An Application Driven by AI for a Sustainable Existence

DAIS-E

A Report

Raima Joseph

October 2023

Feynn Labs ML Internship

ABSTRACT

Environmental degradation is a crisis that challenges the balance of our planet's ecosystems. Earth and its resources are slowly decaying and depleting and we humans are facing the brunt of it. In a world that is now living on the edge with technological developments, technologies such as Artificial Intelligence, Machine Learning and Data Sciences offer data-driven insights, predictive modelling, and efficient resource management, fostering sustainability and responsible consumption. To shed light upon this matter, this report gives a detailed proposal about my application idea, an application that could change the way we live by changing the things we consume.

PROBLEM STATEMENT

We live in an era marked by growing environmental concerns and increased focus on sustainable living.

Consumers of big-name brands and companies have been increasingly prioritising eco-conscious and ethical practices in the products they invest in. The issue lies in the fact that these companies and businesses often struggle to provide personalised sustainability guidelines and products to their customers.

If the general public is becoming aware of the environment, why shouldn't businesses assist in their responsibility towards our planet Earth?

Corporate sustainability has commenced in various companies and brands with meaningful actions. For instance, car brands like Ford and Volkswagen have announced manufacturing all-electric vehicles in the coming years. Starbucks, taking responsibility for the global waste caused by single-use cups, has initiated efforts to reduce the waste their products cause by half in the next 5-10 years.

src:https://yourstory.com/2019/03/india-government-electric-vehicles-policies-mvqiyx

src:https://www.upworthy.com/starbucks-has-a-dramatic-new-plan-to-ditch-disposable-coffee-cups

However, the problem is that traditional business models may not fully integrate eco-friendly habits due to the lack of user-friendly tools and technologies. Here is where I would like to bridge the gap of technology and trends with Artificial Intelligence to ideate a project;
Driven by AI for a Sustainable Existence, or simply- DAIS-E (daisy).

Introducing DAIS-E, your eco-conscious companion in the world of sustainable living. With the power to Scan, Suggest, Save, and Share, DAIS-E is not just an app; it's your personal guide to making environmentally friendly choices. Simply scan a product – be it food, cutlery, or hygiene essentials – and watch as DAIS-E recommends eco-friendly alternatives. It doesn't stop there; your preferences are saved, creating a tailored experience just for you. Plus, businesses can join the sustainability journey, sharing valuable data to enhance customer engagement. DAIS-E is here to empower you to shop smart, live sustainably, and make a positive impact, one choice at a time. Welcome to the future of eco-conscious living, where every scan brings us closer to a greener world.

Market/Customer/Business Need Assessment

Broadly speaking, the market for all things eco is rapidly increasing on a global stage. The mentioned examples are just two of the many situations or cases businesses have developed for the betterment of the environment.
The market, customer and business need assessment, for the purpose, can be classified over various factors such as customer engagement, competition, trend analysis for sustainability and personal preference.

For this reason, DAIS-E emerges as an innovative solution that addresses critical market, customer, and business needs.

Market Need:

Statistics and sentiment analysis prove that the popularity and growing concern for sustainability and corresponding shifts towards consumer preference has created a spark in the business for suitable products.

Customer Need:

A personalised product preference and choice along with the awareness created by environmentalists and concerned humans worldwide create a vast need among customers.

As an article clearly states in :

https://www.cmswire.com/customer-experience/4-ways-sustainability-affects-the-customer-experience/

"There is clearly more emphasis on how, where, and who businesses decide to work with. There has been a shift in our footprint. Many clients now use reused, renewed, and recycled materials in building, equipment, and even office furniture and supplies."

Business Need:

In terms of the business scale, a large customer engagement and competitor advantage create scope for growing popularity. Almost all n=brands from 2020 onwards have removed and added many products and services for the purpose of ecological living.

In conclusion, the DAIS-E can help promote the sustainability of the planet while engaging maximum market needs and business integration.

