Amazon Smbhav Hackathon 2024: Prototype Phase Submission Template

1. Team Details

Team Name: Kartavya

Team Members:

1. Harshit Raj – See LinkedIn

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2. Theme Details

Theme Name: [4] : Develop Sustainable Solutions for the E-commerce Industry

Objective: In an era marked by a heightened awareness of environmental issues, a major issue that needs addressing is a way to optimize the company's e-delivery, diminish its carbon footprint and recycle majority of the waste produced.

Theme Benefits:

- Gives the chance to people to make **eco-friendly choices** and become aware of their surroundings and make responsible choices.
- Implementing robust recycling programs by using eco-friendly packaging materials, conserving natural resources like water and paper to achieving net-zero carbon emissions.

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3. Idea and Approach Details:

THE BIG Problem

Lack Of Options To Make Eco-Friendly Choices And Awareness

More and more people want to make responsible buying decisions by supporting products and brands that focus on sustainability, ethical sourcing, and reducing environmental impact.

However, they find it hard to search for these products because they are often spread out across different categories and hard to find on regular online shopping sites.

Example : Users might not be able to choose product that leave less carbon-footprint, or order from vendors that uses eco-friendly packaging material. Or try to track and learn how they have been affecting the environment and make better choices next time.

SOLUTION 1:

THE GREEN ZONE : Giving the users the chance to make a sustainable choice

The first part of our solution proposes the integration of sustainability and eco-friendly options into the existing primary Amazon platform which we refer to as the green zone.

By bringing the buyer into the **GREEN ZONE** we aim for the following:

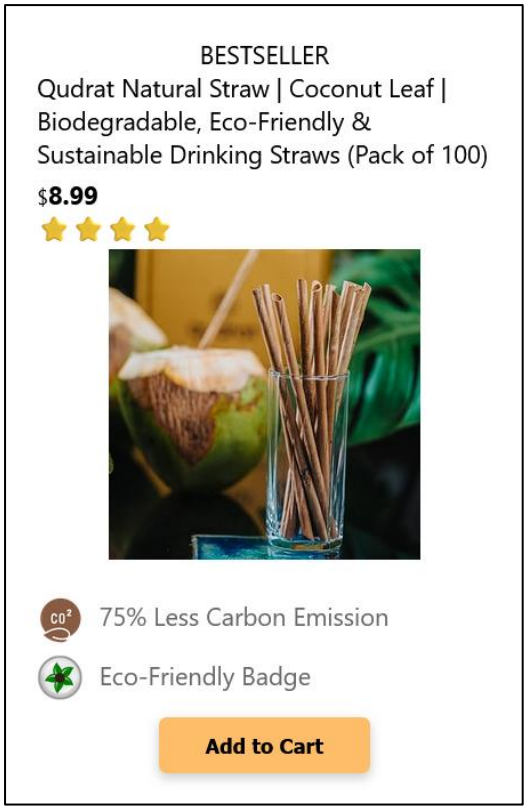
- **Integrating Sustainability**: We propose adding sustainability and eco-friendly options to the existing Amazon platform.

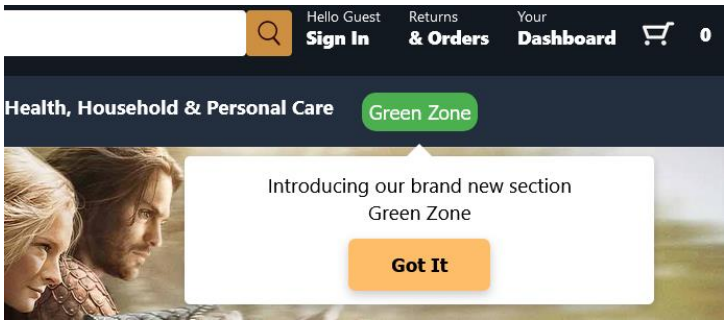
- **Dedicated Green Section**: Create a **specific section for eco-friendly products**, making it easier for users to browse and shop sustainably.

