

GARBAGE CART TRACKING SYSTEM WITH WIRELESS SENSOR NETWORK USING DEEP LEARNING

1Sakshi Rajendra Jain, ²Dipak Bhalchandra Patil, ³Tejal Vitthal Pawar, ⁴Ram Kumar Solanki

^{1,2,3}B. Tech Scholar, ⁴Assistant Professor
School of Computer Science & Engineering
Sandip University, Nashik, Maharashtra, India

Abstract- As the name suggests we are developing a GARBAGE CART TRACKING SYSTEM WITH WIRELESS SENSOR NETWORK USING DEEP LEARNING which is based on sensor to track garbage vehicle. One possibility is to use a siren to signal to residents when the garbage truck will pass by their street. This can be particularly useful in neighborhoods where garbage collection is not done on a daily basis or where the schedule may change due to external factors. By hearing the siren, residents can be reminded to bring their garbage out to the curb, ensuring that it will be picked up on time. Overall, the use of a siren can be a useful tool to improve garbage collection efficiency and effectiveness, as long as it is implemented in a way that is tailored to the specific needs of the community and does not cause unnecessary noise pollution or disruptions.

Keywords: AVR Family Microcontroller, Wi-Fi Modern, LED, LCD Display, Adaptor, Ultrasonic sensors, Resistors, Capacitors, Diodes, Alarm Sensors



Published in IJIRMPMS (E-ISSN: 2349-7300), Volume 11, Issue 3, May-June 2023

License: [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/)



INTRODUCTION

This system can be referred as a system for collecting garbage from the house. One of the modules in this system is 'GPS Tracker'. This is used to track the vehicle and gives the notification message through the alarm to the society members. GPS Tracker is used to track the vehicle remotely. GPS tracker device is attached to the vehicle for collecting the garbage, when vehicle is nearest to the house then notification alert is generated and it gives a message in form of alarm. To provide better facility for citizen Municipal Corporation is using new technology for their smart city mission. The main purpose behind this initiative is to manage the garbage waste management through the various technology like Garbage vehicle tracking system.

In this project humans and vehicles were used to do that work and here we are using automatic technique to detect garbage vehicle. For that, one chip is attach to every garbage vehicle to detect that vehicle with sensor. Also as Garbage vehicle came to the particular area so sensor attach to that area easily detect that vehicle so people near to that area are easily know that garbage vehicle come to their area.

Sensors can detect the presence of a garbage vehicle in a specific area through a variety of means. One common method is through the use of GPS (Global Positioning System) technology. Garbage vehicles can be equipped with GPS trackers that transmit their location to a central monitoring system. When the vehicle enters a predefined area, the monitoring system is able to detect its presence and trigger an alert.

Solid waste management is a big challenge in city areas for most of the highly rush area. An efficient waste management is a pre requisition for maintain a safe and green environment as there are increasing all kinds of waste disposal. There are many technologies are used for waste collection as well as for well managed recycling. The information gathering is big and cumbersome. The concurrent effects of a fast national growth rate, of a large and dense residential area and pressing demand for urban environmental protection create a

challenging framework for waste management. The complexity of context and procedures is indeed a primary concern of local municipal authorities due to problems related to the collection, transportation and processing of residential solid waste today the garbage collection is manual which takes a lot of efforts and is time consuming.