Target Specifications and Characterization

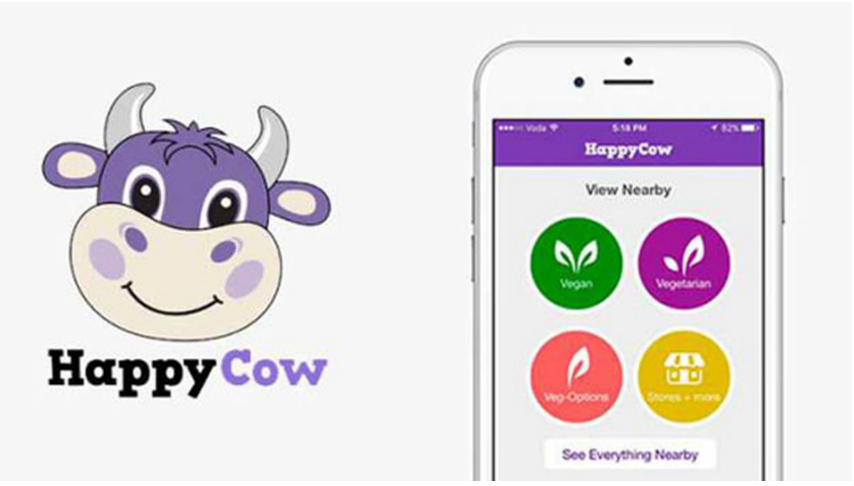
The customer engagement and demographics for DAIS-E essentially rely on the preferences and the sense of environmentalism in the consumers. The primary age group for the application would be trend-following and educated humans with a sense of belonging to the environment. The geographic location would practically be inclined towards developed or urban areas with a heavier sustainability mindset.

As the application would be highly technical, a population with tech-savvy users embracing new innovations would be preferred. Understanding and characterizing this target audience's specifications is pivotal in tailoring DAIS-E to meet their needs effectively. The application's success hinges on its ability to engage, educate, and empower this diverse and eco-conscious user base in its sustainability journey.

External Search

Several applications have implemented services related to this product idea.

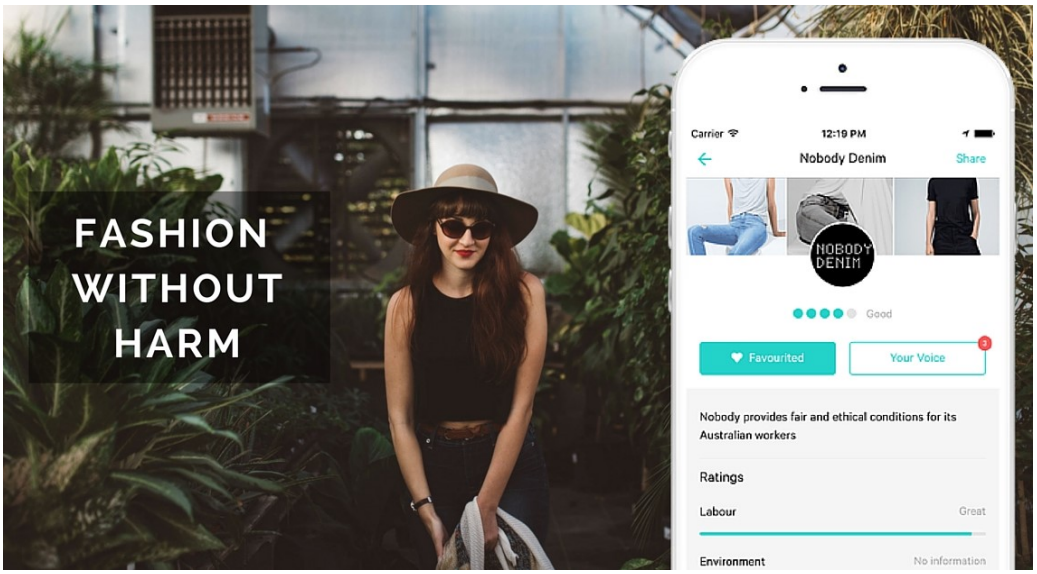
1. HappyCow: An application that enables users to look for vegan restaurants and shops near their location.
2. EarthHero: A website and online marketplace that offers a wide range of sustainable and eco-friendly products, making it easy for users to shop with environmental values in mind.
3. Karma Recycling: An Indian platform for recycling and refurbishing electronic gadgets, reducing e-waste and promoting responsible disposal.



It is also possible that new innovations and ideas may have emerged for the same. However, the facilities offered and the personalisation within the application DAIS-E are fairly unique.

Benchmarking Alternates

Website/App	Origin and Purpose	Differences from DAIS-E
Good On You	Australian-based website and app.	Primarily focused on fashion brands.
https://goodonyou.eco/how-we-rate/#		Rates and provides information about brands rather than products.
		Does not provide real-time product suggestions.
Ethical Consumer	UK-based website and organization.	Does not suggest eco-friendly alternatives to products.
https://www.ethicalconsumer.org/about-us		Primarily assesses the ethical practices of companies.
		Does not engage consumers in real-time decision-making.