- **Sustainability Scores**: Display sustainability scores for products to help users make informed, environmentally-conscious decisions.

- **Packaging Preferences**: Allow users to **select their preferred packaging type** (paper, cardboard, or plastic), with details on the most sustainable choice.

- **Eco-Sustainability Details**: Provide comprehensive information on products' environmental impact, including their carbon footprint and CO2 production, along with sustainability scores.





SOLUTION 2:

An AI POWERED ECO DASHBOARD

An ECO DASHBOARD where customers can track their eco-friendly shopping habits, such as the number of eco-friendly products purchased, carbon footprint reduction, or savings in energy consumption.

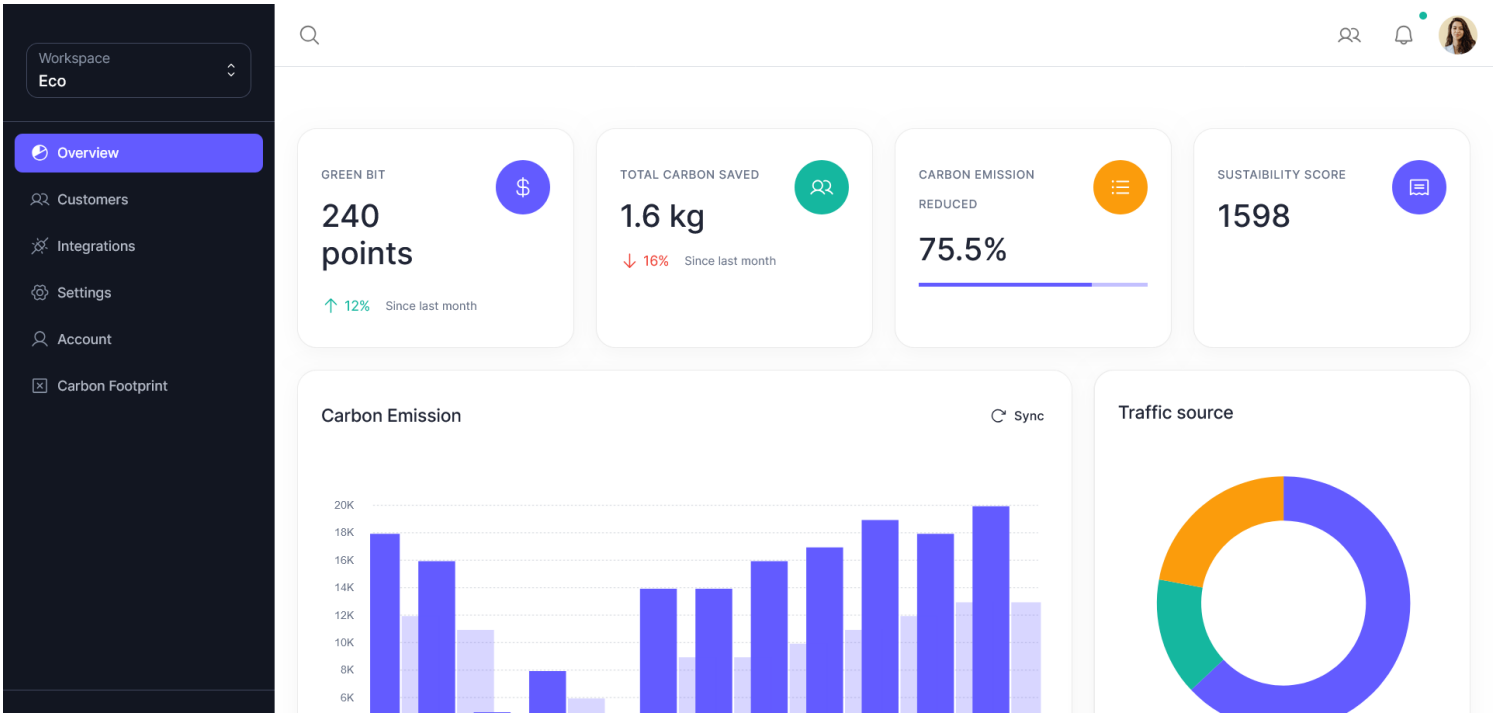
- **Eco-Dashboard**: A personalized dashboard that tracks users' habits and highlights sustainable choices they can make. It will **display key metrics and figures** such as the number of **plastic-free products purchased, carbon emissions prevented, and CO2 footprint scores.**

