



## ZEROWASTEX

SMART WASTE SEGREGATION AND UTILIZATION FOR A WASTE-FREE  
FUTURE

TEAM NAME:

EcoReclaimers

SELECTED TRACK

MEMBER DETAILS:

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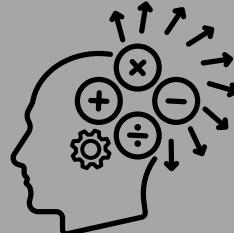
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WASTE &  
POLLUTION



# PROBLEM STATEMENT



## Problem addressing



Waste is often dumped without proper segregation, leading to valuable materials being lost in landfills. Manual sorting is unsafe and inefficient, making it hard to recycle or reuse effectively. This limits our ability to turn waste into useful products and meet sustainability goals.



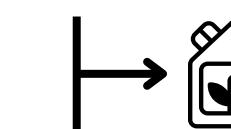
## Explanation of solution



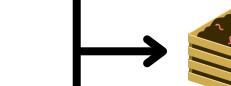
Waste



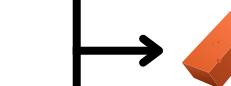
Biodegradable



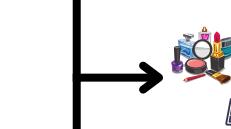
Biogas Plants



Vermicompost



Organic bricks



Cosmetics,  
energy storage



Non-Biodegradable



Various levels of screening,  
classification



Find the value which can be  
extracted from the waste



Preprocess



Ship finished product to  
concerned stakeholders



## Real - World Impact

### Revolutionizing Waste Management Efficiency



- Reduces Manual Labour
- Higher throughput at working centres
- Improved worker safety
- Faster and More accurate



### Maximized Resource Recovery

- high-value materials are diverted from landfills
- Materials repurposed



### Alignment with Global SDGs

- SDG 11: Sustainable Cities and Communities
- SDG 12: Responsible Consumption and Production
- SDG 13: Climate Action



### Data-Driven Environmental Governance

- Predictive waste modeling, better infrastructure
- Carbon footprint reduction
- Smart urban ecosystems



Lack of Efficient Waste Segregation at Source



Manual Sorting is Unsafe, Inefficient,  
and Inconsistent



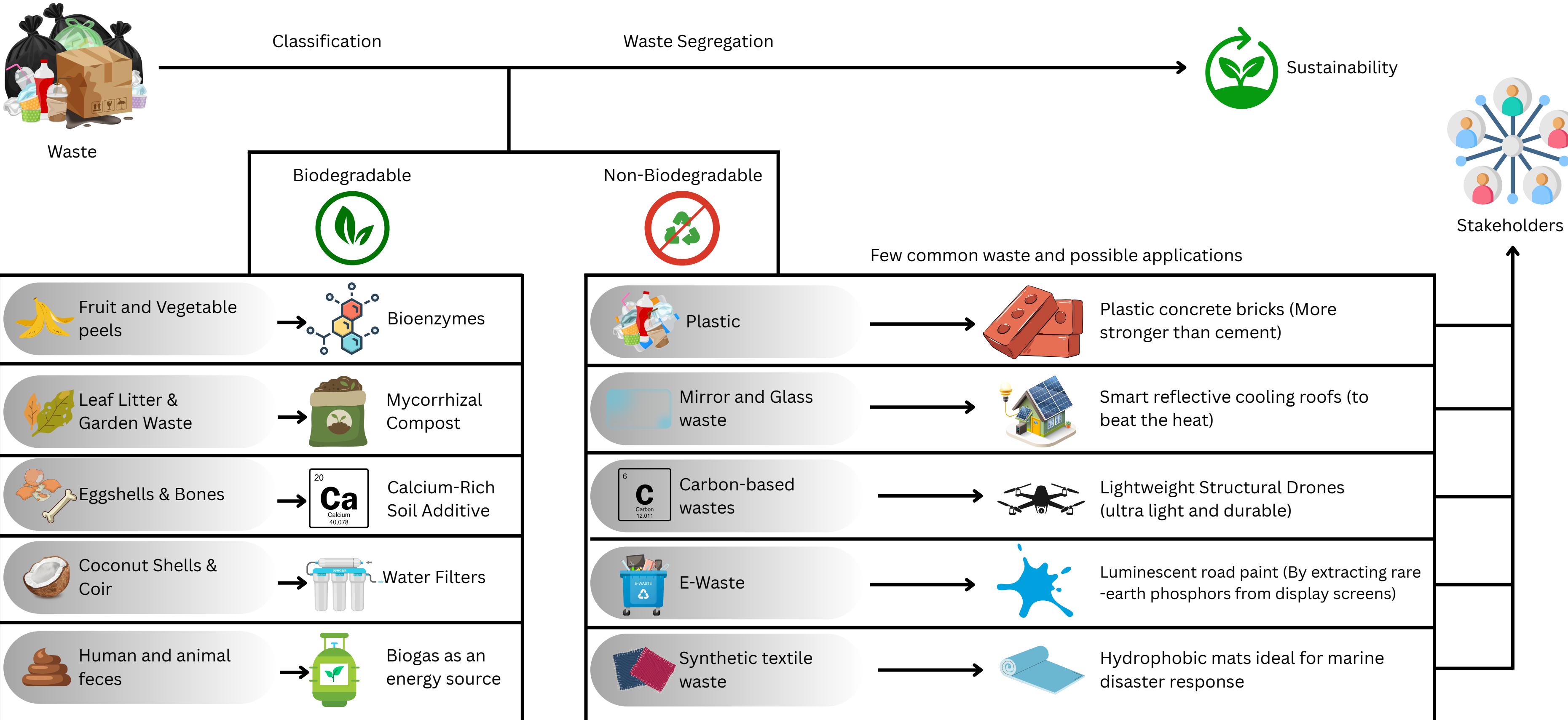
Recyclable Waste Often Ends Up in Landfills