Applicable Patents and Potential Risk Against Regulations:

Patents such as Design, Software, AI and ML patents can be applied to this project. Regulations that DAIS-E might need to look out for could be:

1) Data Protection
2) Consumer Protection Laws
3) Patented Algorithms (IPR)

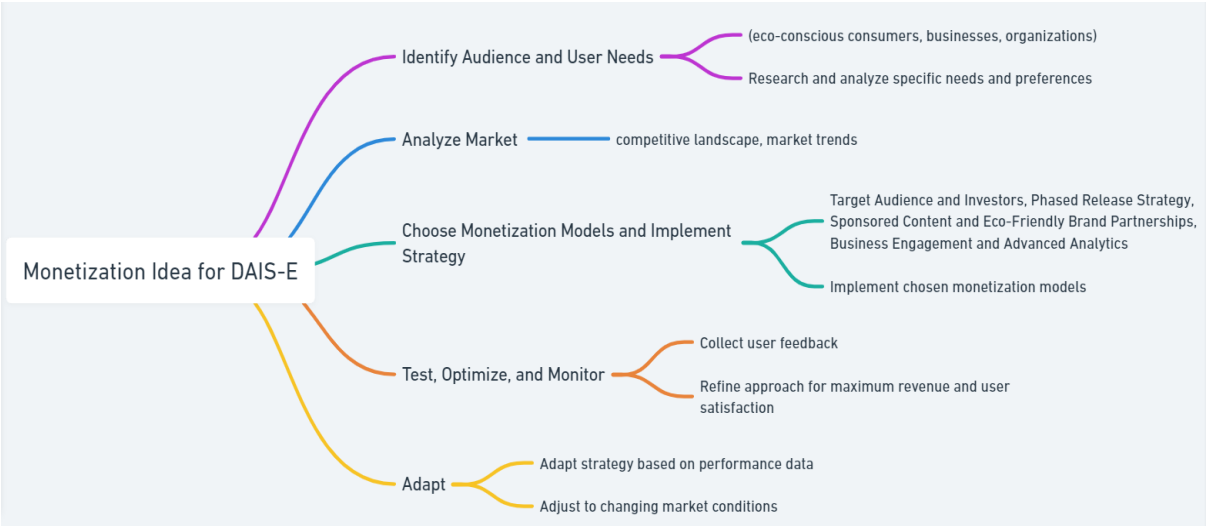
Business Model (Monetization Idea)

To ensure sustainability and profitability, certain ideas for monetization can be applied to DAIS-E:

1. The main audience and potential investors for the app would be the general consumers. In the context of business, eco-conscious companies and brands can gather insights into the customer's choices based on DAIS-E as guidance to their production.

2. As a start, the free model or prototype can be introduced in order to test how the app would work. Based on increased choices and user insights, the paid version can be made public with the data gathered from the feedback of the prototype.
3. With partnerships with eco-friendly brands, sponsored content can align with the very scope of DAIS-E.
4. For businesses, targeted promotions or detailed customer behaviour insights that are considered advanced analytics can be a paid commodity.

Here's a detailed workflow:

