SMART INDIA HACKATHON 2024

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HACKATHON
2024

HACKERWAR 5.0

ORGANISED BY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
FACULTY OF ENGINEERING AND TECHNOLOGY (ITER) SIKSHA 'O'
ANUSANDHAN (DEEMED TO BE) UNIVERSITY, BHUBANESWAR,
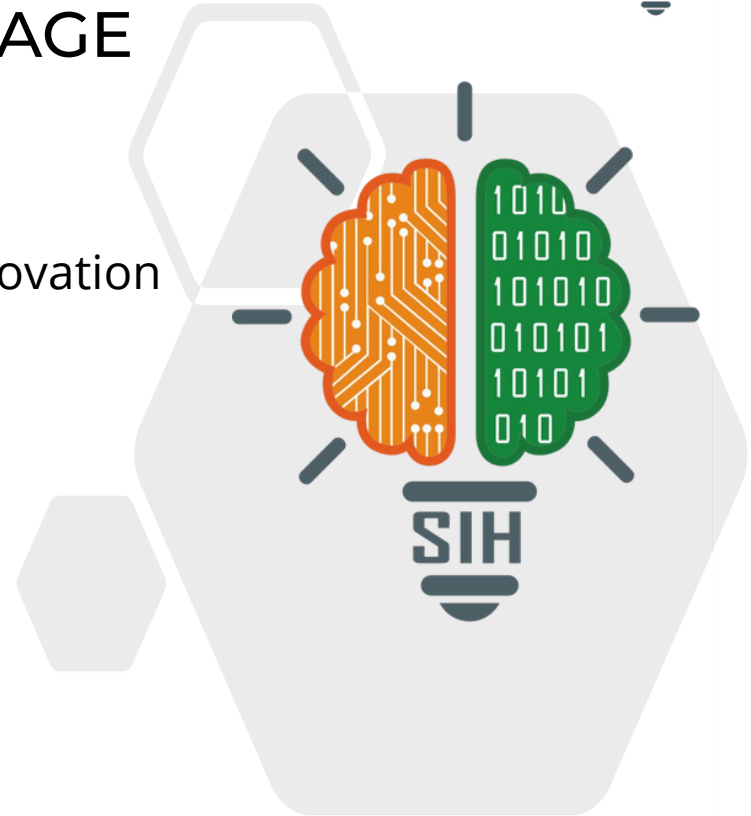ODISHA

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We code. We explore

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TITLE PAGE

- **Problem Statement ID** - 1592

- **Problem Statement Title** - Student Innovation

- **Theme** - Clean & Green Technology

- **PS Category** - Software

- **Team ID** -

- **Team Name** - DevUnion

SmartBin

Detailed Explanation of the Proposed Solution:

Our platform is designed to address the problem of Waste Management by allowing users to report garbage which is spread along the sideways of roads in localities by uploading photo with location directly through the website . The key features include -

- **Improves the local sanitation -** It creates a direct channel between citizens and municipal authorities to report and track the cleanup of roadside litter and illegal dumping sites.
- **Enhance recycling efforts -** It will enable users to report recyclable items from their homes for pickup.

How It Addresses the Problem:

- **Bridging Communication Gap -** Our platform directly addresses the lack of interaction between residents and authorities. It provides an easy-to-use interface for users to report roadside garbage, creating a direct line of communication with local sanitation departments that was previously missing.
- **Real-Time Reporting -** Users can instantly upload photos of garbage-strewn roadsides or items to be recycled allowing for immediate reporting of issues. This real-time capability significantly reduces the delay between problem identification and authority notification.

Innovation and Uniqueness of the Solution:

- **Dual-Purpose Reporting -** The website handles both local garbage issues and household recycling needs through a single platform.
- **Photo-Based Reporting -** Users can submit photos of garbage or recyclable items, improving accuracy and response efficiency.
- **Location-Specific Targeting -** By utilizing location data from photo submissions, our system can create precise, geo-tagged reports of garbage hotspots, enabling highly targeted cleanup efforts .

TECHNICAL APPROACH

Technologies to be used:
Frontend : Html , Css , Javascript , Gsap , Swiper.js , React.js
Backend : Node.js , Express.js , MongoDb , JWT (jsonwebtoken) for authentication , Stripe API for payments , OpenCage API for geolocation, Pytorch , Sklearn , Flask , Pandas , ntlk-libraries .

