Basic Details of the Team and Problem Statement

PS Code: **202**

Problem Statement Title : **Smart Waste Segregation and Recycling System**

Team Name : **EcoLogic**

Team Leader Name : **Chavda Jaydeep**

Institute Name : **Madhuben & Bhanubhai Patel Institute of Technology (MBIT)**

Category Number and Name: **Category-2_CVMU_Hackathon_4.0**
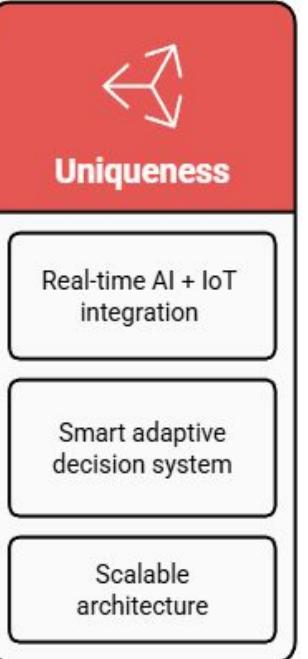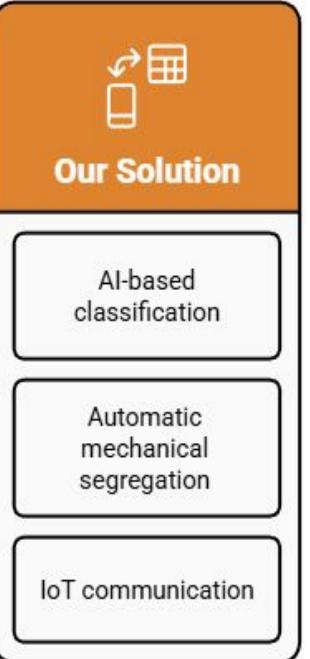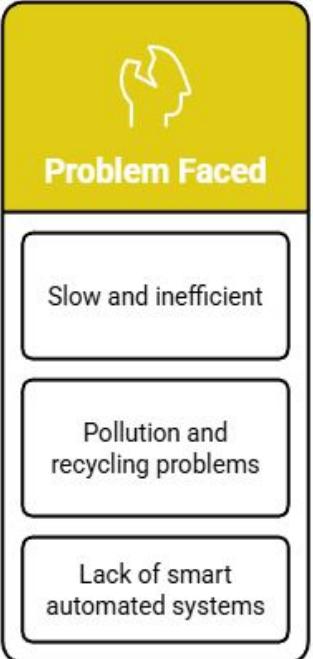
Idea/Approach Details

	Problem Faced	**Our Solution**	**Uniqueness**
Waste Segregation	Slow and inefficient	AI-based classification	Real-time AI + IoT integration
Waste Impact	Pollution and recycling problems	Automatic mechanical segregation	Smart adaptive decision system
System	Lack of smart automated systems	IoT communication	Scalable architecture

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1  https://github.com/shubhamos-ai/smart-dustbin-v2
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Dependencies