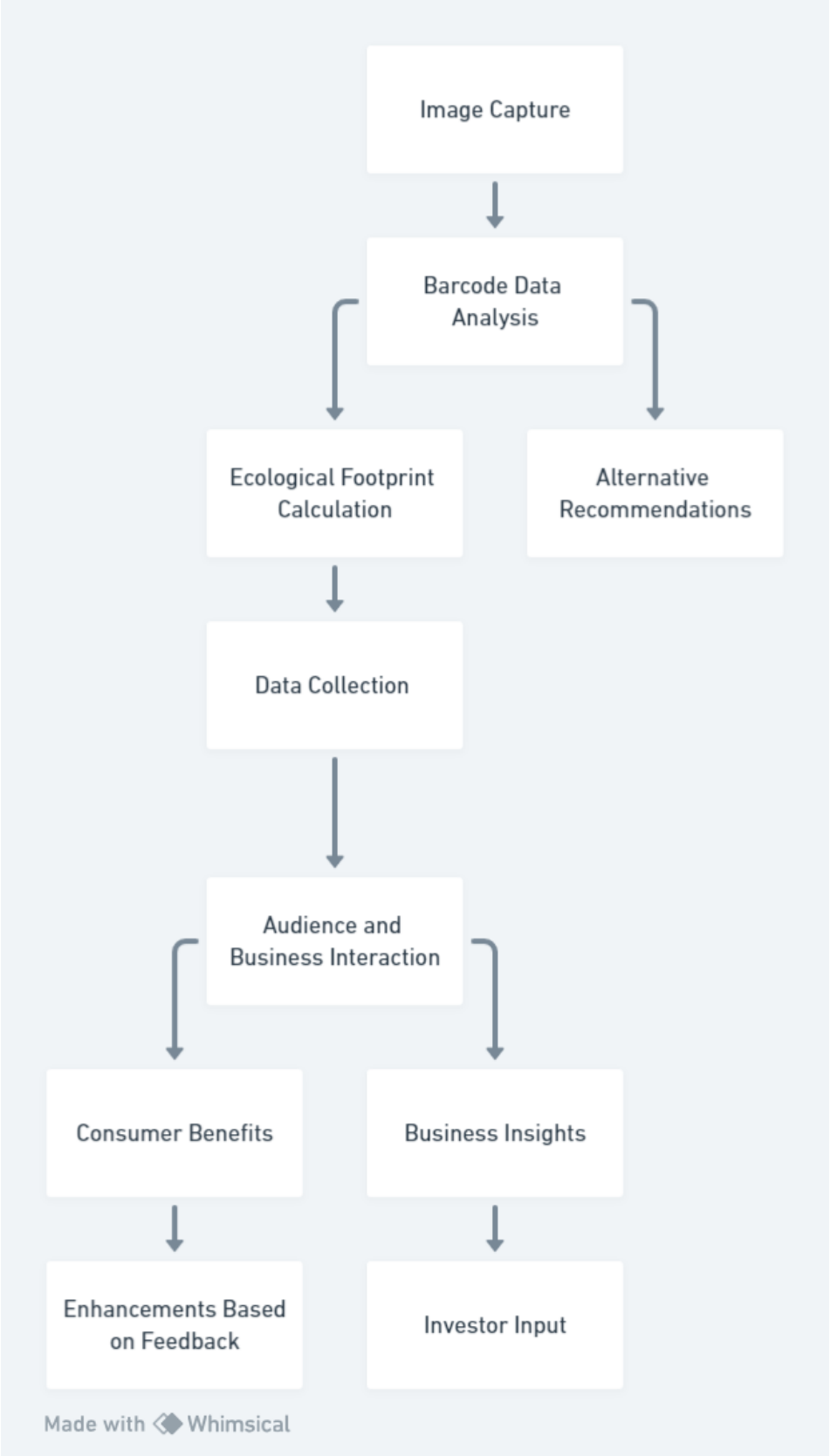


Concept Generation and Development

The generation of the idea of DAIS-E rose with the recognition of the significant challenge our planet is going through, environmental degradation. As there is a growing importance of including SDG, this application also inclines towards sustainable development. A range of ideas could be generated with this approach, and DAIS-E deals with the simple idea of scanning a product, obtaining its ecological footprint rating it based on the amount of harm caused, and suggesting a better product.

Technically speaking, Python will be broadly used to develop the core of the product. Libraries like TensorFlow and OpenCV will be employed to create the scanning system. Algorithms such as collaborative filtering can be used to suggest an eco-friendly alternative.

Final Product Prototype (Schematic Diagram)



I shall take the example of shopping for bags. A customer, in order to keep things in a bag, looks at a poly bag. These bags are made up of polyethylene, a plastic material. These serve their purpose but are harmful to the environment. The customer uses DAIS-E to scan the product. DAIS-E calculates the ecological footprint of the plastic bag and then suggests a reusable bag.

This data gets stored as well as shared with retail businesses to alarm the productions about the growing need for cloth over plastic bags.

Consumer scans. App suggests. Data stored. Businesses serve—income surges.

Product Details

How does it work?

1) Image Processing: The item and its barcode get scanned. The barcode serves as a key to access information about the product, its manufacturer and the materials/ingredients used.
2) Ecological Footprint calculator: With the relevant information, DAIS-E can calculate the eco-footprint. Factors such as carbon emissions, waste generation and the product's life cycle till its disposal.
3) Eco-friendly alternatives: Based on the calculated data, DAIS-E will recommend eco-friendly options. Taking the example of the poly bag, DAIS-E suggests more sustainable packaging materials, such as jute bags.
4) Data and Feedback Collection: Customer engagement for feedback and user interactions would be securely collected for analysis.

Data Sources:

1) Databases for barcode: Information related to the product and its manufacturer details.
2) Ecological databases: Regarding information about the environmental impact of the product.
3) User databases: Details and feedback of the user for preferences and more customised suggestions.