- **Green Bit Score**: A unique "Green Bit" score that rewards eco-friendly actions and encourages users to adopt more sustainable behaviors. This gamified experience motivates users to improve their score over time.

- **AI-Driven Insights**: Leverage AI **to guide and influence sustainable purchasing behavior**, helping customers make better eco-friendly choices with ease.

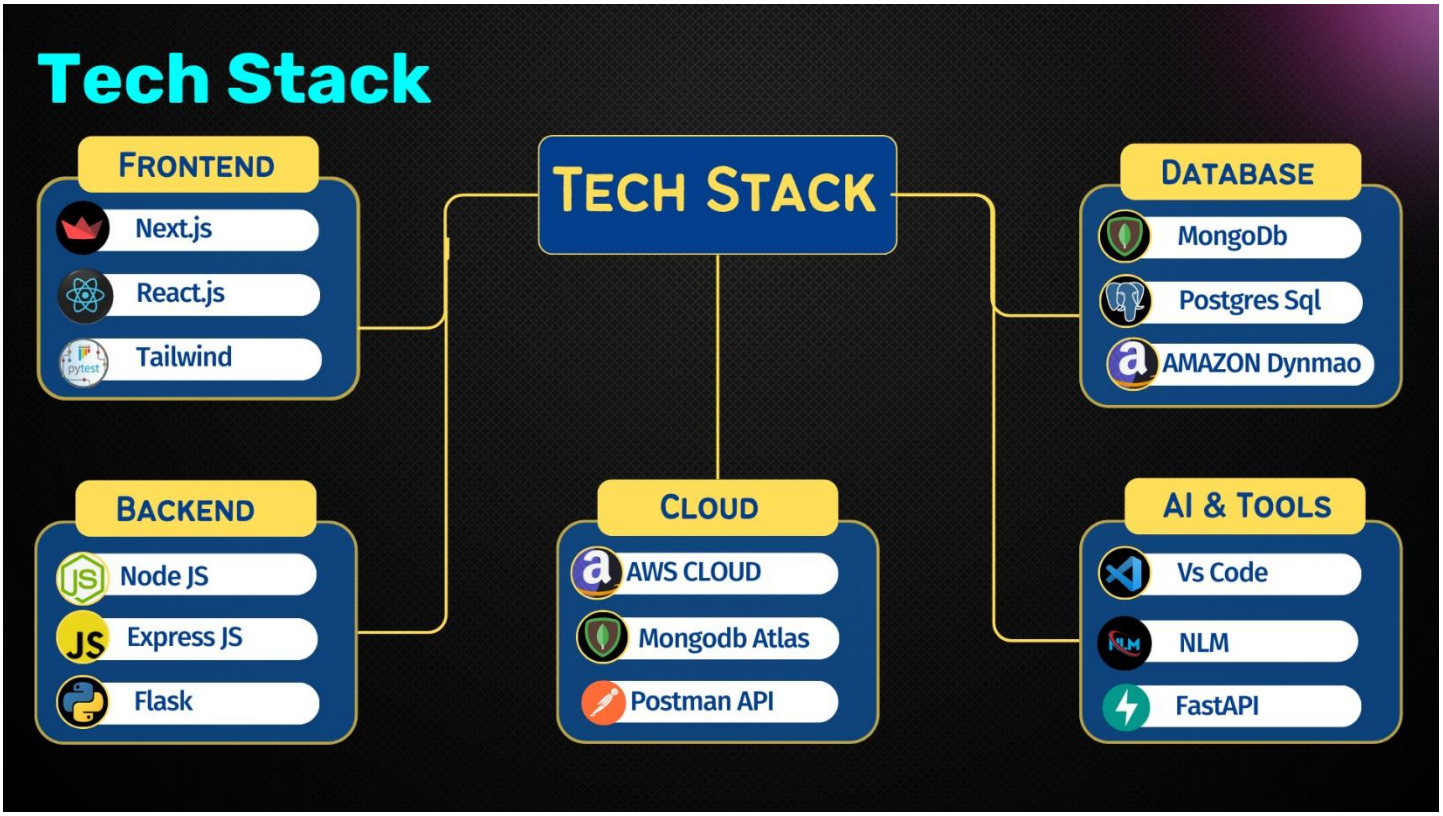
- **Green Deals and Discounts**: Offer exclusive green deals and discounts within the platform to incentivize and reward eco-friendly shopping habits.

