"Smart Monitoring of Remotely Located Dustbin in Urban Area."

[1] Prof. Khandekar Nagnath Vyankati

[2] Mr. S. M. Gaikwad, [3] Mr. S. T. Kolekar, [4] Mr. B. S. Dhanawale

1-Assistant Professor

2,3,4 -UG Students of Department of Electrical Engineering

SKN Sinhgad College of Engineering Korti, Pandharpur,Solapur, Maharashtra, India

Abstract— The smart dustbin uses an Ultrasonic sensor HC-SR04 to detect objects in front. It and sends the signals to Arduino Uno. The Arduino understands the signal and sends a signal to the Servomotor which opens the flap on top of the dustbin. So it is just a normal bin where everyone can dispose waste but integration of some hardware components is done for more efficient use of it. Smart Dustbin is integrated with some hardware components such as Arduino, NODEMCU, Servo Motor, Ultrasonic sensors.

Indexed Terms— Smart Dustbin, Arduino, long distance, IOT based, Ultrasonic Sensor.

I. INTRODUCTION

Garbage and diseases are very common problem in today's situation, every one of us wants everything that looks clean and tidy. Not every individual is aware of there environmental problems based on a large amount of garbage scattered on the streets. The dustbins which are provided from the govt. facilities are dirty and unattractive due to lack of maintenance. So this matter is also a reason in itself for people not to throw the garbage in the dustbin maybe one of the reason is it's a manual process of opening the lid and also closing it after throwing.

So here comes our IOT project of smart dustbin, we designed and Implemented a smart dustbin in an unique way which will be fully automatic [1] . The dustbin is for the dry trash so the whole idea behind this project is that the ultrasonic sensor will detect an object and automatically the lid will open and it will remain opened as long as we are not throwing the garbage in it after that the lid will get closed.

A lot of people has done projects on this topic earlier, but we must say that our project is quite different from others as we have considered a lot of prospective while making this project [2-3].

Right now our world is going through a very tough time as we are fighting against corona virus

which basically spreads by touching people or any surface. This device will help throwing the garbage without touching or opening the device by our hands, thus we will be able to maintain hygiene properly and the possibility of spreading the virus will be less.

II. LITERATURE REVIE

1. IOT Based Smart Trash Bins – A Step Toward Smart City (December 2017) Chaitanya Jambotkar, Shamlee Rashinkar, Sneha Ghatole, Swati Kadapatti, Varsha Yadave

The main plan of planned work is to develop a wise intelligent garbage alert system for correct garbage management.

A smart alert system is meant for garbage clearance by giving an associate alert signal to the municipal internet server for immediate cleanup of ashcan with correct verification supported level of garbage filling. This method is assisted by the inaudible device that is interfaced with Arduino UNO to envision the amount of garbage crammed within the garbage bin and sends the alert to the municipal internet server once if garbage is ninetieth crammed via IoT.Once the alert is received, Municipal Corporation takes initiative to scrub identical. After cleanup the rubbish bin, municipal internet server gets updated regarding the rubbish bin been cleansed. This system provides information regarding the status of how a waste collection is being

done and followed up by the municipality authority.

The technologies used at disposal to develop this sensible system have conjointly evolved, i.e. from WSNs to RFIDs to now the most popular Internet of Things (IoT). At the hardware level, the sensor

system may be a garbage bin with an inaudible device, a micro-controller and Wi-Fi module for transmission of information.

2. IOT Based Smart Garbage Monitoring and Alert System Using Arduino UNO (February 2018) K. Harika, Muneerunnisa, V. Rajasekhar, P.Venkateswara Rao, L.J.N Sere Lakshmi

This paper describes the most theme of the work is to develop a wise alert system for garbage clearance by giving AN alert signal to the municipal net server for fast cleanup of dirt bin with correct verification supported level of garbage filling. This method is motor-assisted by the inaudible sensing element that is interfaced with Arduino UNO to see the extent of garbage stuffed within the dirt bin and sends the aware of the municipal net server once if garbage is stuffed. the entire method is upheld by AN embedded module integrated by exploitation GSM and GPS with IOT facilitation. the $64000 time standing of however waste assortment is being done might be monitored and followed up by the municipality authority withthe help of this technique. Additionally, to the present the mandatory remedial measures might be tailored.

