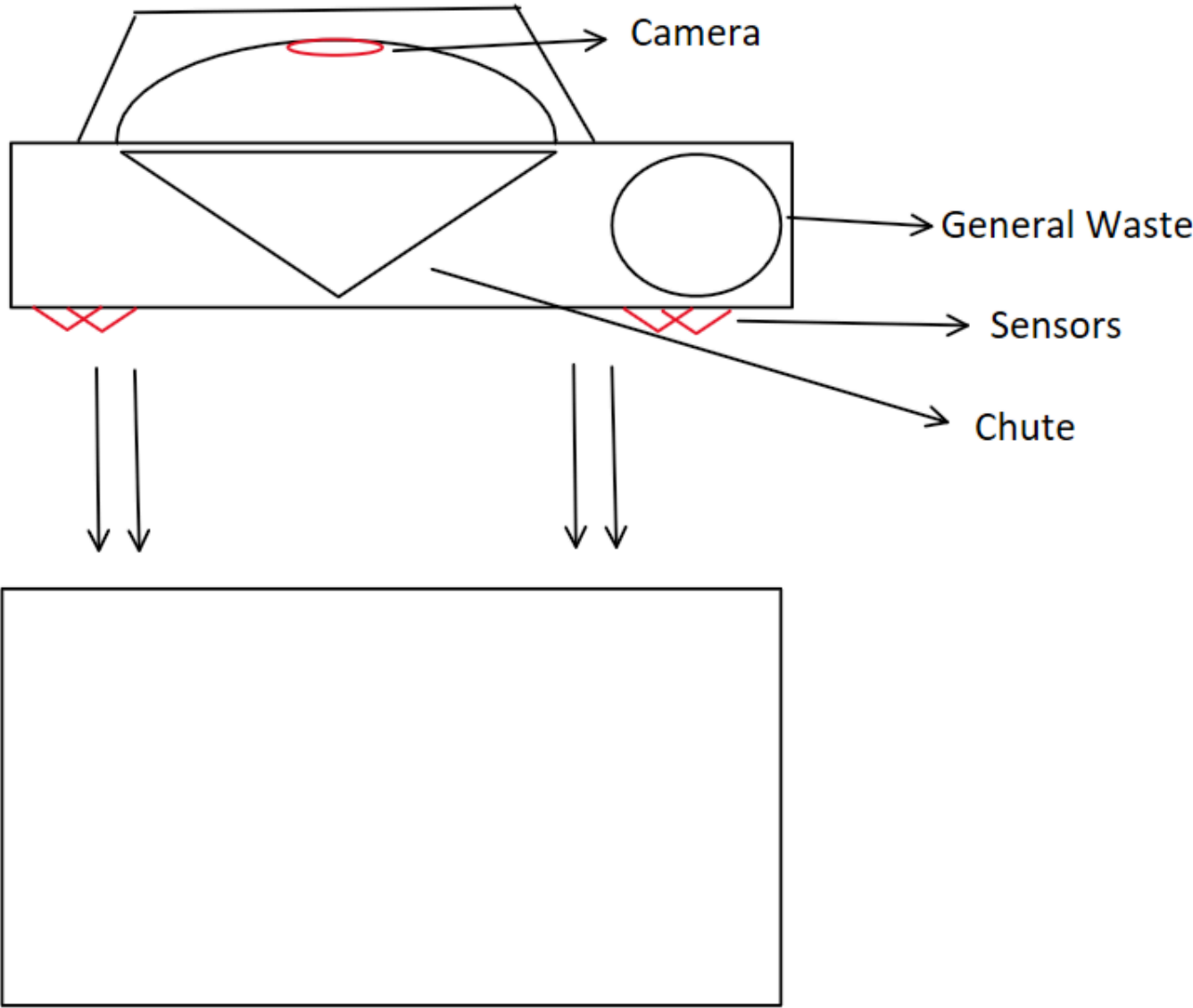




ECOCLIPSE

SORTA-BIN

ONE-STOP RECYCLING SOLUTION

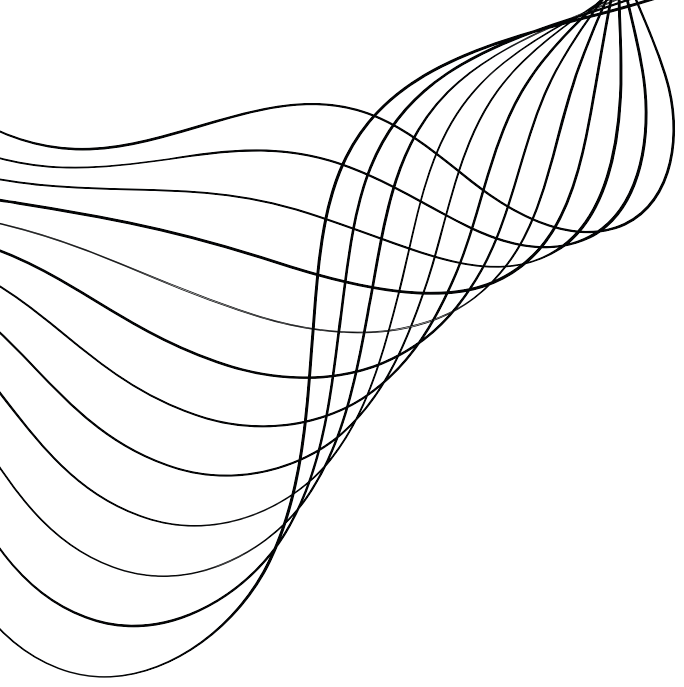




ECOECLIPSE

SORTA-BIN

ONE-STOP RECYCLING SOLUTION



DID YOU KNOW?