- **Feedback and Reporting System**: Implement a system that allows customers to report products falsely labeled as eco-friendly and provide feedback, ensuring greater transparency and accuracy in sustainability claims.



Technical Stack:

- **Frontend:** Crafted using the powerful Next.js 13 App Router, React, and Tailwind CSS for a responsive and intuitive user interface.
- **Backend:** Powered by MongoDB for flexible and scalable data management.
- **Database Scaling:** Utilizes data sharding and master and slave architecture techniques for scalability and reliability.
- **Analytics and Visualization**: Chart.js and 3D.js: For visualizing insights and recommendation data on the frontend dashboard.
- **AI Recommendation** : TensorFlow - For fine-tuning or training custom machine learning models, if you need to use or improve your own LLM.
- **Cloud & Deployment**: AWS (S3, EC2, Lambda): For hosting the application, storing model files, and performing compute-heavy AI tasks.
- **Recommendation System**: Scikit-learn: For building recommendation algorithms.
- **Real-Time Data Processing**: Apache Kafka : For handling real-time data streams, especially for generating insights and recommendations based on user interactions.



USE CASES

Promoting Eco-Friendly E-commerce Delivery

- Encouraging customers to make **eco-conscious choices**—such as purchasing sustainable products, opting for eco-friendly packaging, and becoming aware of their environmental impact—leads to significant benefits.

- By fostering these practices, companies can reduce issues like incorrect sales and unnecessary returns, ultimately saving costs while contributing to a healthier planet.

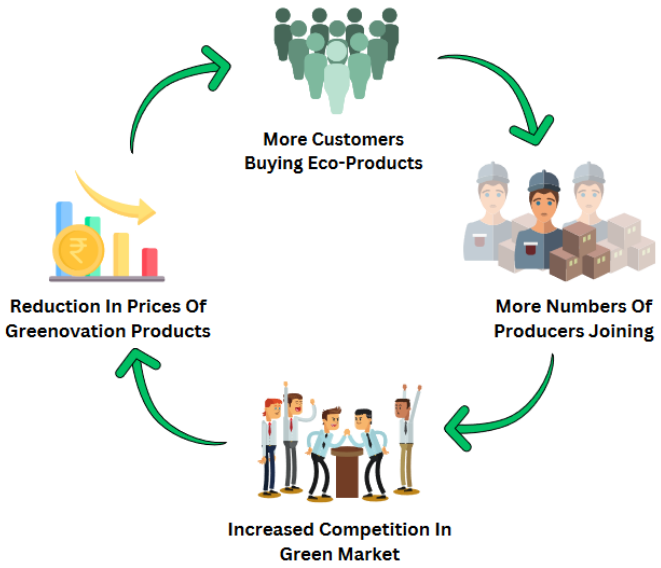
Empowering Small Businesses

- Growing consumer preference for eco-friendly products will drive more suppliers to join the **Green Zone**, boosting visibility for small businesses.
- Increased supplier participation fosters competition, leading to lower prices and attracting a larger consumer base, creating a cycle of growth and sustainability.