Untapped Potential of Waste as a Resource



# PROPOSED SOLUTION

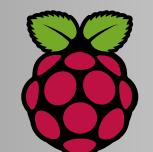


# TECH STACK

## Frontend

 HTML
 CSS
 Javascript
 Node.js

## Tools and Methodologies used

 Computer vision
 Raspberry PI
 Kissan AI
 Arduino UNO

 Solidworks
 GEMINI API keys

 YOLO
 Transformers

## Backend

 Python
 FastAPI
 Arduino IDE
 Raspbian OS



# IMPACT AND SUSTAINABILITY



## WHAT DOES IT BRING?

### Manual to Smart Waste Management



- Increases accuracy
- Reduces Human error

### Localized Circular Economy



- Empowers sustainability
- Reduces carbon footprint

### Waste Usefulness Scoring System



- Assess and prioritize waste
- Upcycle based on potential

### Repurposing Waste into Utility



- Gives waste a second life and purpose

### Data-Driven Waste Intelligence



- Predicted Waste Planning
- Targeted recycling policies

## BENEFITS

Improved Waste Recovery Rates

Real-Time, Scalable Automation

High-Value Resource Generation

Cost Savings for Municipalities

Climate Impact Reduction



### 11 SUSTAINABLE CITIES AND COMMUNITIES



The project makes waste management smarter, safer, and more efficient

### 12 RESPONSIBLE CONSUMPTION AND PRODUCTION



It promotes circular economy practices by repurposing waste into useful products and reducing dependency on raw materials.

### 13 CLIMATE ACTION



Reduces landfill emissions (like methane), lowers carbon output by replacing energy-intensive raw materials with recycled inputs.

