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AI for Bharat Hackathon

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Team Name : CommitOfOne

Team Leader Name : Anshul Wycliffe

Problem Statement : AI for Communities, Access & Public Impact

Brief about the Idea:

CivicBio – Smart Biomedical Waste Governance SystemCivicBio is a QR-enabled, role-based biomedical waste management platform designed for civic bodies to ensure:End-to-end waste traceabilityRegulatory complianceReal-time monitoringAI-powered anomaly detection

Problem
Biomedical waste is:
- Manually tracked
- Poorly audited
- Vulnerable to misreporting
- Hard to monitor at city scale

Our Idea
Digitize the entire lifecycle:
- Facility → QR Generation → Collection → Disposal → Civic Audit

With:
- AWS-powered anomaly detection
- Real-time dashboards
- Cloud-based logging & monitoring

🔥 1. Governance-First Design

Most systems focus only on:
- Logistics
- Tracking

CivicBio focuses on:
- Accountability
- Civic approval control
- AI-based anomaly detection
- Audit logging via AWS CloudWatch

🔥 2. AI-Based Statistical Anomaly Detection

Instead of just tracking waste,
we detect:
- Sudden spikes in waste
- Unusual patterns
- Suspicious reporting

Using:
✓ **`Z-score Statistical Detection`**
✓ **`(Mean & Standard Deviation)`**

Powered by:
- AWS Lambda
- Serverless architecture

🔥 3. Serverless & Scalable

Unlike traditional systems:
- No heavy servers
- No complex ML pipelines

We use:
- AWS Lambda
- CloudWatch
- MongoDB

Scales automatically.

List of features offered by the solution

Facility
- Waste generation
- QR code tagging
- Compliance status

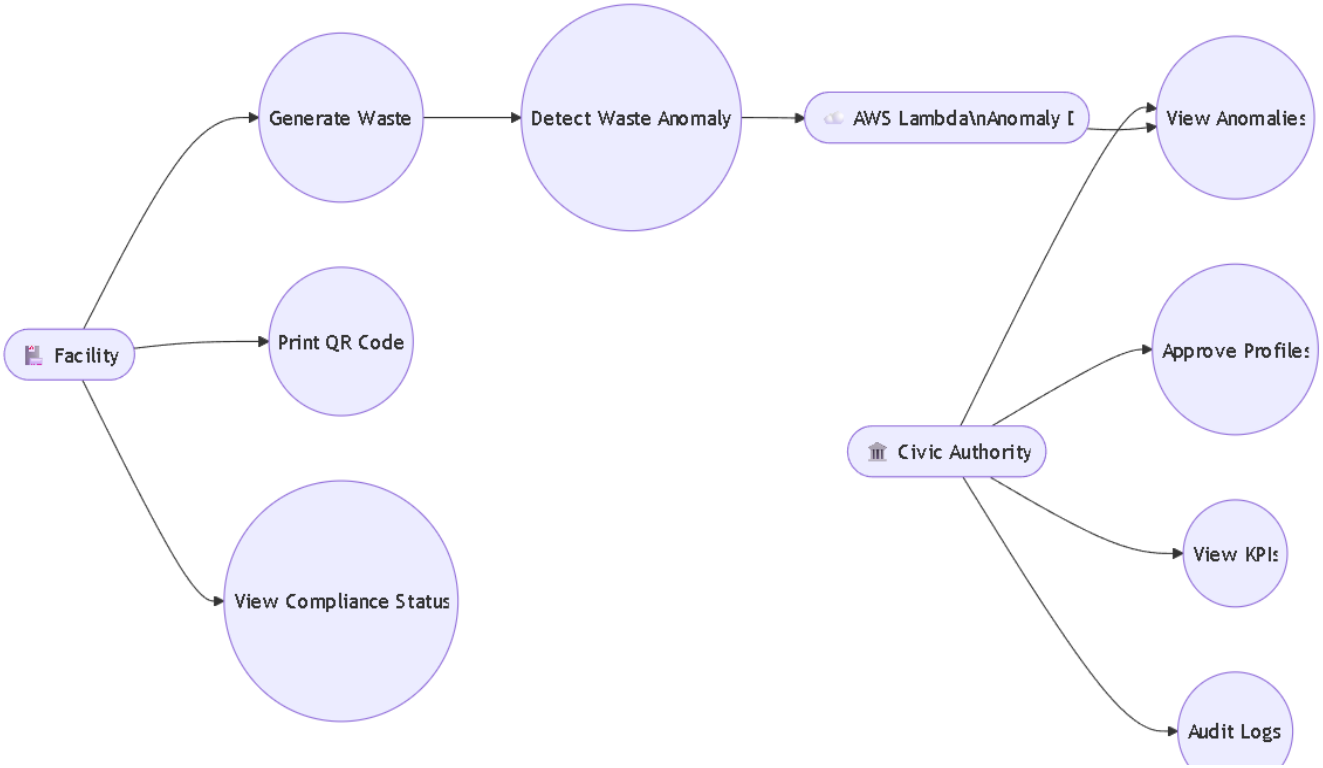
Collector
- Facility verification via QR
- Waste batch scanning
- Issue reporting

