Design and Development of Garbage Identification System Using AI

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Abstract -*Pik-To-Clean is an android application which detects and coarsely segments garbage regions in a user-clicked geo-tagged image. The app utilizes the proposed of deep architecture of fully convolutional networks for detecting garbage in images. The model has been trained on newly introduced garbage in images (GINI) dataset. The system will automatically detect the garbage from the picture taken by a responsible-citizens. It will also have real-time monitoring capabilities. This would be remotely managed by the waste collectors (Garbage truck driver). To maintaining and ensure the protections of the environment through effective waste management measures. By making this smart waste detection system we are trying to keep engaging citizens to tracking and report on their neighborhood to clean environment and society*

Keyword: *Security, leak, data-leak patterns, privacy preservation.*

INTRODUCTION

Each and every person in this world wants to live in a clean house as well as in a clean society. Every person in our country tries their best to keep their surrounding clean, but no one pays a heed to their surroundings. Due to lack of knowledge of disposing the waste, a lot of problem is faced in garbage collection. No one cares when someone throws the garbage on the street. Nowadays cities are moving towards smart cities. In traditional ways of manually monitoring the waste, is a complex process and utilizes more human efforts, time and cost. Organizations are moving towards smart work where there is a need to reduce human efforts in the process of cleaning surrounding effectively in low cost and less time. Our basic idea is to design smart waste detection system to maintaining a clean and hygienic civic environment is an indispensable yet formidable

task, especially in developing countries. Our application is aiming to make citizens responsible by clicking geo-tagged pictures of street waste which will be tracked automatically by the application and then remotely managed by the waste collectors. Our application, Pik-To-Clean, can be a smart solution to above problem.

LITERATURE SURVEY

According to Survey on identification and classification of waste for efficient disposal and recycling Previous developed devices uses raspberry pi as a hardware components. To classify the recyclable materials from garbage and wastes into different categories. Methods that classify objects based on their shape and size can be used only on objects that can be stay in a specific shape and size.[1]

In a paper by Mohammad Saeed Rad, Andreas von Kaenel, Andre Droux, Francois Tieche,Nabil Ouerhani, Hazım Kemal Ekenel, Jean-Philippe Thiran "A Computer Vision System to Localize and Classify Wastes on the Streets", they employed a deep learning based framework to localize and classify different types of wastes. To create Dataset they mounted the camera in garbage truck.[2]

The final result is produced by converting the detection coordinates with respect to initial full image. Detections within the same category are merged in case of having an overlapping factor of more than 60%.[2]

The Optimal Routes Scheduling model was carried out for multi-Area garbage collection based on priority and shortest distance scheduling. This system provides a mechanism for controlling increasing rate of pollution in the world. [3]

This system first gives services to nearby location and

also cover particular zone of society. This is an evolutionary algorithm and an artificial immune system to solve the problem of garbage truck in its daily operation.[3]

REAL-TIME LITERATURE SURVEY

For real-time literature survey we visited to Kauhal Vij,The Associate manager of Kanak Resources Management Limited, Nagpur Maharashtra which is currently having the tender for collecting the garbage till 2019.

They uses two types of collection management system, one is 'door to door garbage collection system' using tricycles and another is 'zone to zone garbage collection system' using automobile vehicles. There are approximately 580 tricycles and 270 automobiles which collects on an average of 1150-2000 tons/day in Nagpur. Nagpur is divided into 10 zones.Each zone consists of an incharge under which five supervisors' works. Under each supervisor there are 25-30 labours. Each zone has its own attendance point and local dumping point. Online attendance is taken by supervisor of that zone by clicking the geo-tagged images of labour. The door to door garbage collection time is from 7am to 2pm. To trace the vehicles each automobile is embedded with GPS tracker. Vehicles have their predefined route map for collection from local dumping points. In emergency cases such as dead animals and hazardous garbage, these vehicles clean the area as soon as possible.

METHODOLOGY

The basic idea of the app will be to modulate and check the picture lively clicked by the citizens around the city using the app-cam and detect the waste using dataset . The modulated picture will then be taken for review. The geo-tagged image will be remotely managed by the waste collector

The app consists of following module:

● Design and development of garbage identification
● Routing and mapping of geo-tagged image
● Implementation of garbage detection using tensor flow.

For AI detection we have used GINI dataset used of spot garbage detection app due to its high accuracy .we are using tensor flow for object detection and training

purpose .we are assigning labels for the geo- tagged images where classes are specified.
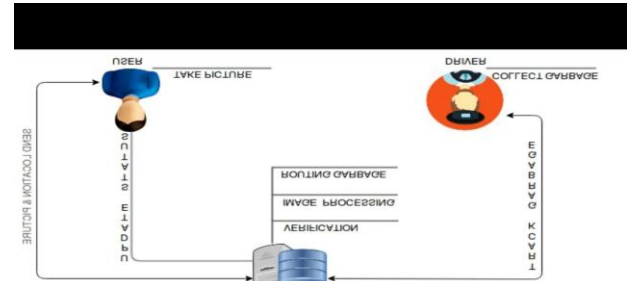

FIG 1: System Architecture

CONCLUSION

Pik-To-Clean is providing us with unique smart solution compared to the traditional working process in socities .It will increase the effeciency on garbage collection and reduce time and cost of labor work.Also makes citizes responsible towards the surrounding by small task. It will also track the shortest and easiest route for garbage collectors (Drivers)

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