Team Name : Aariaabhi

College Name : Delhi Technological University (DTU)

TEAM NAME **Aariaabhi**

MEMBER DETAILS

Member 1 -   Rishit Toteja (Team Leader)

Member 2 -   Abhijeet Thakur

Member 3 -   Aaryan Arora

Member 4 -   Aayush Patel

# Theme : Green Commerce

PROBLEM STATEMENT

Problem : In this environmentally focused theme, the challenge is to create a platform where Amazon prioritizes sustainable and eco-friendly products, and optimize the supply chain to reduce carbon footprint and promote zero waste or biodegradable packaging.

Consumers often struggle to find genuinely eco-friendly products often but lack clear information about a product's environmental impact. The absence of a centralized platform that prioritizes sustainable and eco-friendly products makes it difficult for environmentally conscious consumers to identify and choose sustainable products. Consumption of these non-eco-friendly items contributes to environmental degradation, excessive waste, and a lack of consumer awareness regarding the ecological impact of their purchases.

The IT sector is a significant contributor to global carbon emissions, accounting for about 4% of total emissions. Data centres alone are estimated to be responsible for 1-2% of global electricity usage, with emissions equivalent to the aviation industry.

A major part of the carbon footprint comes from inefficient supply chain practices, including excessive packaging, non-optimized shipping routes, and a lack of emphasis on zero-waste solutions. The transportation sector accounted for 24% of direct CO2 emissions globally in 2018, a significant portion of global greenhouse gas emissions.

How can Amazon leverage technology and innovation to address these challenges? Being the world's largest e-commerce platform, with over 300 million active customers worldwide, plays a significant role in shaping consumer behaviour and environmental impact. As Amazon is on an accelerated path to power it's global operations with 100% renewable energy by 2025.
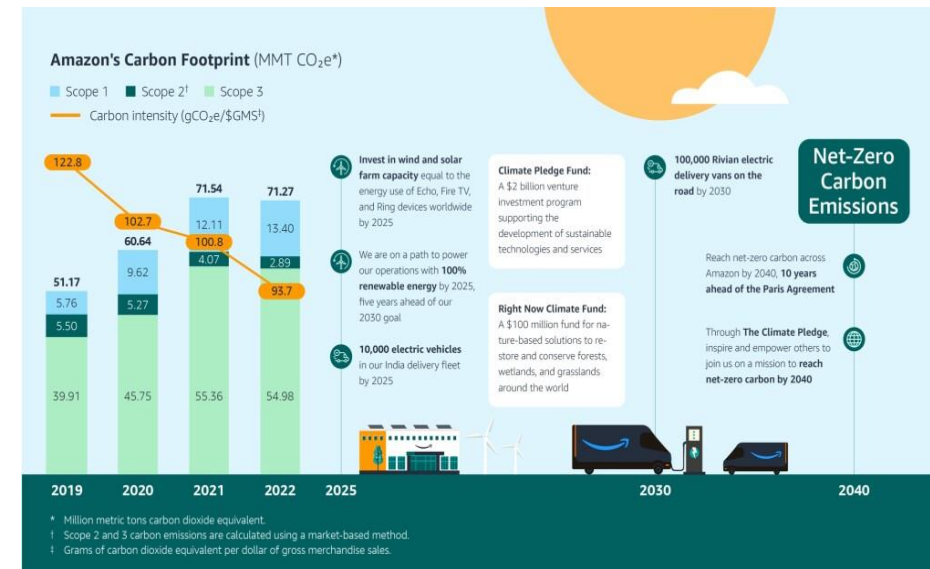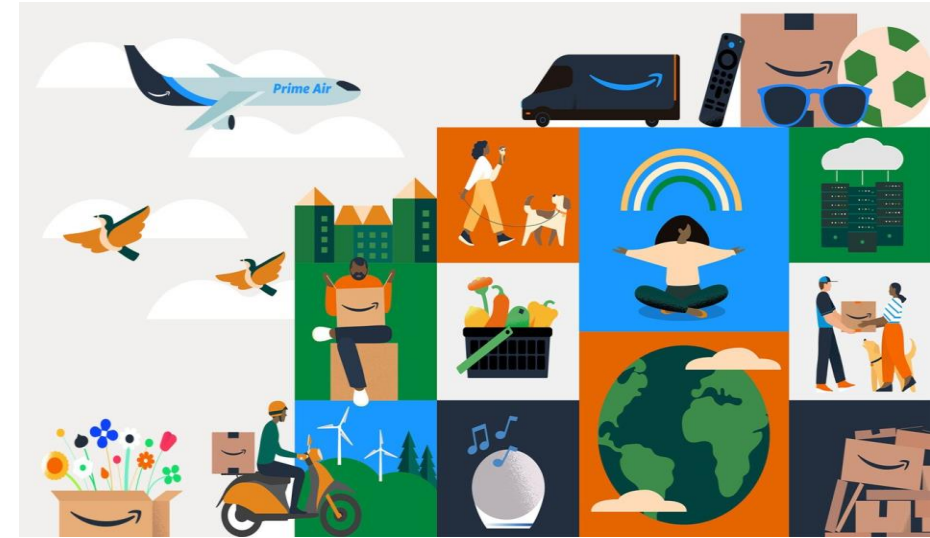
SOLUTION