70-90%

**OF ALL ITEMS THAT COULD BE
RECYCLED END UP IN THE
LANDFILL**

\$300 mil

**PER YEAR, IN ADDITIONAL LABOR,
PROCESSING,
AND MACHINERY REPAIRS FOR THE
MATERIAL RECOVERY FACILITIES,
DUE TO CONTAMINATION.**

Singapore's Context



01

Low domestic recycling rates (12%)

02

Contamination of Recyclables

Up to 40% of items placed in blue recycling bins in Singapore are contaminated / not recyclable

03

Existing Smart Bins

Not as cost effective or practical in the short-run

Lack of **EFFICACY** and **EFFICIENCY**

Problem Statement

How might we transform recycling into a **convenient**, **accurate** and **seamless** process, through innovative utilisation of cutting-edge AI technology?



The background features a series of thin, black, curved lines that flow from the left side towards the right, creating a sense of movement and depth. These lines are layered, with some appearing closer and more distinct than others, giving the impression of a tunnel or a dynamic, organic shape.

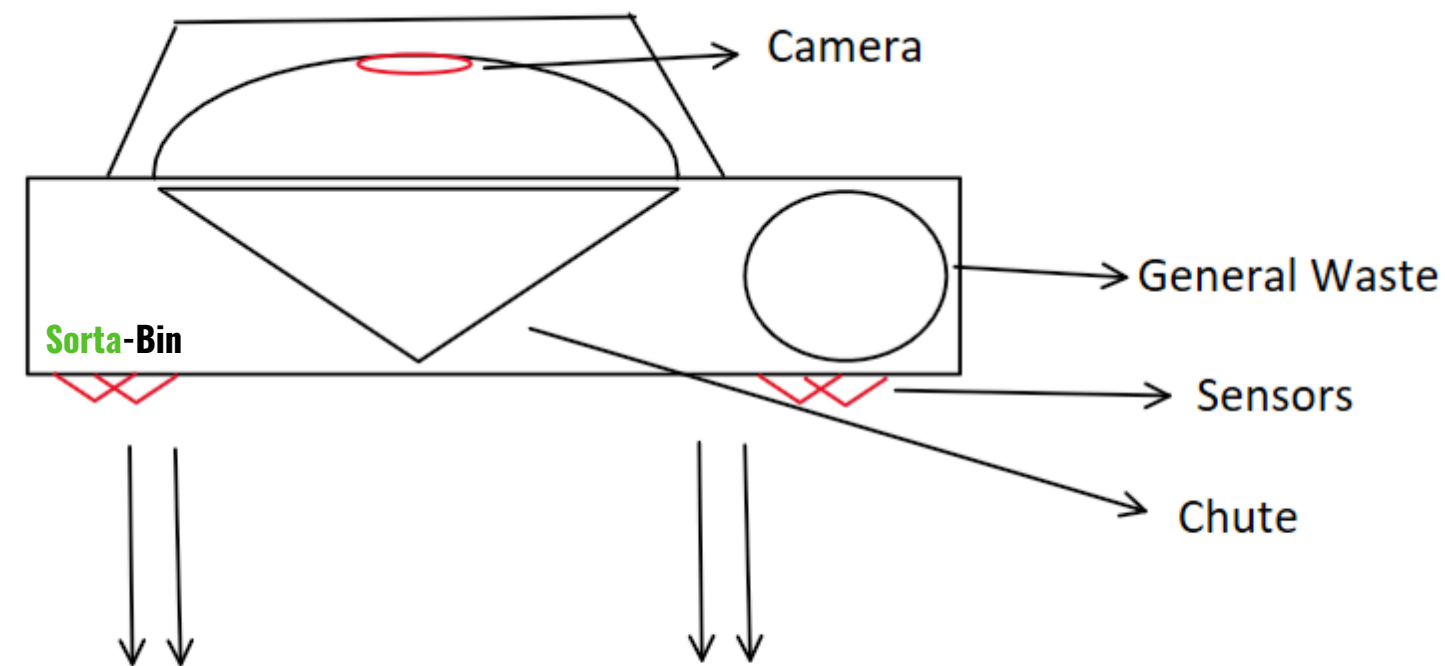
Introducing

Sorta-Bin

How It Works

Implementation

RETRO-FITTING TO EXISTING RECYCLING BINS



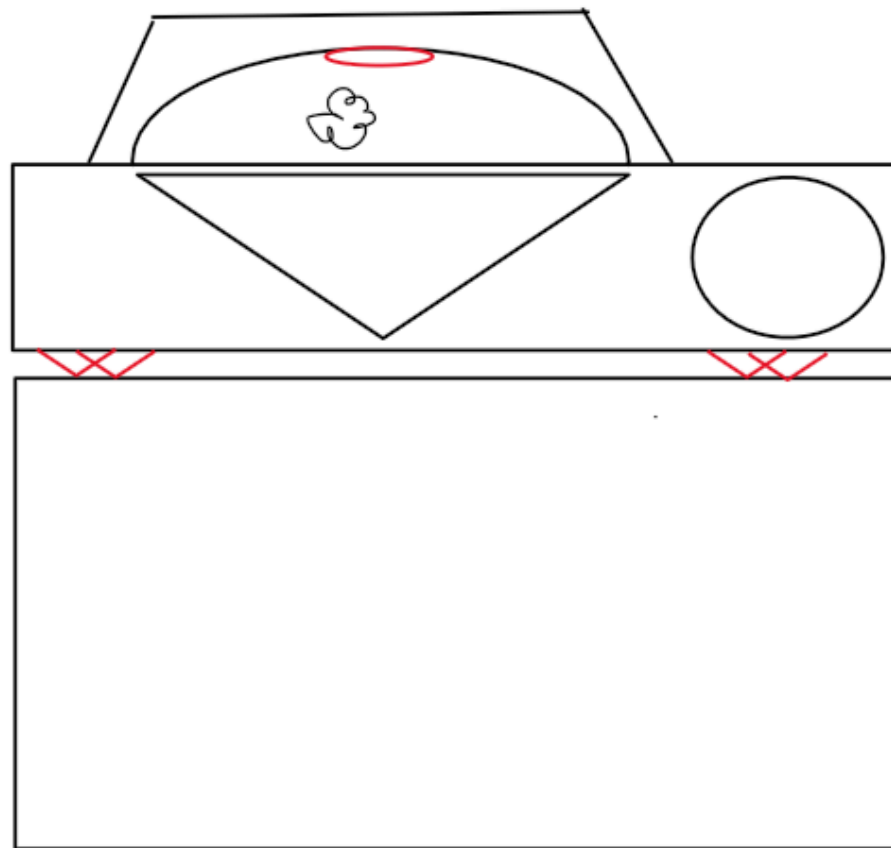
Why just a lid?

- Utilising and revamping readily available resources; avoiding space constraint issues
- Reduce material costs per unit
- Versatility to adapt to other types of bins

