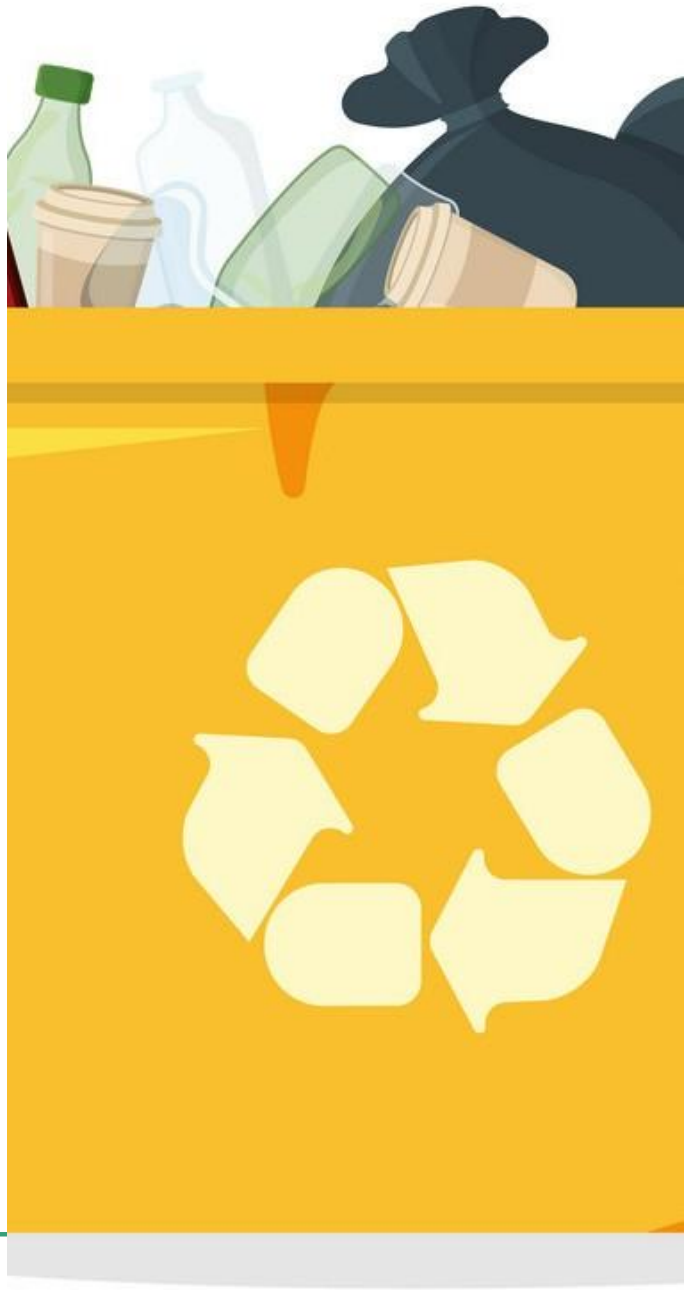
OCTOBER 2022

SPRINT 2



Report by:
Jagadish

Deepan
Yogeshkumar
DineshKumar

LITRATURE SURVEY

Litrature Survey Link	Authors	Year
https://www.researchgate.net/publication/354271614_Waste_Management_Technology_for_Sustainable_Agriculture_Waste_Management_Waste_Management_Technology_for_Sustainable_Agriculture	Muzaffar Ahmad Bhat , A. Wani Adil , Yaqoob Lone	2021
https://ieeexplore.ieee.org/document/8515871	Mohammed Adam , Mohammed Elnour Okasha , Omer Mohammed Tawfeeq , Bakri Nasreldeen	2018
https://ieeexplore.ieee.org/abstract/document/8079623	Supratim Auddy , Shubham Kumar , Amrendra Kumar Singh ,Debmalya_Ghosh	2017
https://www.researchgate.net/publication/332954030_An_Automated_Machine_Learning_Approach_for_Smart_Waste_Management_Systems	Denis Kleyko , Fredrik Blomstedt ,David Rutqvist	2019

LITRATURE SURVEY

Smart waste management system for Metropolitan cities

Literature review:

In the recent spans of years, Urbanization has inflated terribly nice in size and there's a rise in waste production. Waste management has been a typical issue to be thought of. during this paper, sensible bin is constructed with ARM microcontroller that is interfaced With UART and IR sensors. IR sensors square measure placed at each ends of trash bin. They work under AND operation. When the dust bin is filled message will be sent to the respective mobile displaying "Garbage is filled". It ceaselessly alerts the specified authority till the rubbish within the garbage can is press. Once the garbage can is press, individuals will recycle the garbage can. Once these dustbins are enforced on an outsized scale, by substitution ancient bins, waste will be re-used expeditiously and avoids gratuitous lumping of wastes on road aspect. Foul smell from these rotten wastes that remained untreated for while, because of neglectfulness of authorities and public could cause sturdy issues. Breeding of insects and mosquitoes will produce nuisance around promoting unclean atmosphere. this might even cause dreadful diseases.

Pros:

Advancement of smart city system.

Effective management of the city waste helps people life style to improve

Making the garbage system an IoT application opens path to a lot of different opportunities

Hands on Device system for garbage system helps to have a more detailed update on the disposal system.

