SafaiApp (TEAM 101)

Android App targeting Swachh Bharat Mission

Prerequisites:

- Android Phone
- Beacon Device, if not available, use android device as beacon

Installation:

- Install the android app APK in your mobile phone.
- Turn on the Beacon device

The Problem that led to the development of this idea:

- Ineffective allocation of trucks in localities, non regularity of pickup trucks.
- Most of solid waste management budget is allocated to collection and transportation, leaving very less for processing waste collected in landfills.
- Lack of motivation to separate the waste into recyclable and non recyclable.
- No way to dispose off large waste
- If a trash bin unexpectedly get filled up, garbage cumulates around it, leading to unhygiene around it.
- You are new to a locality and unable to find a dustbin near you. The lack of this led to littering here and there as people think that nearest dustbin would be too far away, but actually it is nearer.
- Not able to ask the government to deploy new dustbins at a particular location where trash intensity is very high at times.
- All recyclable wastes were processed together, like same process is followed for paper, metal, cardboard, glass etc. No one takes the pain to separate the waste.

About the App:

SAFAI is a full stack solution to waste management problems that are emerging these days in metro cities. It aims to optimise the waste collection and management systems of the evolving “smart cities” and catering the above cited problems.

Setup Instructions:

- Install the App from the Apk in the repository.

Features:

Garbage Pickup Optimised

Optimised garbage collection techniques reducing the cost. Our app will provide users the facility to call for trash pickup truck whenever required. Users will deposit their trash to the collection boy in two separate bins, recyclable and non recyclable bins. The user will be given incentive based on the weight of recyclable waste he/she deposits and the type of recyclable waste. Users who on the other hand are earning incentive will help us save our labour in separating the trash into recyclable and non recyclable. Waste collected on days of parties/marriages is huge in amount. User can schedule a pickup next morning. Garbage pickup trucks’ paths have been optimised, to navigate to only the nearest places where bins are located. We achieved this by Clustering the locations of Trash Bins on Google Maps.

Technologies/Libraries Used:

- K-Means Clustering
- CNN
- Transfer Learning
- Djikstra's Algorithm

Smart Bins

Smart Bins will tell automatically if they are full or not. If full, they will be picked first. Dustbin fitted with Beacon, generates a response as it fills completely, calling nearby pickup trucks to empty out the bin as soon as to prevent littering outside the bin.

Technologies Used:

- Beacon
- Bluetooth Beacons - BLE devices

Dustbin Nearby

New to a locality and seeing no place to dump your garbage, just use this feature to find one. The user can set the maximum radius and get all the dustbins in that radius and navigate to any of them. There is also a facility to add a new bin that is not present in the database. He can also request for a new bin to be installed at a location.

Technologies Used:

- Google Maps API for android

Request Dustbin

Found a place with trash but no trash bin? Request on the app and we'll deploy one. The user can make a request on the app to install a new dustbin if he thinks there should be a dustbin at his location. The request will be processed if there are no nearby dustbins around the place the user requested for.

Garbage Identification

Capture image to identify different kinds of waste

Technologies Used:

- CNN
- Transfer Learning
- TensorFlow

Future Plans:

The following are the features we are planning to add in the future :- To enable real time identification of garbage through video surveillance throughout the city or major parts of city and tourists places. The amount of garbage will be calculated and if it exceeds a certain limit, the authorities will be notified. Design a good algorithm to give incentives to users/ To collaborate with the local network of garbage collectors.

Developers:

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