How It Works

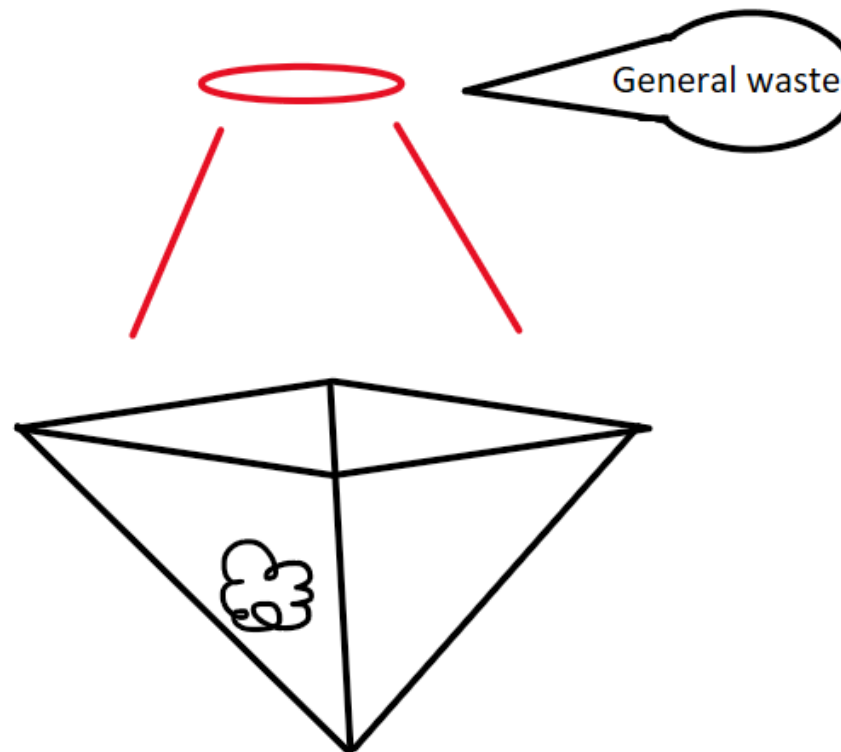
Disposal

WASTE CAN BE THROWN INTO
AUTO-SORT/GENERAL PURPOSE BIN



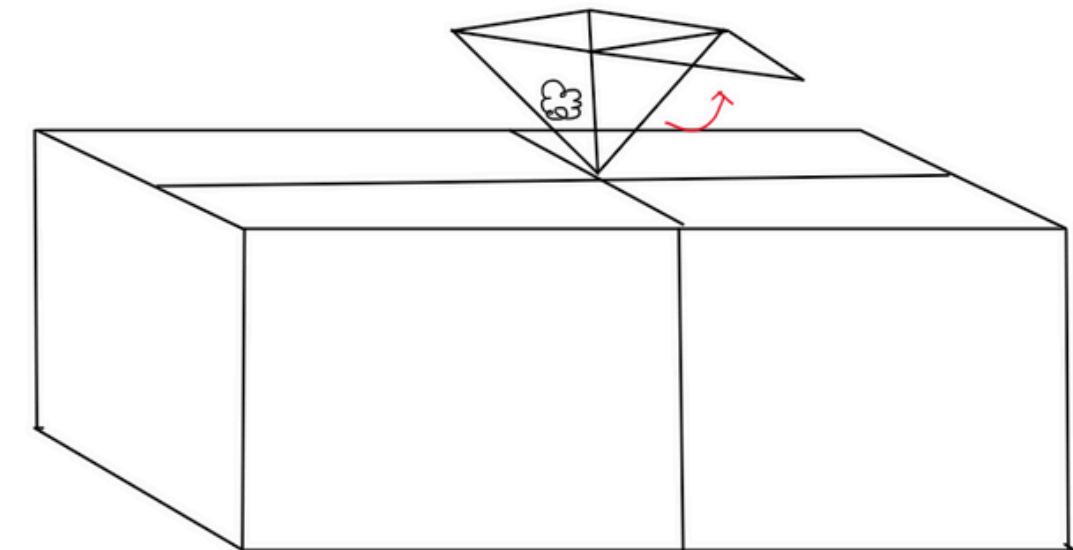
Recognition

USING COMPUTER VISION AND ROBUST
IMAGE CLASSIFICATION ML, IT CLASSIFIES