Eco-Friendly products based Scoring and Sorting system:

Product's score are based on their eco-friendly nature using machine learning algorithms, which consider factors like carbon footprint, recyclability, energy efficiency, and ethical sourcing. The search results then can be sorted according to this score. Users can easily identify and buy eco-friendly items. It can help increase the sales of eco-friendly products as well as user satisfaction due to conscious shopping.

Supplier Collaboration:

By actively engaging and collaborating with suppliers, we can encourage and enforce eco-friendly practices throughout the supply chain. This includes setting sustainability standards, sharing best practices, and incentivizing suppliers to adopt green manufacturing processes and materials. Thus, thereby increasing the availability of such products and number of suppliers adopting sustainable practices.

AI Chatbot Integration:

A multilingual AI chatbot using NLP serves as a powerful tool for users seeking products and scheduling consolidated delivery dates, effectively reducing shipping expenses and the associated carbon footprint. By streamlining the search and logistics processes, it optimizes supply chain operations, minimizes emissions from multiple shipments, and supports commitment to sustainability and cost efficiency.

Personalized Recommendations:

Our platform leverages advanced AI algorithms to provide personalized product recommendations that align with customers' eco-conscious preferences and past purchases. By tailoring suggestions towards sustainable options, we aim to encourage and empower our users to make environmentally responsible choices, ultimately driving the adoption of eco-friendly products and practices.

Carbon Offsetting Fee:

Implementing a carbon offsetting fee on purchases is a proactive step towards environmental responsibility. This fee can be used to fund various environmental projects, such as reforestation, renewable energy initiatives, or carbon capture technologies. By neutralizing the carbon footprint of transactions, this approach allows businesses and consumers to take collective action in promoting sustainable practices. Blockchain technology can be used for transparency in fee utilization is a powerful approach to support environmental projects and neutralize the carbon footprint of transactions. *Assuming that users are willing to pay a carbon offsetting fee for environmental conservation*.

Consumer Education Hub:

A dedicated section can be introduced which serves as an educational hub, enlightening users about eco-friendly practices and sustainability. Simultaneously, we can run impactful campaigns to both raise funds and awareness for critical environmental initiatives. This dual approach not only fosters a more environmentally conscious community but also actively contributes to the support and advancement of eco-friendly causes.

Route Optimization:

Utilizing AWS Lambda and Amazon API Gateway, an efficient system for optimizing delivery routes within our supply chain can be implemented. This technology-driven approach significantly reduces fuel consumption and emissions by ensuring that deliveries are made using the most efficient and eco-friendly routes possible.

Frameworks/Technologies Stacks:

- **<u>Machine Learning</u>:** Machine learning can be harnessed to develop an eco-friendly scoring and sorting algorithm in a sustainability project. By training ML models on extensive datasets, the algorithm can assess and rank products based on their sustainability.

- **<u>Natural Language Processing</u>:** Key component for development of advanced AI powered chatbots and enable chatbots to understand and respond to user queries and requests related to eco-friendly products, carbon emissions, recycling, and more in a human-like conversational manner

- **<u>Web Development</u>:** Necessary tool for the creation of online platform and interface that facilitate communication, data collection, and user engagement.