### 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



Introduces innovative waste sorting technology

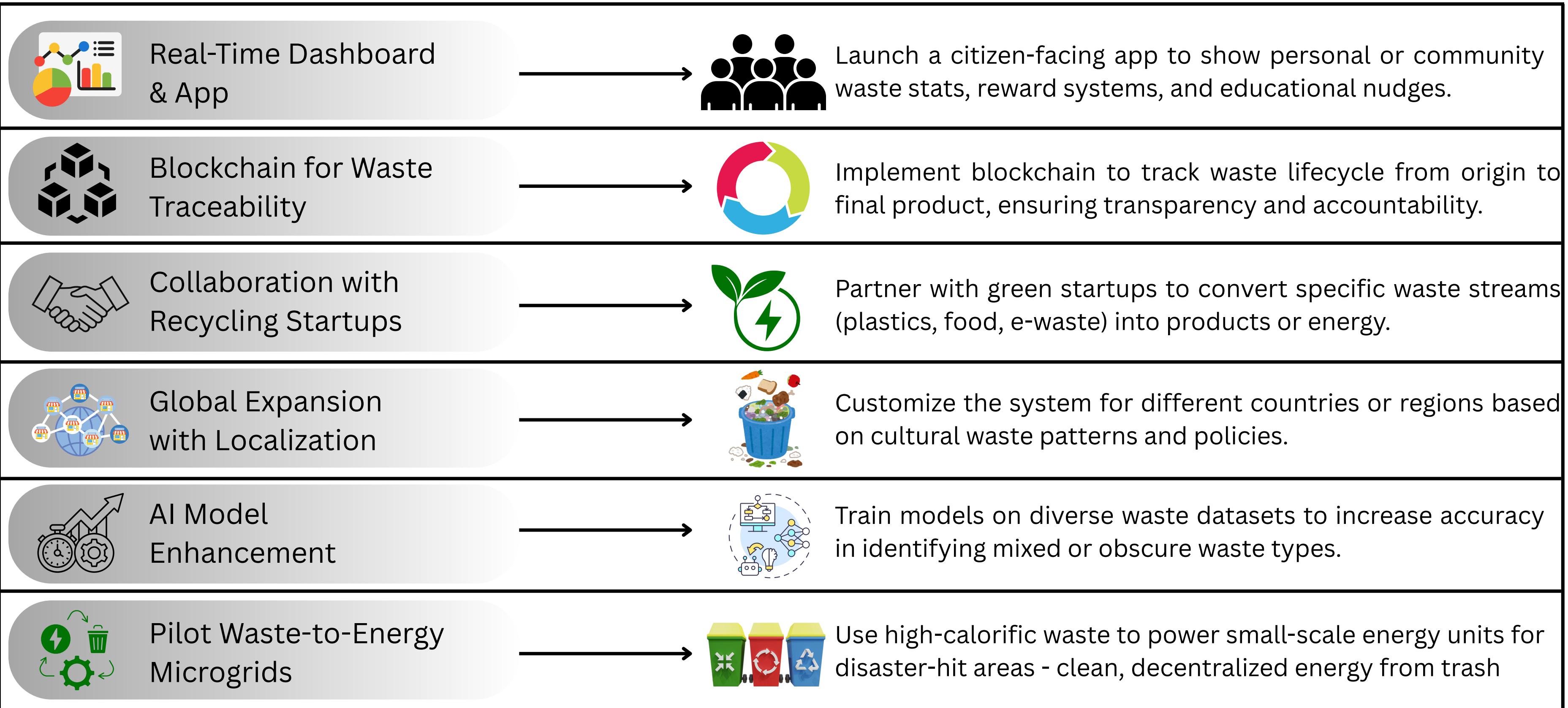
### 8 DECENT WORK AND ECONOMIC GROWTH



Creates green job opportunities in recycling, data analytics, product development, and system maintenance.

## SDG GOALS

# FUTURE SCOPE AND SCALABILITY





# CONCLUSION



ZeroWasteX transforms traditional waste management by using computer vision and layered screening to automate segregation and assign value to waste. It promotes a circular economy, reduces landfill burden, and aligns with SDG goals through sustainable, tech-driven solutions.

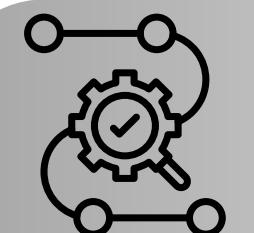
## WHY OUR IDEA STANDS OUT? (NOVELTIES)



Usefulness Scoring System



Layered Screening Conveyor System



End-to-End Value Recovery Vision



CV-Powered Material Recognition at Scale



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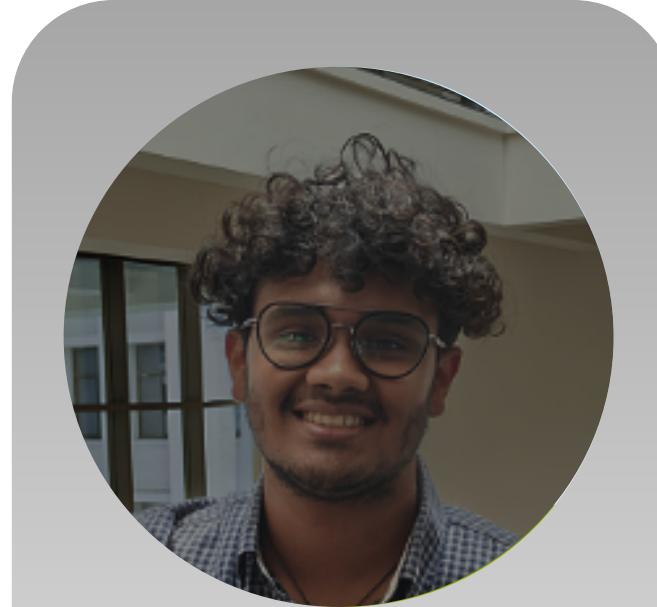


# TEAM MEMBER & CREDITS



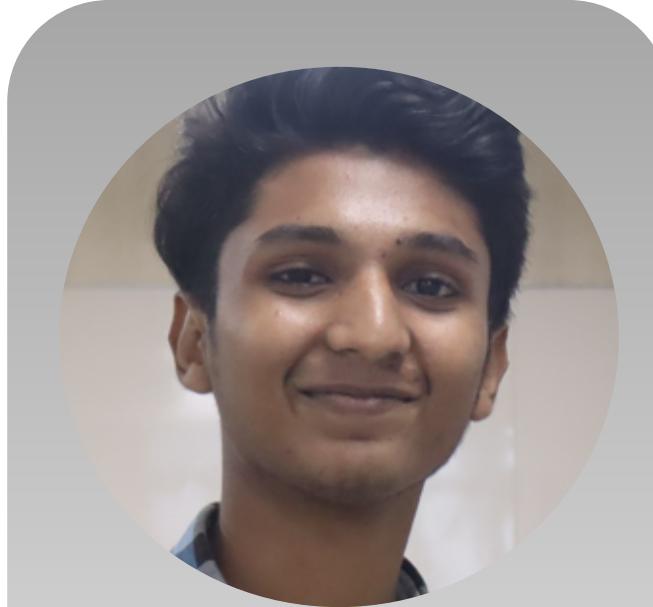
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