THE TRASH. AI WILL CONTINUOUSLY
IMPROVE WITH EACH DISPOSAL



Segregation

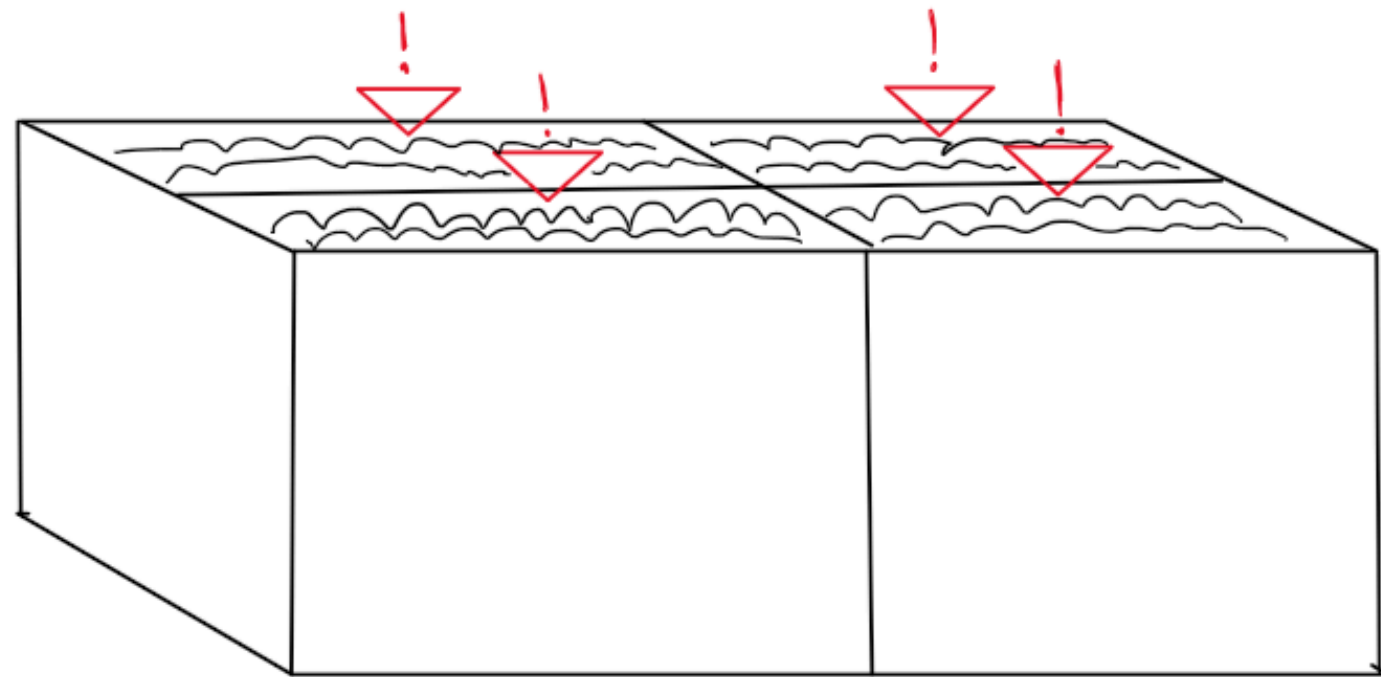
THE CHUTE WITH A SPECIALLY
DESIGNED PYRAMID MECHANISM IS
OPENED INTERNALLY, AND THE
TRASH FALLS INTO THE CORRECT BIN