- **<u>Green Computing Technologies</u>:** By embracing green computing technologies, organizations can reduce their carbon footprints, decrease energy costs, and contribute to a more sustainable, eco-friendly IT systems.

- **<u>Blockchain</u>:** Blockchain ensures the traceability and accountability of funds, offering consumers and stakeholders a transparent view of how their contributions are invested in initiatives that combat climate change, thereby building trust and promoting sustainable practices.

- **<u>AWS</u>:** Amazon Web Services (AWS) is a robust choice for building a scalable and reliable system for a sustainability project. AWS provides a wide range of services that can support the project's infrastructure needs, including computing, storage, databases, and networking.

Our proposed solution is based on the concept of integrating technology and utilizing machine learning algorithms, artificial intelligence chatbots, blockchain technology, route optimization using AWS, and web development. This platform will serve as the backbone of Amazon, ensuring a sustainable online shopping experience.

At its core, we aim to create a comprehensive ecosystem where sustainability isn't just a trend but a fundamental principle. By employing advanced technologies, ethical methods, and enhanced user interaction. It will redefine traditional e-commerce into a space that advocates for eco-conscious products while prioritizing user education and engagement.
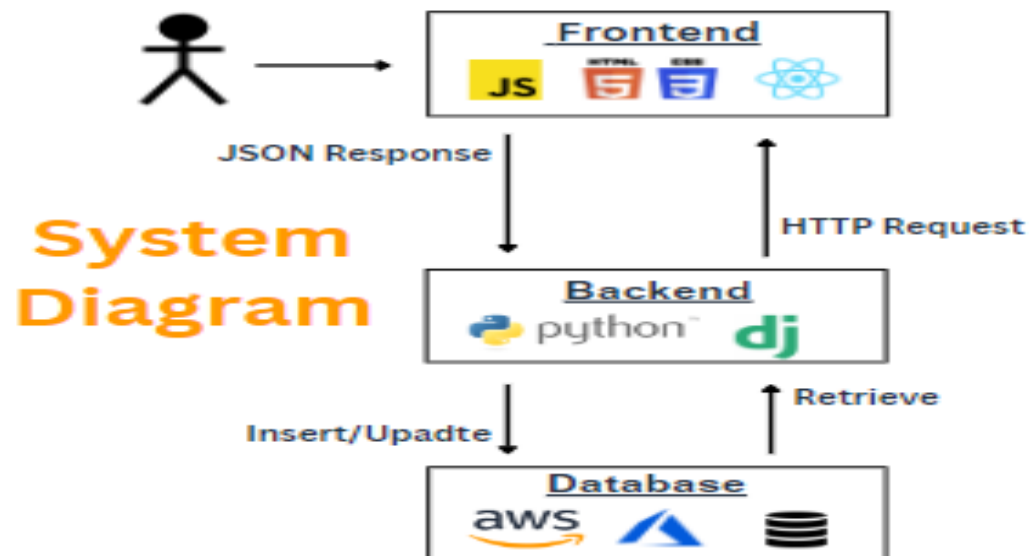
Principles

Eco-Friendly Products-based Scoring Algorithm-Making categorizes of different product, while prioritises eco-friendly products based on a scoring system. This principle ensures that users are presented with options that align with sustainable practices, driving eco-conscious purchasing decisions.

Supply Chain Transparency through Blockchain:
The integration of blockchain technology,ensuring transparency and authenticity through blockchain for supply chain management. It fosters an ecosystem where consumers are confident about the sustainability of their purchases.

Personalized Recommendations : By employing machine learning algorithms to analyze user behavior, preferences, and past purchases. This personalized approach not only enhances user experience but also encourages the adoption of sustainable products tailored to individual needs.

Route Optimization : It takes into account factors such as traffic conditions, package size, and delivery schedules using AWS . This optimized approach minimizes fuel consumption, decreases delivery-related emissions, making it more environmentally friendly logistics process.