1. BLOCK DIAGRAM

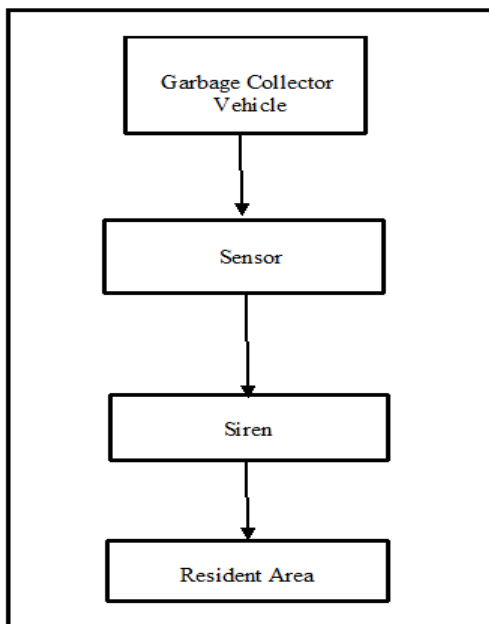


Figure- 1 Block Diagram

2. HARDWARE DESCRIPTION

2.1 Sensors:

1. GPS: Sensors can detect the presence of a garbage vehicle in a specific area through a variety of means. One common method is through the use of GPS (Global Positioning System) technology. Garbage vehicles can be equipped with GPS trackers that transmit their location to a central monitoring system. When the vehicle enters a predefined area, the monitoring system is able to detect its presence and trigger an alert.



Figure-2 GPS

2. Microcontroller:

It is used to process information that is been given by the sensors. It compares the received data with the threshold level set and accordingly output is generated. The LPC2131/32/34/36/38 microcontrollers are based on a 16/32-bit ARM7TDMI-S CPU with real-time emulation and embedded trace support, that combine the microcontroller with 32 kB, 64 kB, 128 kB, 256 kB and 512 kB of embedded high-speed flash memory. A128-bit wide memory interface and unique accelerator architecture enable 32-bit code execution at maximum clock rate.



Figure-3 Microcontroller

3. Alarm:

The alarm would likely be used to alert near resident area of the presence of a garbage vehicle, possibly indicating that the vehicle is entering or leaving a specific area.

Should bring their garbage out for collection. Here's how it could work:

Install Sirens: Install sirens in strategic locations throughout the neighborhood, such as at the entrance to each block or street.

Schedule Pickup: Set a regular schedule for garbage collection, such as every Tuesday and Friday. Ensure that the collection trucks arrive on time.

Activate Sirens: Activate the siren when the garbage vehicle arrive. This will serve as a reminder to residents to bring out their garbage bags.

Raise Awareness: Inform residents about the use of sirens in advance, through flyers, social media, and other means.

Enforce Rules: Enforce strict rules about when garbage should be put out, to prevent residents from putting out garbage too early or too late.

Benefits of Siren System for Garbage Collection:

Improved Efficiency: A siren system can help improve the efficiency of garbage collection by ensuring that residents bring out their garbage at the right time.

Cleaner Streets: By encouraging residents to bring out their garbage only when the trucks are about to arrive, the system can reduce the amount of garbage lying around on the streets.

3. IMPLEMENTATION METHODOLOGY

When Garbage vehicle came to resident area then it will scan or track by sensor that install at that particular resident area by GPS that attach to garbage collector vehicle. After that sensor input pass to siren, based on that input siren will alarm then people recall that garbage vehicle came to their area to they put their waste into garbage vehicle.

Sirens can be an effective way to improve garbage collection systems by alerting residents.