How It Works















Fill-Level Alert

**SENSORS WILL ALERT WASTE COLLECTORS
WHEN BINS ARE FULL
BIN USAGE DATA WILL ALSO BE TRACKED
TO ALLOCATE LABOUR EFFICIENTLY**



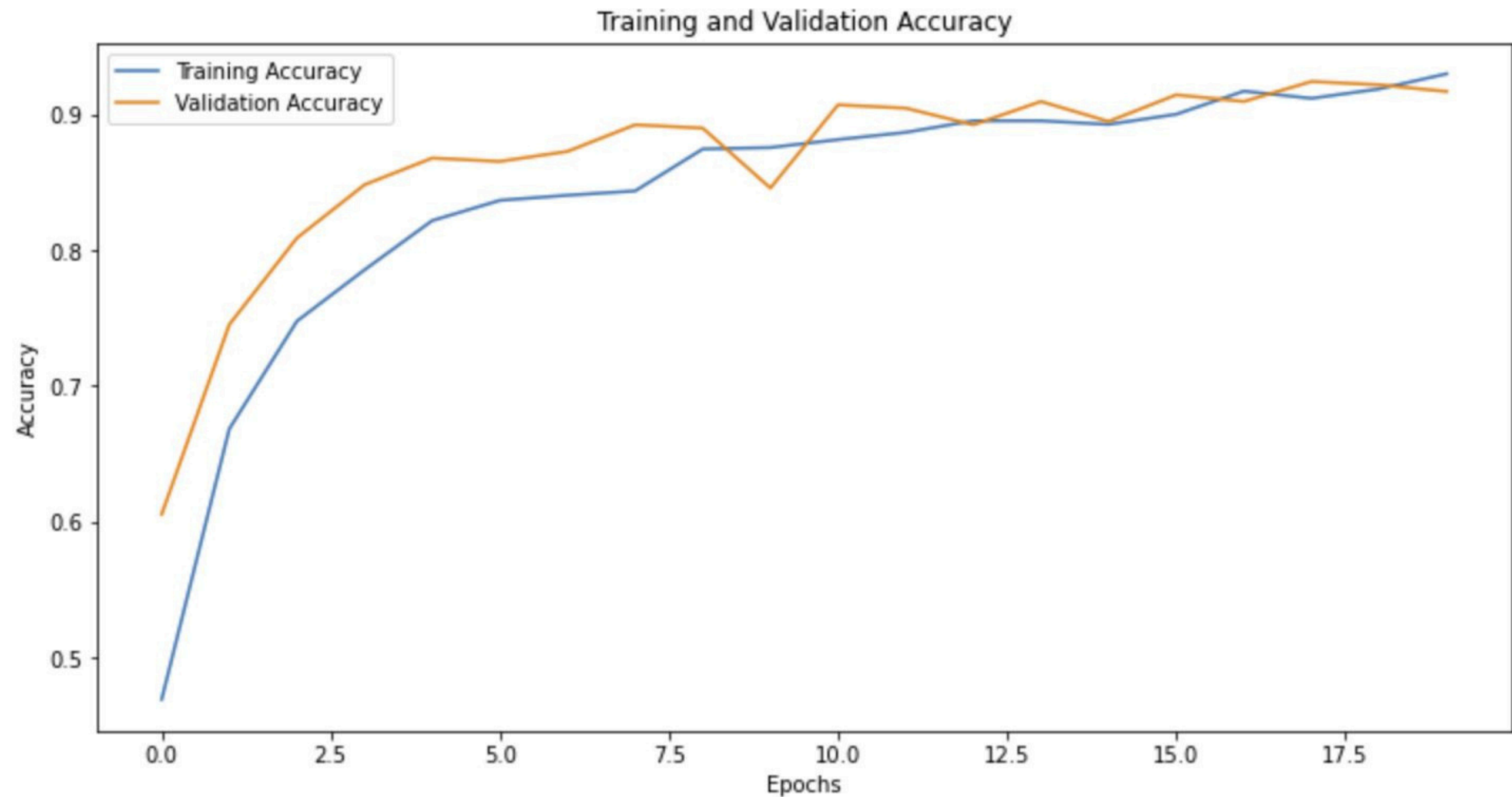
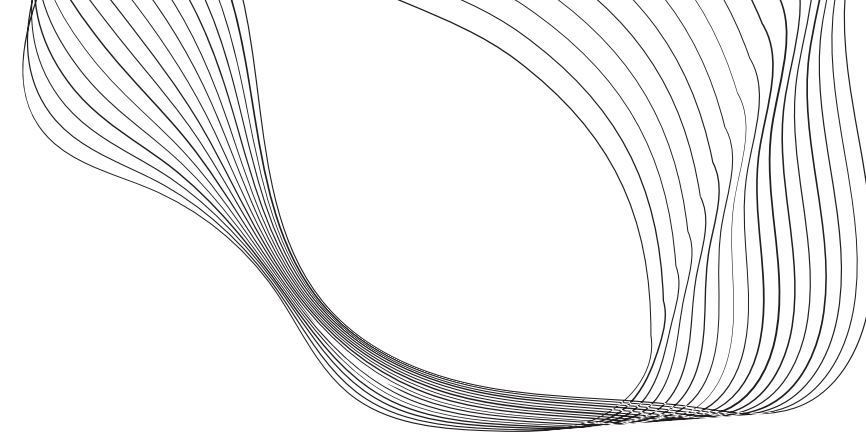
Additional Features