System Diagram

METHODOLOGY

Elements and Components:

1. Eco-Friendly Scoring Algorithm:

- Product analysis algorithms assessing materials, production processes, and environmental impact.
- Scoring system categorizing products based on their eco-friendliness.

2. Blockchain Integration:

- Immutable blockchain ledger tracking each product's journey.
- Smart contracts for ensuring adherence to sustainable practices.

**3. AI Chatbot using NLP with multilingual Support:**

- Natural Language Processing algorithms for multilingual conversational interactions.
- Database of products, delivery schedules, and user preferences for intelligent assistance.

4. Personalized Recommendations Engine:

- Machine learning algorithms for user behaviour analysis.
- Database of eco-friendly products and user preferences.

5. Route Optimization System:

- AWS Lambda functions for real-time route calculations.
- Integration with GPS and traffic data for route optimization.
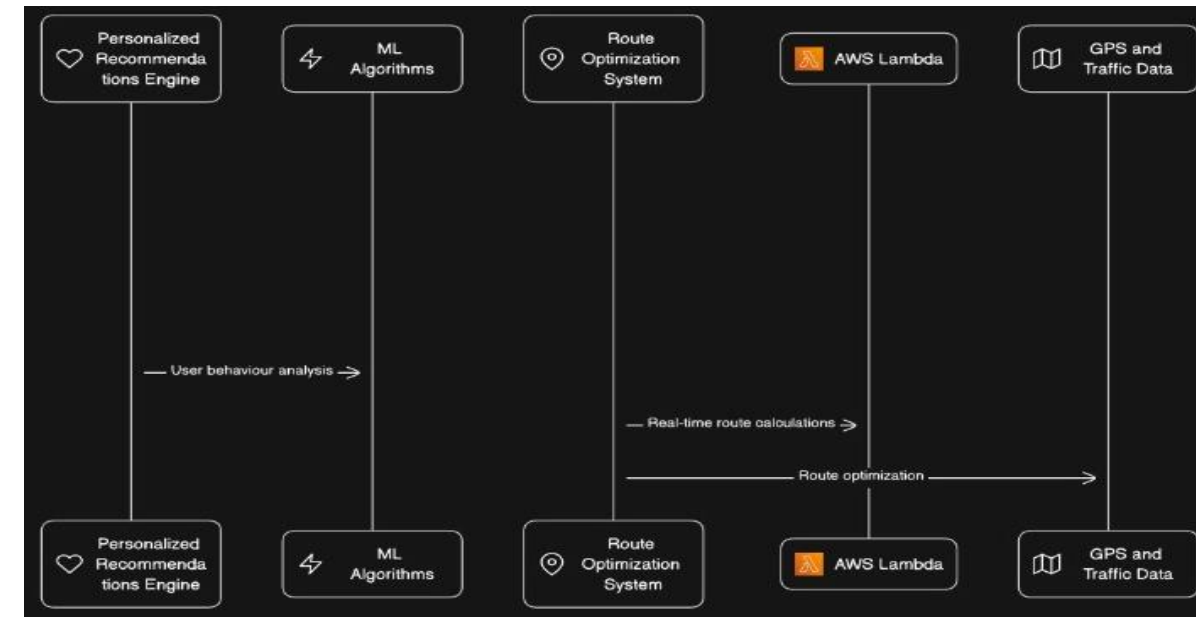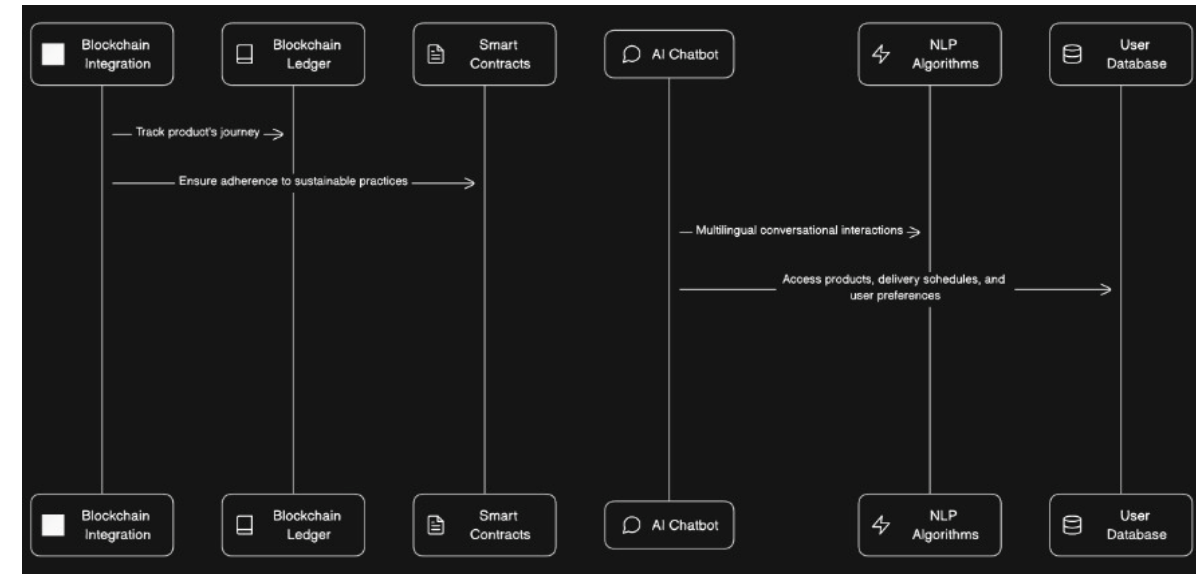
SOCIETAL IMPACT/ NOVELTY

