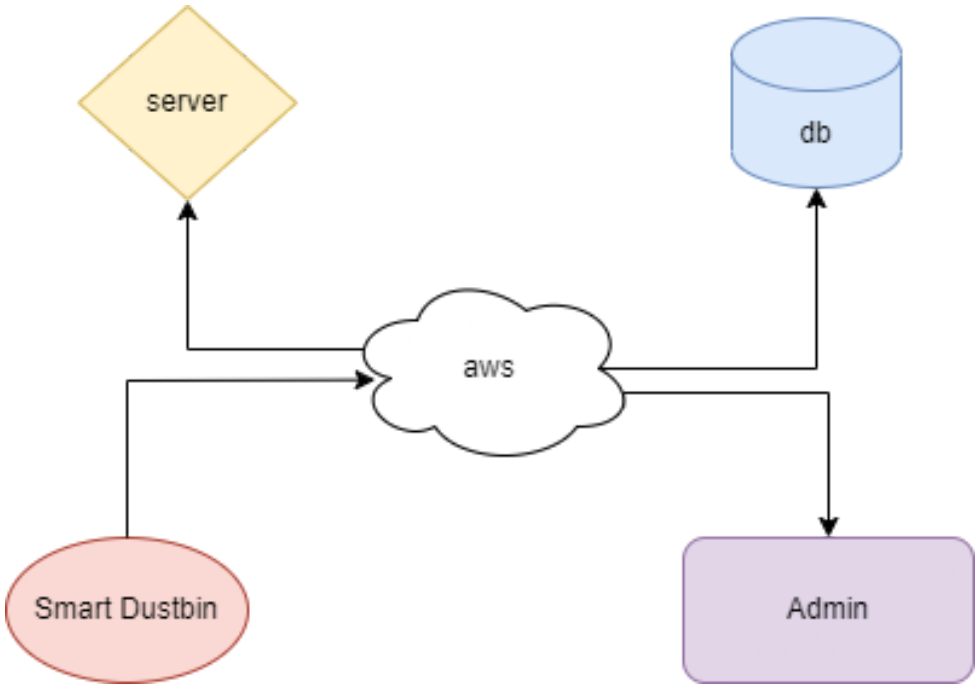
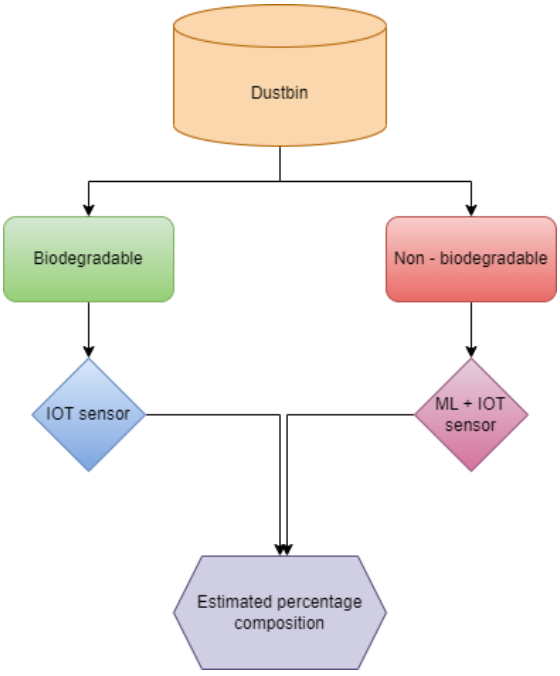
Statement Title: Reduce carbon emissions from NIT Silchar Campus

There are a multitude of people living on the NIT Silchar campus, be it students, guards or faculties. Naturally, this will generate a lot of waste. Waste is best treated when its properties are known. The management authority wants to obtain data on waste being generated on the campus as well as be able to provide selective data to third-party corporations who excel in treating waste.

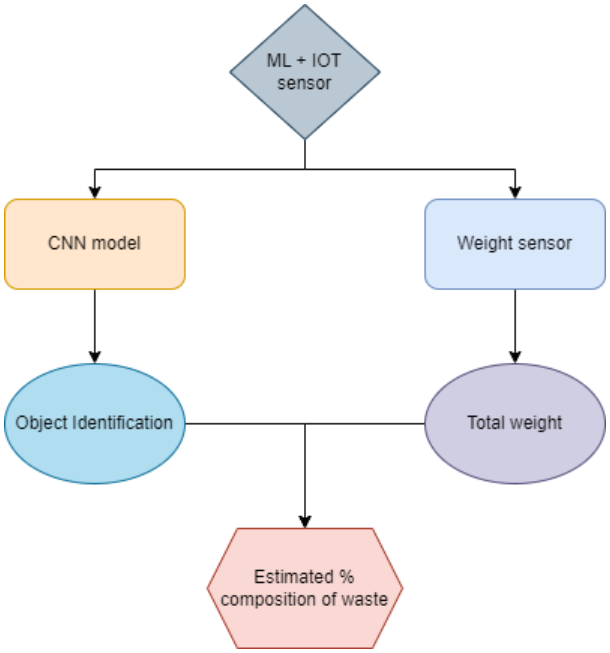
Our Solution:

We will be building an ecosystem of IoT aided dustbins, which send waste generation data consisting of weight, nature of waste, time of generation and location to the backend server. Users can track their waste generation and the admin can keep track of all such waste generations.





Dustbins will contain an IoT device with a weight sensor that can trigger an API call to send data after the user scans the QR code and drops the waste. The dustbin will have an upper rack in which there is a camera that clicks an image of the waste and using image processing and multiclass object detection, estimates the composition of various waste materials in the waste.



The admin dashboard will be able to track waste generation of all such dustbins. It will show the composition of waste in every dustbin in the NIT silchar campus. It will also show the aggregate composition of waste in the campus. Admin can also allow third party users (waste management companies) to access desired information.

Features :

- GPS tracking of dustbins
- Waste segregation record
- Admin Dashboard with insightful records
- Automated waste composition detection for every dustbin
- Interactive client side app to trigger waste disposal by QR scanning and view waste generation history
- Push notifications to concerned stakeholders once dustbin reaches maximum weight limit

TechStack used :

Nodejs, Express, React, Flutter, AWS, Fast api, OpenCV, Tensorflow

Motivation :

Reducing carbon footprint and managing waste in our campus and helping in recycling the waste effectively.

Work done till now :

Developing architecture and data flow for the project.