- **PLASTIC WASTE**
 - **NOT ALL PLASTICS CAN BE RECYCLED**
 - **ML MODEL WILL BE TRAINED TO IDENTIFY THE DIFFERENCES THROUGH COMMON PLASTIC PRODUCTS AND THEIR TYPES**

 1 PETE	 2 HDPE	 3 PVC	 4 LDPE	 5 PP	 6 PS	 7 OTHER
Polyethylene Terephthalate	High Density Polyethylene	Polyvinyl Chloride	Low Density Polyethylene	Polypropylene	Polystyrene	Other
						

DenseNet121

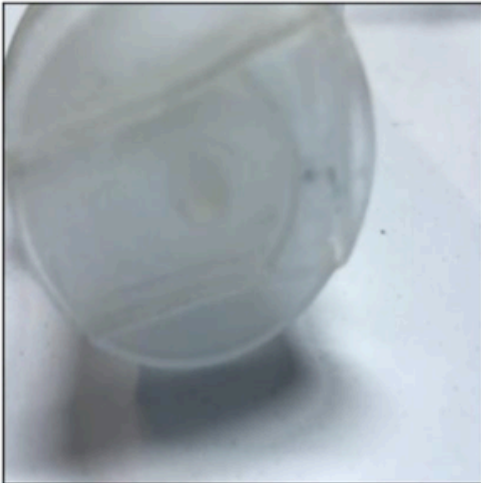
Pre-trained Model



True: plastic, Pred: plastic , Confi:0.86



True: plastic, Pred: plastic , Confi:0.83

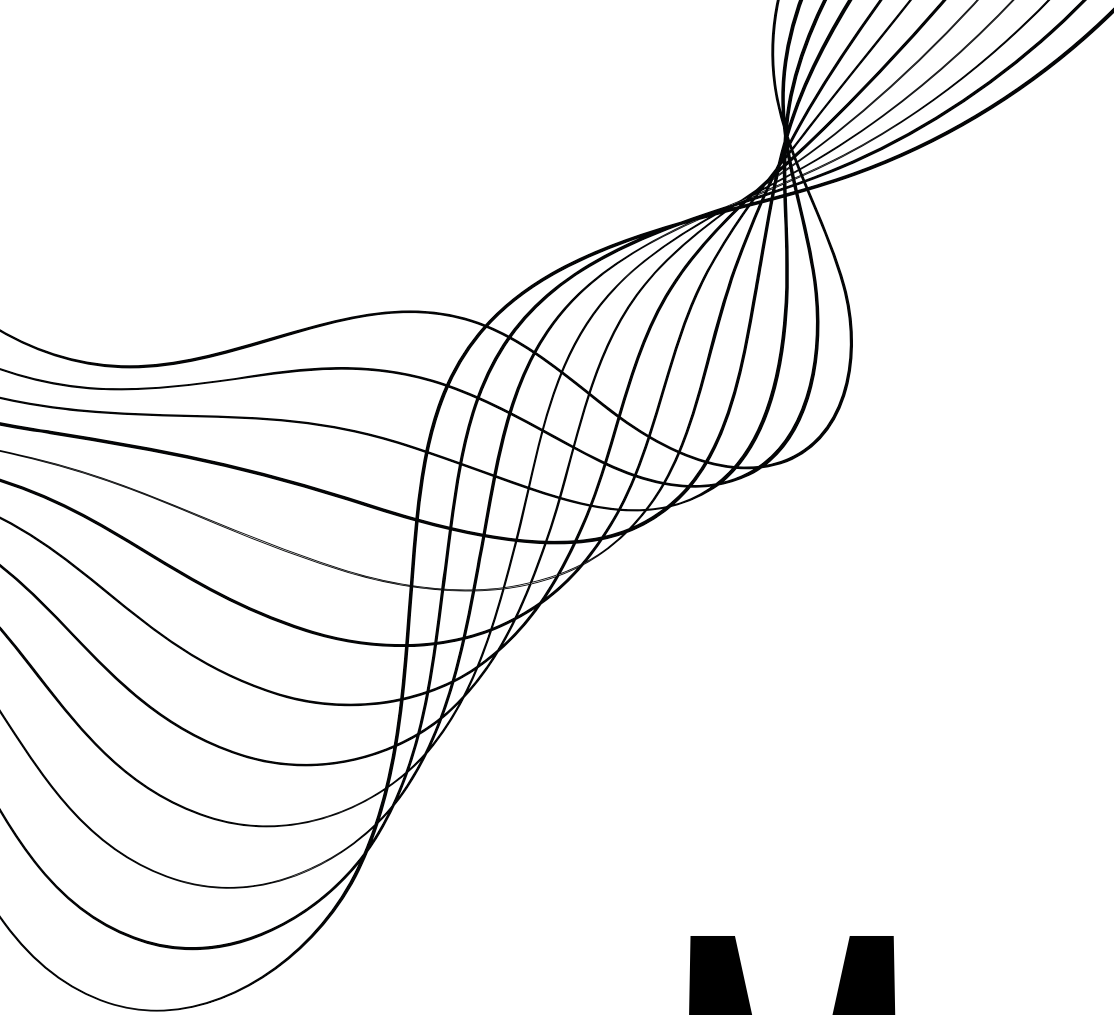


True: metal, Pred: metal , Confi:0.92



True: metal, Pred: metal , Confi:0.94





Market Feasibility

Target Audience

01

National Environment Agency (NEA)

- Primary agency responsible for **environmental protection and management in Singapore**
- Actively participates in waste management policies, recycling programs, and environmental sustainability initiatives

02

Ministry of Sustainability and Development (MSE)