Disposal
- Waste verification
- Treatment method logging
- Disposal confirmation

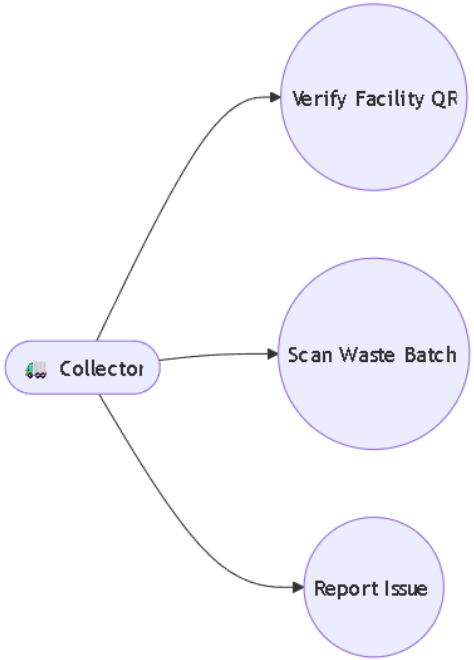
Civic Authority
- Approval workflow
- Real-time KPIs
- Anomaly detection alerts
- High-risk facility detection

AI Layer
- 30-day historical analysis
- Z-score anomaly detection
- High-risk scoring
- Cloud logging

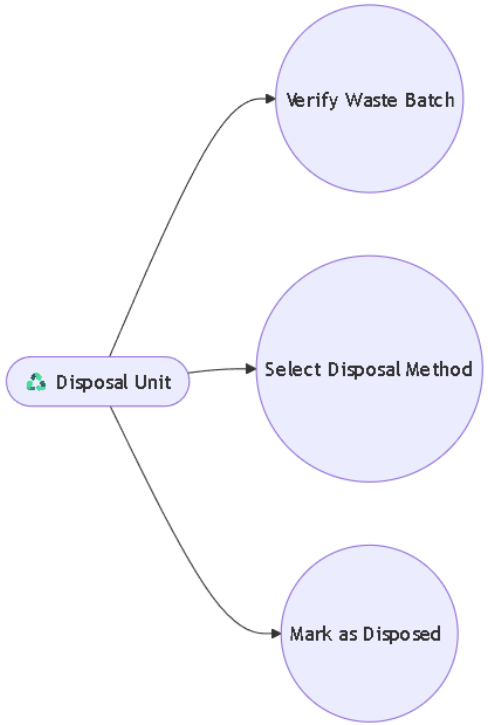
Process flow diagram or Use-case diagram



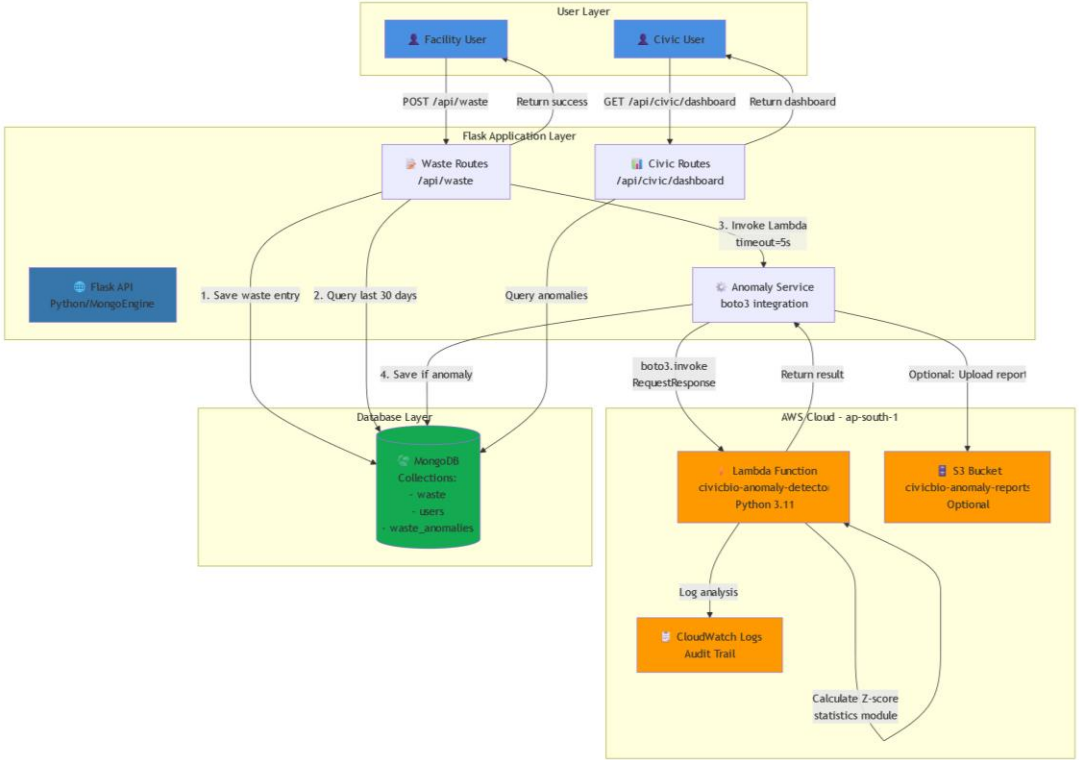
Process flow diagram or Use-case diagram



Process flow diagram or Use-case diagram



Architecture diagram of the proposed solution:



Technologies to be used in the solution:

Backend
- Python
- Flask
- MongoEngine (MongoDB)

Frontend
- HTML
- CSS
- JavaScript
- Bootstrap

AWS Cloud
- AWS Lambda (Anomaly Detection)
- CloudWatch (Audit Logging)
- S3 (Optional Report Storage)

AI Technique
- Z-score based anomaly detection
- Statistical modeling using Python standard library

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Thank You