A humanoid application is developed and connected to an online server to intimate the alert kind the microcontroller to the urban workplace and to perform the remote observance of the cleanup method, done by the staff, thereby reducing the manual method of observance and verification. The notifications area unit sent to the humanoid application exploitation Wi-Fi module. Arduino UNO is the main Module during this project. The inaudible sensing element that is interfaced with Arduino UNO to see the extent of garbage stuffed within the trash bin.

GSM/GPRS Module is employed to ascertain communication between a user pc and a GSM-GPRS system and exploitation this module we have a tendency to get the SMS notification from the trashcan. GPS Module may be a navigation device it'll indicate the situation wherever garbage is stuffed and by exploitation Wi-Fi Module we have a tendency to get distinctive IP address for SMS and conjointly Municipal Officer will see the rubbish bin standing in "All things talk" computing machine.

3. Eco - friendly Environment with RFID Communication Imparted Waste Collecting Robot (July 2015) Vidyasagar,

M. Sumalatha,K. Swathi,M. Rambabu

This paper mentioned that restaurant to keep the premises clean and green. Smart waste collecting system enabled to develop a methodology to collect the waste material into the dustbin provided at the guided robot. An RFID (Radio-frequency identification) communication is adapted to communicate the table occupier with the mobile robot. An RFID tag is provided to each table and an RFID reader is equipped with the guided robot.

The command signal outputted by the table occupier will be transmitted to the central control room using an RF transmitter. RF receiver at the control room will receive the signal and fed as input to the microcontroller ARM7. The microcontroller will output the necessary commands to the robot to collect the waste material from the particular table. To drive the robot to the required table, a path finding mechanism has been adopted using optimum path algorithm. An IR sensor assembly is equipped with the robot to follow the specified optimum path. The status of the task is communicated to the control room by imparting the IEEE 802.15.4 communication device. The experimental results encouraged to implement the developed mechanism for real-time applications.

4. Smart Garbage Management System Using Internet of Things (IOT) For Urban Areas (May 2018) Ms. Nisha Bhagchandani, Ms. Rupa, Ms. Rajni Kumari, Mr. Ashish Mathur

This project manages the garbage collection done by Municipal Corporation with the help of an IOT based embedded device attached to the dustbin of each area, this device continuously updates the standing of dustbins in every space to the web site designed for this management. This device ceaselessly detects the amount of ash-bin mistreatment supersonic detector and because the ash-bin gets full it'll update its standing of obtaining full on the web site designed for garbage management along with date and time and will go to waiting for state and remain in this state till dustbin gets empty.

A timer is also set simultaneously in this state for a fixed duration within which dustbin must be cleaned by the Municipal Corporation.

If this timer gets expired and dustbin is not cleaned by their employees on given time, then the device will be sent a message to the higher

authority that dustbin not cleaned on time and again set the timer for the same duration and remain in waiting for the state. Once the dustbin is cleaned by the employees the device will come out of waiting for state and will update its status of getting cleaned on the website along with date and time. Thus a record is maintained regarding dustbin status for each area in the website in tabular form using IoT technology along with the embedded system which will efficiently manage the assortment garbage pickup trash

collection trash pickup by the Municipal Corporation and can resolve the foremost settings issue of inefficient garbage collection ends up in a clean and healthy environment.

