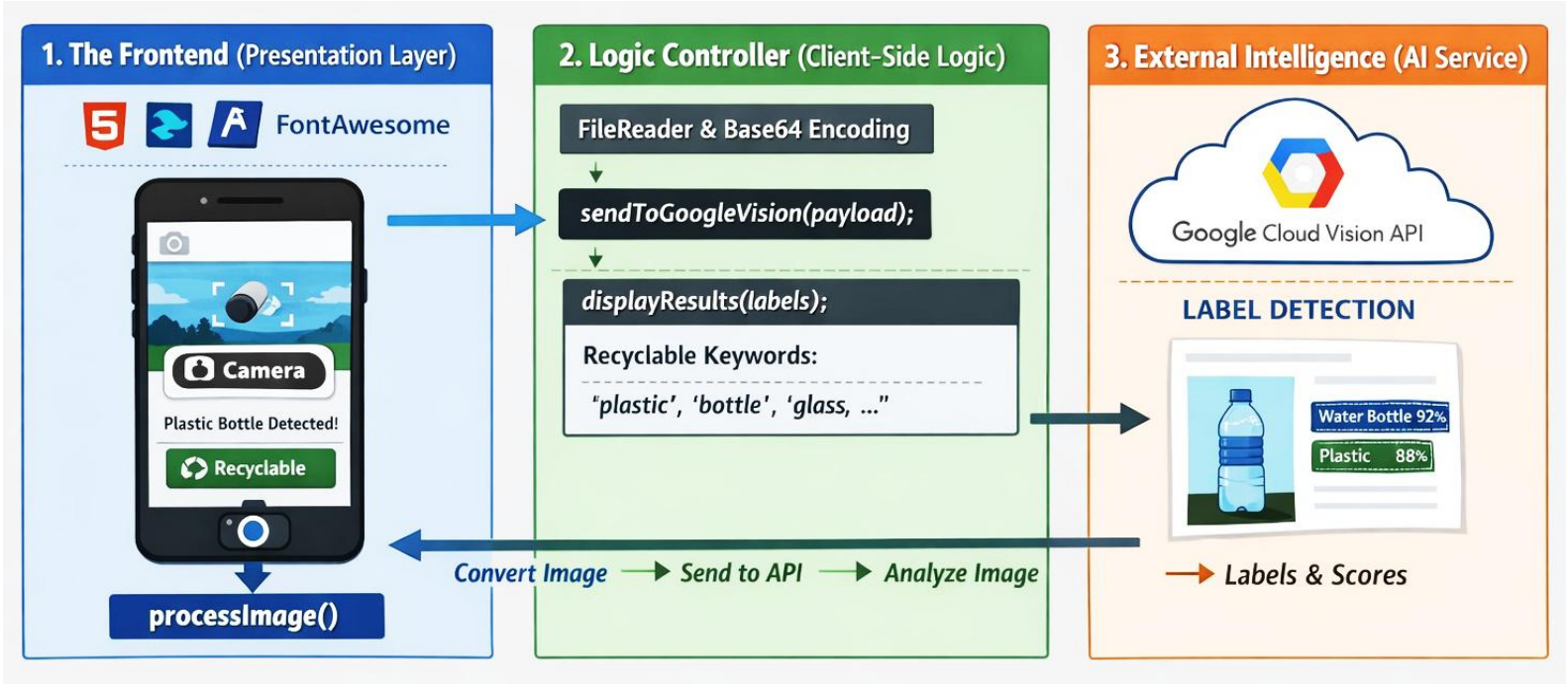
Process flow diagram or Use-case diagram