FLOW CHART

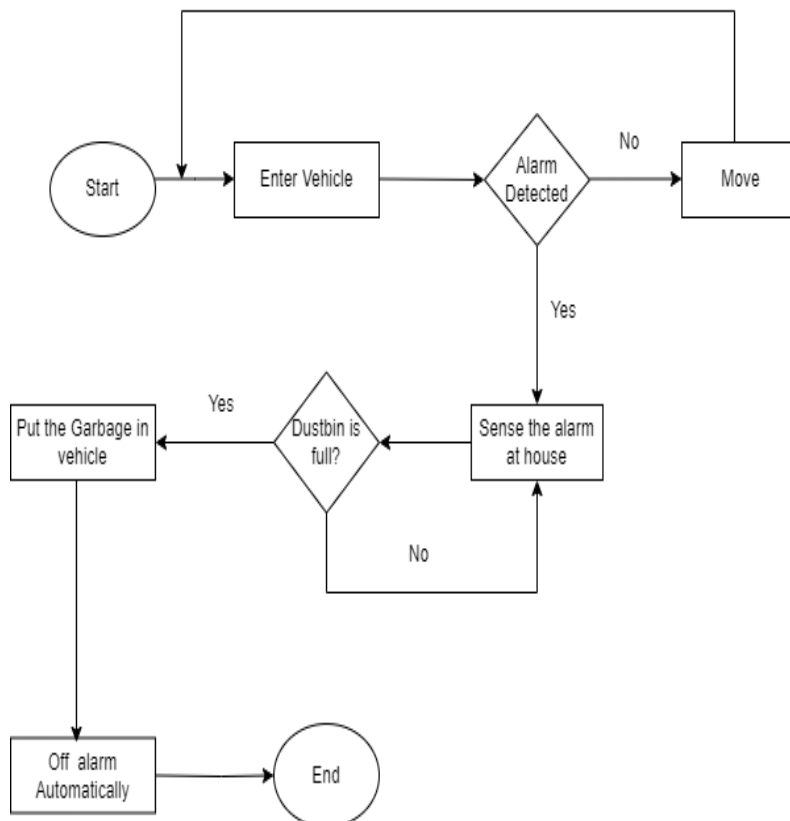


Figure-4 Flow Chart

4. CONCLUSION

The novel cloud-based system for waste collection in smart cities. By implementing this project, we will avoid overflowing of garbage from the container in residential area which is previously either loaded manually or with the help of loaders in traditional trucks. Development of software for city administration and municipal staff.

5. FUTURE SCOPE

Another way a siren could be used is to alert the garbage truck drivers when a street or area has particularly high amounts of garbage to be collected. This can be useful in cases where garbage collection needs to be prioritized due to health or environmental concerns. The siren can be triggered by sensors placed in garbage bins that detect when they are overflowing or by residents calling a dedicated hotline to report a particularly high amount of garbage in their area.

Overall, the use of a siren can be a useful tool to improve garbage collection efficiency and effectiveness, as long as it is implemented in a way that is tailored to the specific needs of the community and does not cause unnecessary noise pollution or disruptions.

REFERENCES:

1. Yang Kai, Zhang Junmei, Li Wenbin, Yang Liu, GaoLin,XueHuixia,“Weighing System of Fruit-Transportation Gyrocar Based on ARM” IEEE computer society,2011 DOI 10.1109/ICMTMA.2011.253.
2. Arebey M.,Hannan, M.A. ; Basri, H. , Abdullah, H. “Solid waste monitoring and management using RFID, GIS and GSM ”IEEE Student Conference on Research and Development (SCOReD), 2009.
3. Arebey, M. ; Hannan, M.A. ; Basri, H. ; Begum, R.A., “Solid waste monitoring system integration based on RFID, GPS and camera”, IEEE International Conference on Intelligent and Advanced Systems (ICIAS), 2010.
4. Islam, M.S. ; Arebey, M. ; Hannan, M.A. ; Basri, H.,“Overview for solid waste bin monitoring and collectionsystem”,IEEE International Conference on InnovationManagement and Technology Research (ICIMTR), 2012. [5]. Alberto Rovetta^a, Fan Xiumin^{b, c}, Federico Vicentini^{a, d}, Zhu Minghua^{b, c}, Alessandro Giusti^a, He Qichang “Earlydetection and evaluation of waste through sensorizedcontainers for a collection monitoring application” ScienceDirect Journal.
5. Issac, R;Akshai,M.”An effective solid waste management system for Thiruvalla Municipality in Android OS” IEEE Conference Publications , 2013.
6. Longhi,S ; Marzioni,D ; Alidori, E ; Di Buo,G.; Pris,M. ; Grisostomi, M. ; Pirro,M. ”Solid Waste Management Architecture Using Wireless Sensor Network Technology“ ,New Technology , Mobility and Security (NTMS),2012 5th International Conference.
7. Chen Tao; Li Xiang, “Municipal Solid Waste Recycle Management Information Platform Based On Internet of Things Technology”, Multimedia Information Networking and Security (MINES).