Access Transparent Insights into Product Manufacturing: Access detailed information about product manufacturing processes, including sourcing, production, and environmental impact, ensuring transparency.

Eco-Impact Dashboard : **Track your sustainable actions**, view your overall eco-impact, and earn rewards on a personalized dashboard.

Eco-Friendly Notifications: Stay updated with personalized feedback, reminders, and eco-friendly tips through notifications that keep you informed and motivated.



OUR UNIQUE SELLING POINT (USP)

What makes us different?

Reduce Return Policy – Using AI

Utilizing the user data stored in the eco-dashboard we can train an AI model to give user recommendation what they should buy and about the right choices they should make and avoid mistakes.

Example : Like Amazon notices that a person always returns a specific type of cloth, then the AI will recommend some other cloth and remind that you always return this type of cloth. Using this we can avoid returns that reduces plastic usage.

Return Box Policy

1. **Efficient Pickup Scheduling**
    - Area-based pickups are scheduled once a threshold of returned boxes is met, with notifications sent via app, SMS, or email. Optimized routes and trained delivery personnel ensure efficient collection and recycling.
2. **Earn Rewards for Participation**
    - Customers earn **GreenBit** coins for each returned box, redeemable for coupons, fostering active engagement in sustainability.
3. **Cost-Effective Recycling**
    - Recycled cardboard lowers production costs and supports zero-waste goals, aligning with sustainability efforts while reducing manufacturing demand.