Architecture diagram of the proposed solution



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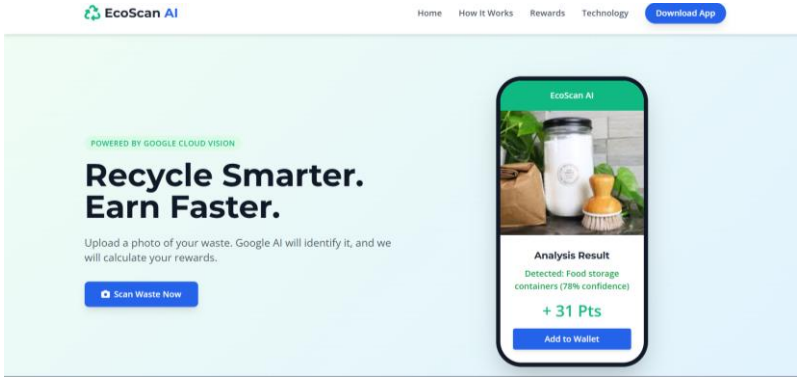
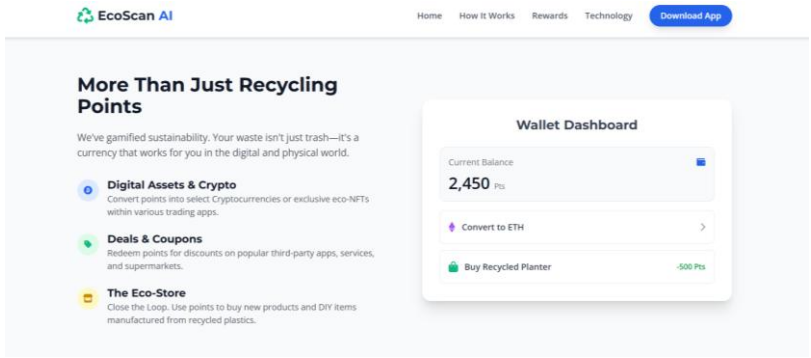
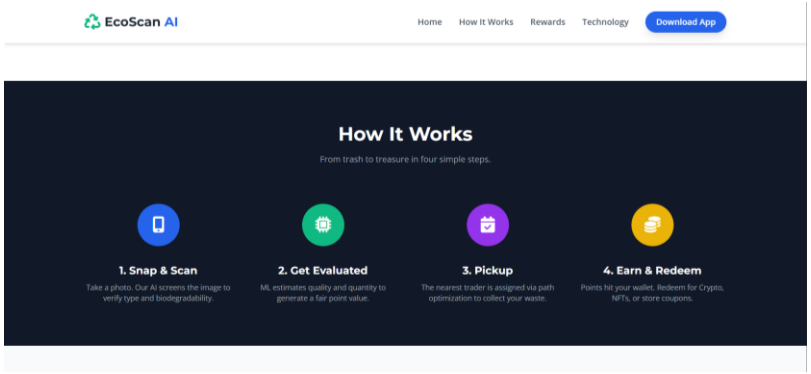
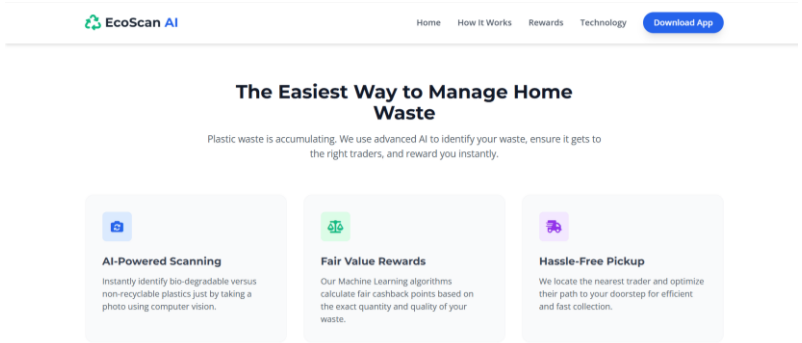
Snapshots of the MVP









Additional Details/Future Development (if any)

- Enhanced backend implementation for real-time tracking, secure data handling, and smooth system operations.
- Improved AI & ML models for accurate plastic identification, quality analysis, and reward calculation.
- Scalable system to support more users, locations, and higher volumes of plastic waste.
- Future integration with smart bins, analytics dashboards, and expanded partner rewards.

Provide links to your:

1. **GitHub Public Repository**
https://github.com/SoumikSamanta123/Garbage-AI-System

2. **Demo Video Link (3 Minutes)**
https://drive.google.com/file/d/1K2B8-xdVFsmdPbvu1vtjph80XcklDqy6/view?usp=drive_link

3. **MVP Link**
https://ecoai-red.vercel.app/