Our solution societal impact is not only quantifiable in reduced carbon emissions and waste but also in the creation of a conscious and informed community dedicated to preserving the planet for future generations. Its novelty lies in the integration of various technologies and practices to create a holistic solution addressing both eco-friendly product prioritization and supply chain optimization as described below:

- We can empower consumers to make environmentally responsible choices. This shift in consumer behaviour leads to an increased demand for eco-friendly products. Our platform will guide users towards purchases that align with their values, fostering a sense of social responsibility.

- The integration of an AI chatbot reduces the carbon footprint by optimizing shipping routes and consolidating deliveries. Also contributes to a significant reduction in traffic congestion, thereby enhancing the overall quality of urban life.

- Charging a carbon offsetting fee allows users to contribute directly to environmental conservation efforts. By incorporating this fee, we can make a substantial financial resource dedicated to reforestation, renewable energy projects, and sustainable development initiatives.

- The dedicated section on eco-friendly awareness educates users and fosters a sense of environmental consciousness. This awareness not only drives eco-friendly purchases but also encourages users to adopt sustainable lifestyles, amplifying the platform's societal impact beyond the realm of commerce.

FUTURE SCOPE

Business Relevance:

- According to a Nielsen study, 66% of consumers globally are willing to pay more for sustainable goods. Moreover,87% of consumers would purchase a product based on a company's advocacy concerning environmental issues.

- Optimizing the supply chain to reduce the carbon footprint is crucial for environmental conservation. The transportation sector accounts for a significant portion of global greenhouse gas emissions.

- Environmentally conscious consumers who struggle to find genuinely eco-friendly products amidst a sea of options. They face the dilemma of wanting to make sustainable choices but lacking clear information about a product's environmental impact.

- By addressing these challenges, Amazon can bolster its brand reputation and customer loyalty. As per study, 91% of consumers are more likely to shop with brands that are authentic about their environmental efforts.

Optimization:

- **Collaboration with NGOs:** Forge partnerships with environmental organizations to enhance the project's credibility and impact, potentially leading to joint initiatives and awareness campaigns.

- **Expansion of AI capabilities:** AI-chatbot can be improved for analysis of product reviews to highlight user feedback on sustainability aspects, helping users make more informed purchasing decisions.

Scope for Modification:

- **Predictive Analytics:** Develop predictive models that anticipate product demand and supply chain needs, optimizing inventory management to reduce waste and emissions.

- **Mobile App Development:** Develop a mobile app to complement the web platform, offering users on-the-go access to sustainability information, product searches, and carbon offset features.

- **User Engagement Gamification:** Create gamified experiences within the Consumer Education Hub to incentivize sustainable behavior and reward users for eco-conscious actions.

THANK YOU !!