Workflow Diagram

FEASIBILITY AND VIABILITY
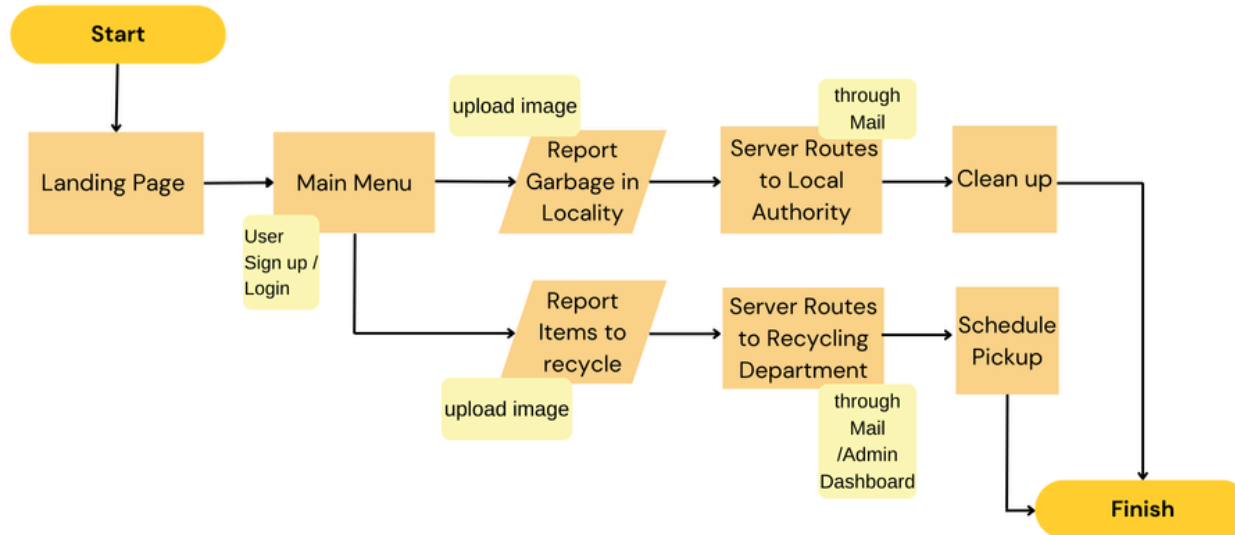
Analysis of the feasibility of the idea :
1. Our idea for a waste management platform is highly feasible, given the increasing demand for smarter, more efficient urban waste solutions and the current trend towards citizen engagement in environmental issues.
2. The technology required to build this platform is readily available. Existing frameworks for image uploading, geolocation tagging, and user management can be leveraged to bring our vision to life quickly and efficiently.
3. The core functionality can be easily adapted to include additional features or address other civic issues in the future, increasing its long-term viability.

Potential challenges and risks :
1. Photo Verification Accuracy : False or misleading reports could undermine the system's credibility.
2. Misuse of the Platform: Spam, inappropriate content, or malicious reporting could divert resources and reduce overall efficiency.
3. Integration with Local Authorities : Resistance or slow adoption by local authorities could limit the platform's effectiveness.
4. System Scalability : Performance issues during peak usage times could frustrate users and authorities.

Strategies for overcoming these challenges :
1. Minimal Viable Product (MVP) : Start with a pilot program in one locality or municipality focusing on serving a limited geographical area efficiently and gathering user feedback and refine the platform before expanding.
2. Strategic Partnerships : Collaborate with local environmental NGOs for community outreach, partner with municipal corporations to ensure official adoption.
3. Cost-Effective Development : Utilizing open-source technologies and cloud-based services , modular design for easy feature addition and scalability

IMPACT AND BENEFITS

Potential Impact on the Target Audience:

1. Community Empowerment : Direct channel for addressing local waste issues and increased consciousness about proper waste management.
2. Health Benefits : Reduction in garbage-related health hazards and Improved overall community hygiene.
3. Economic Benefits : Potential for reduced waste management costs in the long term and improved local environment may positively impact property values.

Benefits of the Solution:

1. Educational Impact : Users gain knowledge about proper waste segregation and recycling practices, promoting long-term sustainable habits.
2. Cost Savings: Optimized waste collection routes and increased recycling can lead to reduced operational costs for municipalities in the long run.
3. Health and Safety : By facilitating prompt garbage removal and promoting proper waste disposal, the platform contributes to improved public health and hygiene.
4. User Convenience: The easy-to-use mobile interface allows quick reporting of waste issues and scheduling of recycling pickups, simplifying waste management for residents.

DevUnion

RESEARCH AND REFERENCES

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