Applications:

Can be implemented in highly trafficking system

Apartment based lifestyle has a huge requirement for this kind of system

Helps city people to have a update on garbage system

Hardware Setup:

The implementation of the smart garbage monitoring system is done by following the design approach as discussed earlier. The program is based on the C-compiler based IOT technique is loaded into the ARM micro-controller. The ARM 7 LPC 2148 micro-controller is used and the compiler lab code written can be ported on to the micro-controller using Code Composer Studio. The LCD module is connected onto the ARM 7 LPC 2148 kit, to deliver the latitudinal and longitudinal positions thus developed is also sent the respective mobile. ARM micro-controller is high speed ant is d based on RISC architecture. It has 64 bit micro-processor. It has reduced complexity, less power consumption and smaller size. The 16*2 LCD module can display 224 symbols is interfaced with LPC 2148 kit, it is helpful in providing user interface as well as for debugging purpose. LCD modules can display textual information as well as numerical information to user. The 16 by 2 LCD interface supports both 4 bit and 8bit. and facilitates to adjust. It has 16 characters per line by 2 lines. That is each line displays 16 characters in 2 lines. Also the GSM module is interfaced with the UART, C program to send a message from LPC 2148 to mobile through GSM.

Conclusion:

The project titled "Smart garbage monitoring system "is aimed at implementing a safe and clean environment. Our proposed reward based intelligent garbage based system when implemented on a large scale and in the long run can get high satisfying outputs. By implementing this system of garbage disposal and collection we can reduce the pollution cost by the stinking garbage that we come across along the road paving way for clean environment also not only the world is made clean but also people are rewarded for the help. This robotization of waste additionally diminishes the human exertion and therefore the expense of entire procedure. This framework can be executed at wherever easily and inside sensible measure of time.

Our work is little however a productive advances for working of a fantasy city with a clean and an extremely sound condition. With support from the administration we trust that our proposed framework when actualized will give exceptional returns.

PROBLEM STATMENT

Smart waste management system

Team ID : PNT2022TMID28660

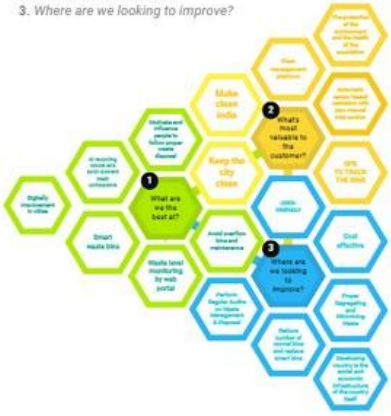
STEP 1

Problem Solving Cards

-Basic question

#Problem Statement

1. *What's most valuable to the customer?*
2. *What are we the best at?*
3. *Where are we looking to improve?*



STEP 2

Framing Statements

Smart waste management system framing

The greatest problem regarding waste management in developing countries begins at the very starting point of the process. Due to lack of proper systems for disposal and collections, wastes and garbage's end up in the roads and surrounding. According to a report from Google research, the amount of waste generation in 2010 was around 20,000 tons per day, and it is estimated that by 2025 the amount will be no less than around 47000 tons per day. With the existing methods of collecting and disposal it is near impossible to manage such amount of waste in the future as around 30% of waste end up on the roads and public places due to ineffective disposing and collecting methods. Not only that, there is even no systematic methodology for the collected garbage for treating and recycling thus most of them end up in land filling and river water, making the environment unhealthier. The prime impediment of implementing smart waste management system based on IoT in a developing country is the social and economic infrastructure of the country itself. The initial stage of this system comprises of proper disposal and collection, which is the biggest challenge. In addition, to motivate and influence people to follow proper waste disposal methods is also important.

STEP 3

Ideas

Problem Solution

Example ideas:

AI-based smart waste bin, designed for public places, enabling them to Monitor and Manage

Reduce the number of bins required & DE-cluttering and improving the street scene

Previously there were numerous initiatives on waste management and educating people to dispose waste properly, and as they failed to achieve significant results, we have figured out the scopes that could be develop. To solve this problem, we have designed a process that ensures proper disposal and efficient waste collection. The procedures we designed involves creative initiative that will inspire people to dump in designated area or bins, and innovative method by using Decreasing Time algorithm or DTA for monitoring garbage generation and collection of the garbage's.

Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

10 minutes

TEAM ID: PNT2022TMID28660

a **Team gathering**
Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

b **Set the goal**
Think about the problem you'll be focusing on solving in the brainstorming session.

c **Learn how to use the facilitation tools**
Use the Facilitation Superpowers to run a happy and productive session.

Open article

Brainstorm

Write down any ideas that come to mind that address your problem statement.

10 minutes

Jagadish

The proposed system would be able to automate the solid waste monitoring process and management of the overall collection process using IOT (Internet of Things).

Placing Ultrasonic sensor to detect level of bins

Deepan

Enable GPS function to locate bins easier

Waste generation analysis to understand cities usages

YogeshKumar

Load cell on bottom of bins

Place Arduion board at left side of bins

when bins fill alert message to the authorized person

Dineshkumar

Visual fill status indicators on top of bins

using by GSM in bins achieve wireless communication with bins and managing center

solar panels for power supply for IOT devices

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.

20 minutes

Smart garbage maintenance server

Transparency and sustainable solution than normal garbage bins

Optimized trash collection route

Collect only degradable and non-degradable wastes

IOT alert authorized person when bins going to fill

Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

20 minutes

Waste generation analysis to understand cities usages

Raspberry-pi with ultrasonic, GPS, Load cell, are configured

Importance

If each of these tasks could get done without any effort, which would have the most positive impact?

TIP

Participants can use their cursors to point at where sticky notes should go on the grid. The facilitator can confirm the spot by using the laser pointer holding the **M key** on the keyboard.

Feasibility

Regardless of their importance, which tasks are more feasible than others? (Cost, time, effort, complexity, etc.)

IBM-EPBL/**IBM-Project-50265-1660901330**