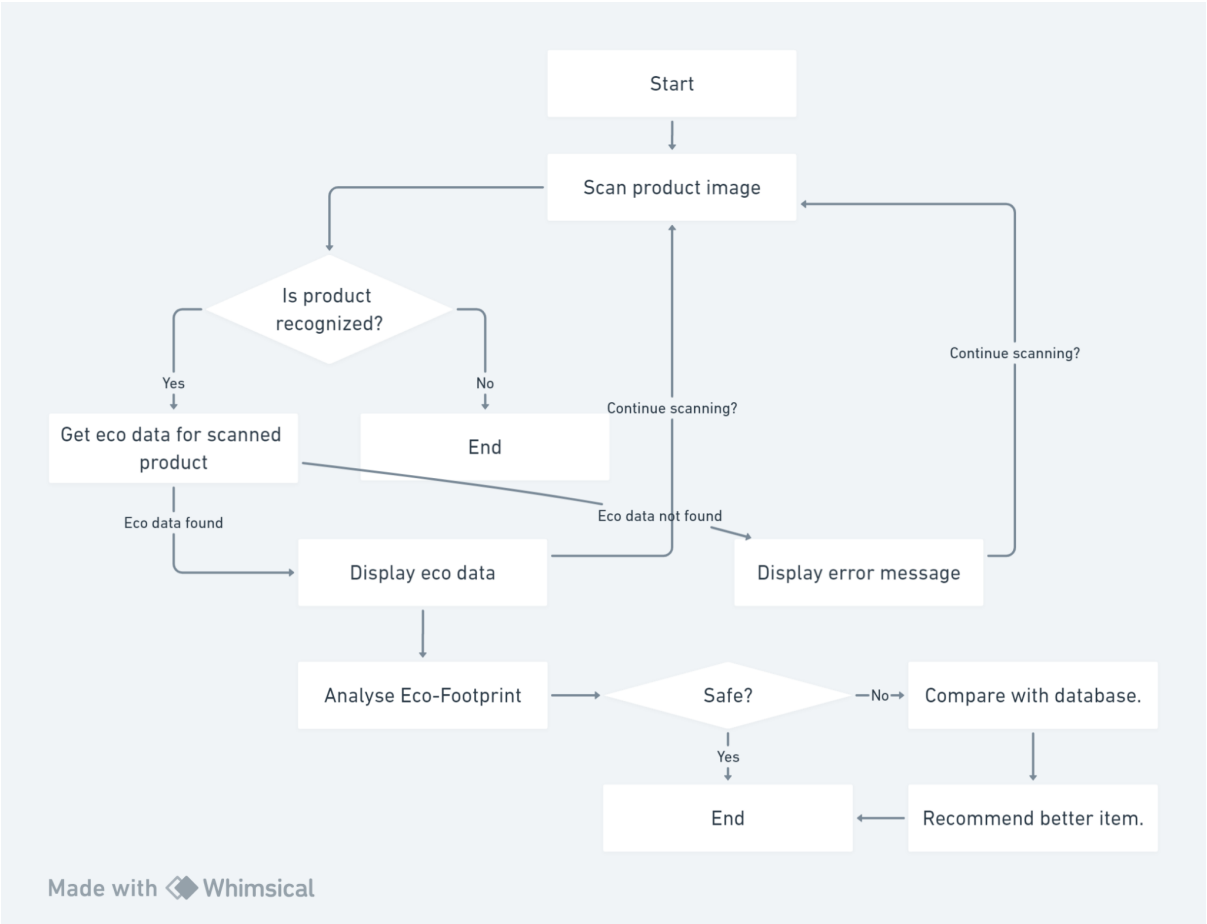
Algorithms, Frameworks, Software, etc. Needed

1) Computer Vision: For recognition and identification of the barcode and the product itself to distinguish what it actually is.
2) Machine Learning: To classify an item as harmful or safe for the planet, according to calculated ecological footprint.
3) DBMS: Storage and retrieval of item and user data, along with some business or partner brand data.
4) Mobile App development tools: For the framework and languages required to build an app.
5) Servers: In order to facilitate communication between the app and databases.

Team Needed:

1) Application developers for front-end and back-end.
2) Machine Learning specialists: For building and training models.
3) Database managers: To facilitate and optimize data.
4) Graphic designers and Product Managers

Cost:
The development and database management costs would include salaries for the teams as well as expenses for hosting. Marketing and promotional costs would also be involved.



Conclusion

DAIS-E would emerge as a smart and eco-friendly app that also uses technological advancements. Hand-in-hand with SDG and technology, the app provides consumers with a choice of choosing the eco-friendly option. It helps businesses and customers altogether, thereby also helping the market area.

This report gives a piece of detailed information about how the app would work and help us all. It iterates through the process of idea generation and development with the report. The factors such as ideation and monetization have also been touched upon and hereby presented as a document.