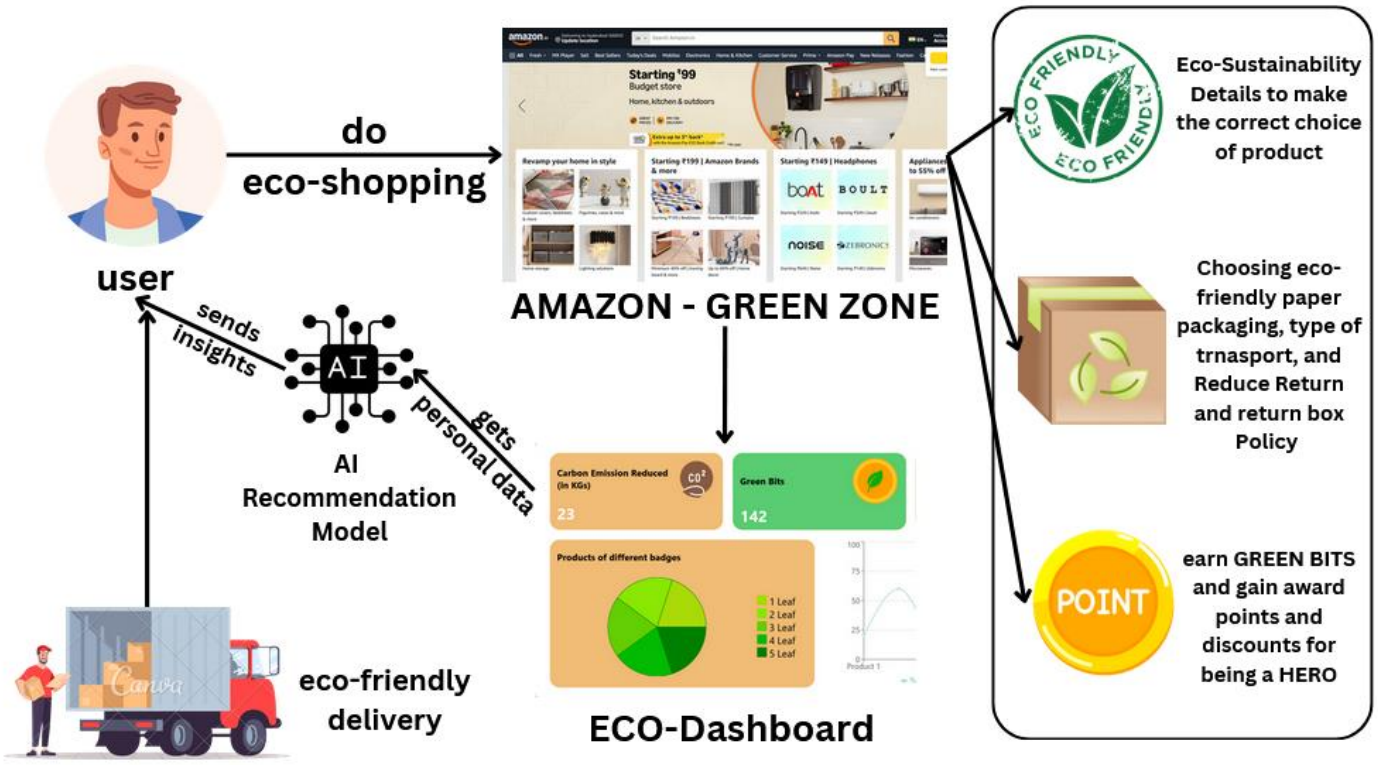
Use Zero-emission Fleets

Based on your urgency to get the product and type of product customers can opt to choose delivery boys to come from bicycle or electric vehicles.

1. **Eco-Friendly Fleet Selection**
    - Customers can choose zero-emission delivery options, such as bicycles or electric vehicles, based on the urgency and type of product. This ensures flexibility while promoting sustainable delivery practices.

2. **Customized Delivery Preferences**
    - For non-urgent or lightweight deliveries, customers can opt for bicycle couriers, minimizing the carbon footprint. For larger or time-sensitive deliveries, electric vehicles provide a balance of speed and sustainability.

4. Methodology/Architecture Diagram



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5. Success Metrics:

Metric Category	Key Performance Indicators (KPIs)	Success Metrics
Customer Engagement	- Time spent in eco-friendly sections - Pages viewed per visit - Bounce rate	- Measures user interest and interaction in eco-friendly sections, reflecting customer satisfaction and engagement. - Indicates how intuitive and engaging the platform is.
Sustainability Impact	- Eco-friendly products sold - Reduction in carbon emissions - Increase in sustainably sourced products	- Assesses the core environmental impact of the platform. - Shows how well the platform is advancing sustainability goals in terms of product selection and carbon footprint reduction.
Partnership Success	- Number of eco-focused partners - Visibility and brand association improvements	- Reflects the effectiveness of building strong relationships with eco-conscious partners. - Demonstrates the platform's credibility and market position in the sustainability space.
Competitor Comparison	- Changes in market share - Performance against main eco-conscious competitors	- Measures competitive positioning and performance. - Indicates the platform's ability to adapt, scale, and outperform in the eco-friendly market compared to competitors.

6. Open Source Disclosure

- **Cloud Platform**: AWS (Amazon Web Services)
- **AI LLM Framework**: Hugging Face Transformers 4.x (Apache 2.0 License) Leveraged for text generation and contextual understanding to power the eco-friendly recommendation system.
- **Frontend Library**: ReactJS 18.x (MIT License)
- **Containerization Tool**: Docker 20.x (Apache 2.0 License)

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7. Prototype Demonstration

Demo Link: https://drive.google.com/file/d/1eDWbJUzNh7rD2wOPvgcoriddciYEUQWo/view?usp=sharing

Deployment Link: https://green-amazon-harshit.vercel.app/

Source Code Repository: https://github.com/Harshit-Raj-14/Green-Amazon

README Instructions: https://github.com/Harshit-Raj-14/Green-Amazon?tab=readme-ov-file#instructions

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THANK YOU