





ECOSORT AI-POWERED SMART BIN FOR WASTE SORTING

Revolutionizing Waste Management with Intelligent Automation





OUR TEAM

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INTRODUCTION

EcoSort is an innovative solution designed to tackle the pressing issue of improper waste segregation. Using cutting-edge AI technology, it can automatically classify and separate biodegradable and non-biodegradable waste in real-time. By promoting efficient recycling and reducing landfill overflow, this project aims to address environmental challenges and create a sustainable, eco-friendly waste management system for households, public spaces, and industrial applications.






PROBLEM STATEMENT

- Existing waste bins fail to facilitate sorting of solid waste at the point of collection.
 - Mixed waste in bins complicates the manual sorting process.
 - Results in labor-intensive, time-consuming, and hazardous manual sorting.
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PROBLEM STATEMENT

- Overfilled bins lead to unhygienic conditions, impacting public health and economic activities.
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SOLUTION

- Smart waste bins with integrated camera and AI for real-time tracking of waste which tracks if the waste is biodegradable or non-biodegradable.
 - IoT device directs the waste to its respective slot based on the categorization.
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SOLUTION

- Ultra Sonic Sensor tracks if the bin is full, providing timely alerts for waste collection.
 - Automates the waste sorting process, reducing manual labor and enhancing efficiency in waste management.
 - Helps optimize waste collection, promoting recycling and sustainable disposal practices.
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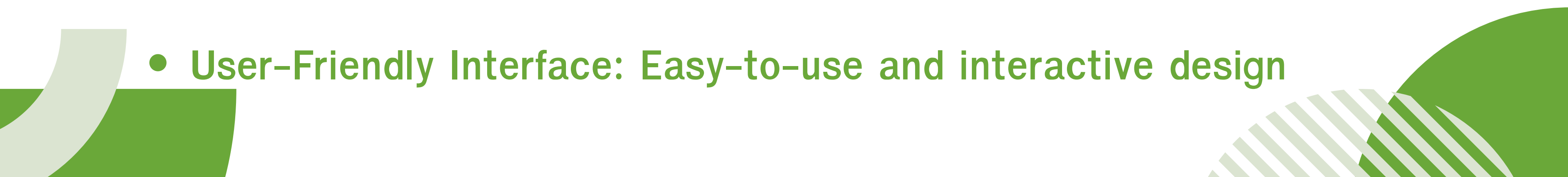


OBJECTIVE

- 01** Automatically sorts biodegradable and non-biodegradable waste using AI
 - 02** Integrates real-time detection and classification capabilities
 - 03** Provides tracking and analytics for waste management
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KEY FEATURES

- **AI-Driven Sorting:** Detects and classifies waste items in real-time
 - **Automated Mechanism:** Physically separates biodegradable and non-biodegradable items
 - **Data Insights:**
 - **Tracks the amount and type of waste collected** by the help of ultrasonic sensors
 - **User-Friendly Interface:** Easy-to-use and interactive design
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WORKFLOW

- 01** Waste Item
Dropped into Bin
 - 02** Camera Captures
Image
 - 03** AI Model Classifies Item
(Biodegradable/Non-Biodegradable)
 - 04** Automated Sorting
Mechanism Activated
 - 05** Data Displayed on
Dashboard
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TECHNOLOGY STACK

- AI Model: Trained using TensorFlow
- Object Detection Algorithm: YOLOv8 for real-time classification
- Programming Language: Python, Node, Next
- Hardware Components:
 - Camera for image capture
 - Servo motors for physical sorting
 - Microcontroller (Arduino) for bin operation
- Integration: OpenCV for image processing




APPLICATIONS

- **Households:** Simplified waste segregation at source
 - **Public Spaces:** Automated waste bins for parks, malls, and streets
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CHALLENGES AND FUTURE WORK

CHALLENGES

- Improving detection accuracy for mixed waste.
 - Ensuring durability in different environments.
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THANK YOU