- Responsible for **environmental sustainability policies**, including waste management, climate change, and conservation.
- Collaborates with other agencies to ensure a comprehensive approach to environmental issues

03

Public Waste Collectors (PWCs)

Tenders appointed by the NEA that are in charge of **regional waste collection**

- ALBA W&H Smart City
- SembWaste
- 800 Super Waste Management

Value Proposition

Effective Recycling

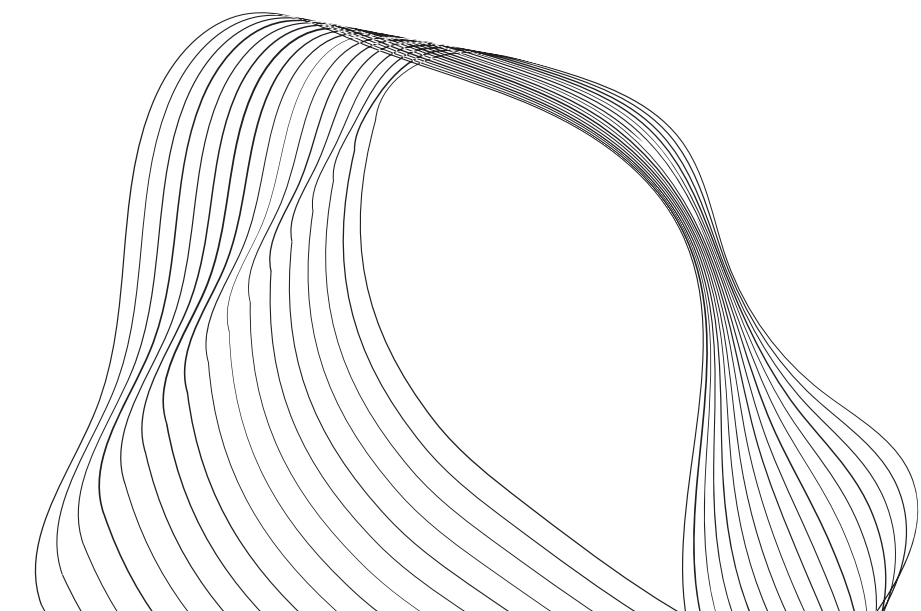
Reduces contamination of waste and improves rate of recycling, helping NEA and MSE achieve SG's green plan

Efficient Recycling

Refurbish existing bins into smart bins, saving costs. Automatically sorting wastes, saving labour and time

Labour Management

Analyse bin usage patterns to help PWCs efficiently allocate labour for waste collection



Sorta-Bin

- Cost-Effective
 - No screens
 - Simple mechanisms
 - Long-term management and repair costs are reduced
 - Utilize existing bins
- Quick and easy, accessible bins for the general practical population