💻 **Software**
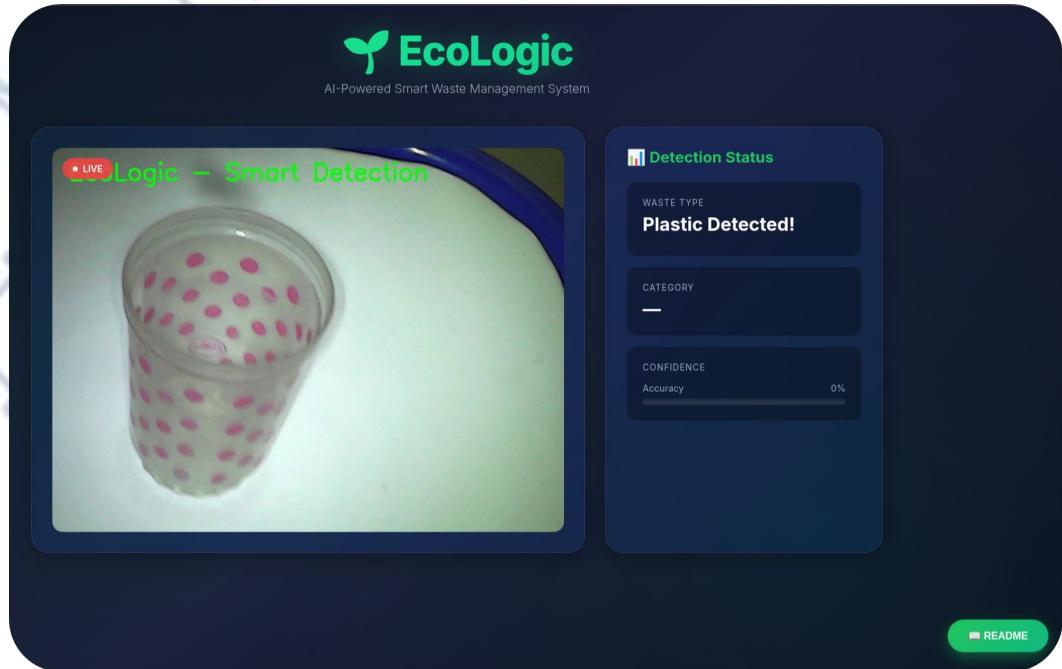
- 🐍 **Python 3.8+** — Core application logic & system control
- 🌐 **FastAPI + Uvicorn** — High-performance backend API
- 🤖 **PyTorch + CLIP** — AI-based waste classification)
- 📷 **OpenCV + Pillow** — Image capture & preprocessing
- 🗄 **MariaDB** — Detection logs & analytics storage
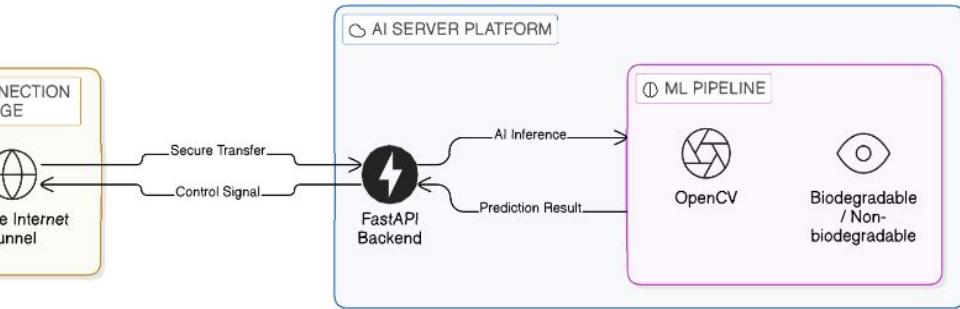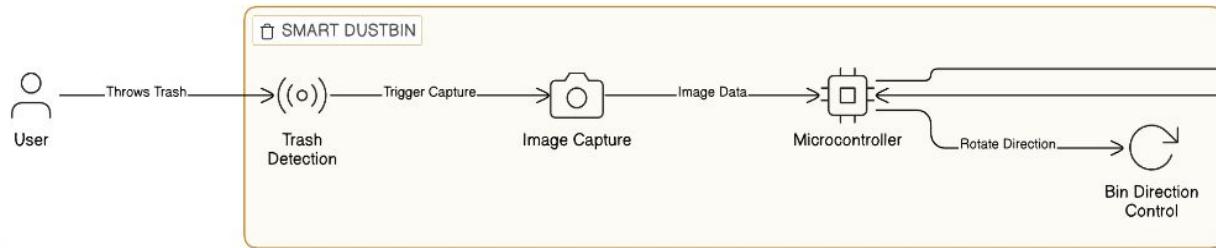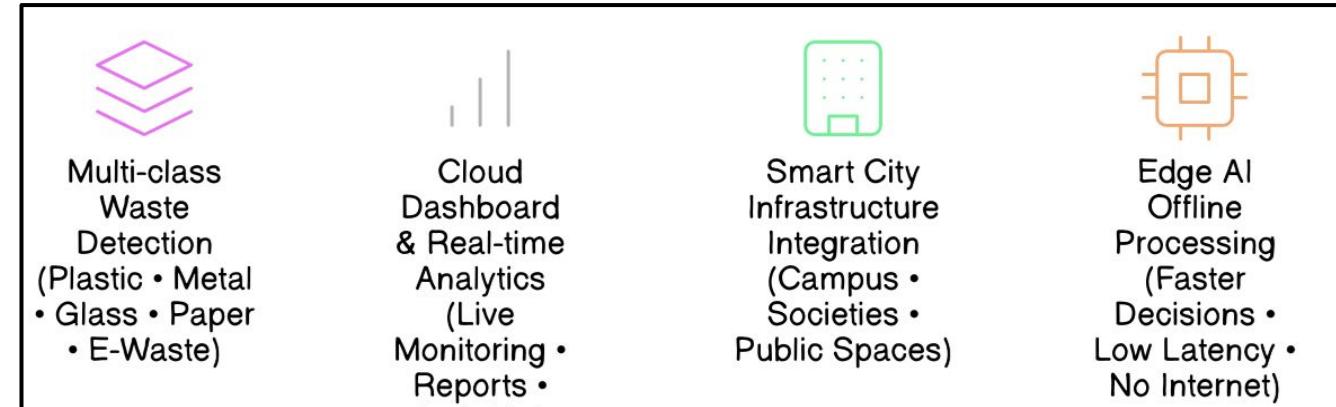
UI/UX Mockups:

Future Scope:

Multi-class Waste Detection (Plastic • Metal • Glass • Paper • E-Waste)

Cloud Dashboard & Real-time Analytics (Live Monitoring • Reports •

Smart City Infrastructure Integration (Campus • Societies • Public Spaces)

Edge AI Offline Processing (Faster Decisions • Low Latency • No Internet)

Team Member Details

Team Leader Name: Chavda Jaydeep
Branch :Btech   **Stream Computer Engineering**   **Year II**

Team Member 1 Name: Shubham Chawhan
Branch Btech   **Stream Information Technology**   **Year I**

Team Member 2 Name: Krish Patel
Branch Btech   **Stream Computer Engineering**   **Year II**

Team Member 3 Name: Denil Patel
Branch Btech   **Stream Information Technology**   **Year I**

Team Mentor 1 Name: Sunit Parmar
Category : Academic   **Expertise: AI/ML**   **Domain Experience : 14**