III.PROPOSED METHODOLOGY

SMART DUSTBIN using ARDUINO is an IOT based project. Here we are using arduino for code execution, for sensing we used ultrasonic sensor which will open lid and wait for few moments. It will bring drastic changes in tern of cleanliness with the help of technology. Here we also use Servo Motor for automation of lid and then we use Battery for 5 V power supply [4,5]
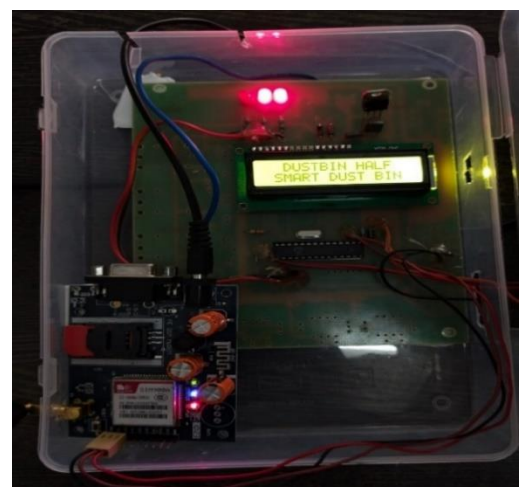
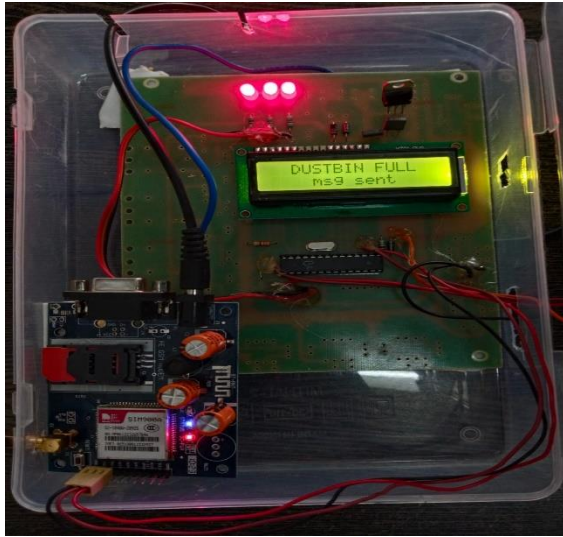### REQUIRED SOFTWARE:
1) Arduino IDE

REQUIRED HARDWARES:

1) Uno Board
2) Ultrasonic Servo Motor
3) 9V Battery
4) Dustbin
5) Jumper wire

Project Photographs: -
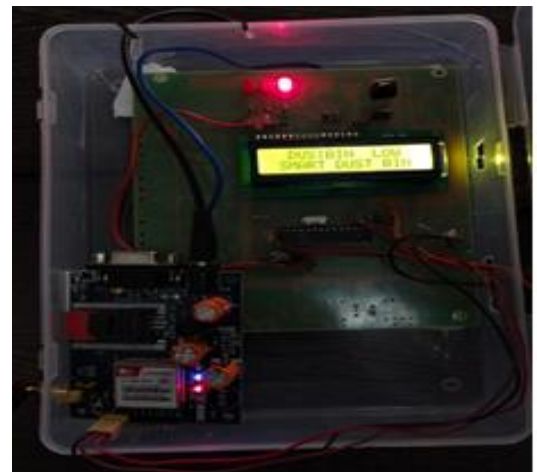
Dustbin

Status Low

Status Half

Status Full

IV. Conclusions

A simple but useful project called Smart Dustbin using Arduino is designed and developed here. Using this project, the lid of the dustbin stays closed, so that waste is not exposed and when you want dispose any waste, it will automatically open the lid.

V. REFERENCES

[1] [1] Narayan Sharma, Nirman Singha, Tanmoy Dutta, "Smart Bin Implementation for Smart Cities", International Journal of Scientific &

[2] [2] K Vidyasagar, M Sumalatha, K Swathi, M Rambabu, "Ecofriendly Environment with
FID Communication Imparted Waste Collecting Robot", Journal of Academia and Industrial Research (JAIR), vol. 4, issue 2, pp. 43 - 47, 2015

Engineering Research, vol. 6, issue 9, pp. 787 - 789, 2015

[3] Twinkle Sinha, Mugesh Kumar, P Saisharan, "Smart Dustbin", International Journal of Industrial Electronics and Electrical Engineering, vol. 3, issue 5, pp. 101 - 104, 2015

[4] Insung Hong, Sunghoi Park, Beomseok Lee, Jaekeun Lee, DaebeomJeong, Sehyun Park, "IoT-Based Smart Garbage System for Efficient Food Waste Management", The Scientific World Journal, 2014

[5] R M Prof, AkshaySahu, Pramod Godase, Reshma Shinde, Shinde "Garbage and Street Light Monitoring System Using Internet of Things", International journal of innovative research in electrical, electronics, instrumentation and control engineering, volume 4, 2016

[6] Pankaj Vikrant Bhor1, Maheshwar Morajkar, DishantGurav, Pandya, "Smart Garbage Management System", International Journal of Engineering Research & Technology, vol. 4, issue 3, pp. 1117 - 1119, 2015

[7] Ramji DR, Shinde JR, R. Venkateswarlu, "Smart Hands-Free Waste Compactor Bin for Public Places", International Journal of Digital Electronics, Vol. 1, pp. 52-8, 2019