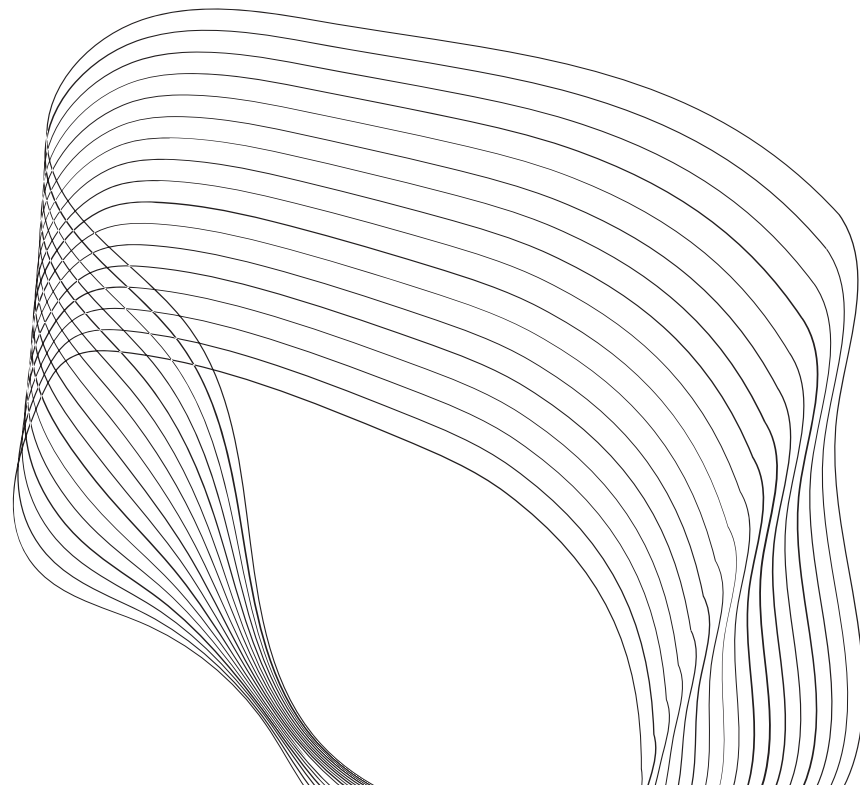
COMPARATIVE

ANALYSIS

BINgo

- Joint initiative by A*Star and Fairprice group
- Focus on education, more time consuming
- Higher cost of production and energy usage

Scalability



Expansion to **Green Bins**

Standardize all large public bins into Sorta-Bin to facilitate waste management

Customisable lid

Allow for customizable lids to cater to bins of different sizes

Creating our own

Manufacturing our own complete smart bin that can be sold to businesses to help achieve corporate social responsibility

Future Innovations

Wet waste

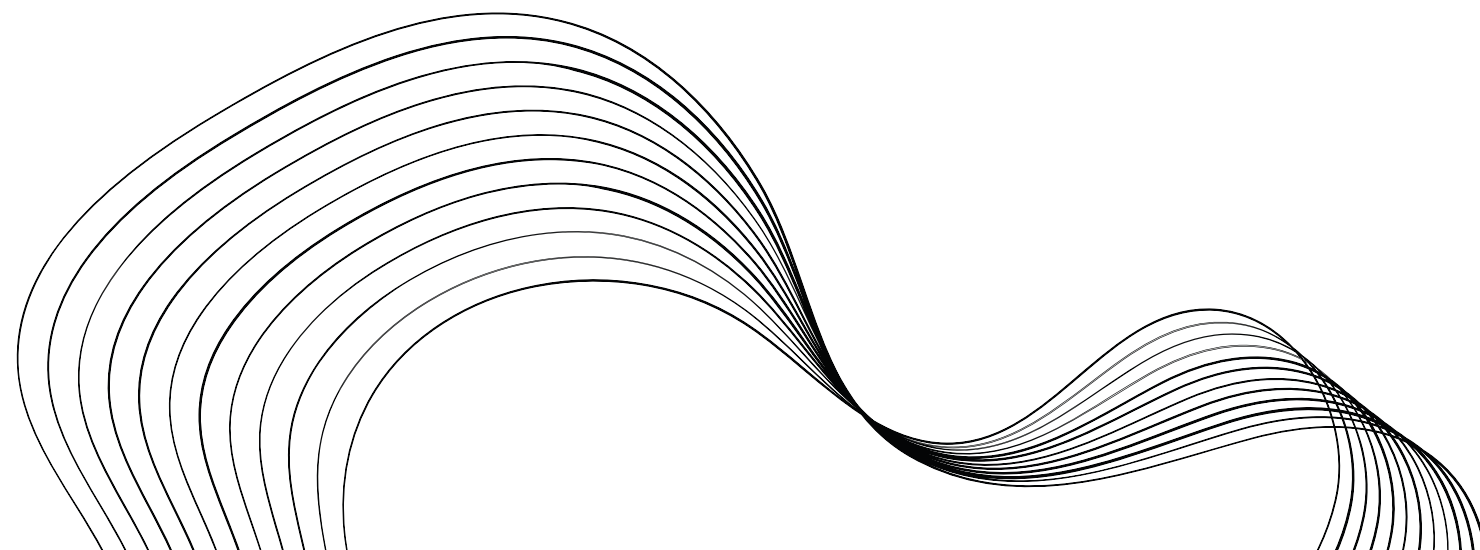
- Sorting food and liquid wastes
- Self-cleaning capabilities

Energy Efficient

- Solar-powered or motion based smart bins

Customisable compartments

- Allow for customizable parameters of waste type according to user's needs



THANK YOU



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