Smart Dustbin System

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Abstract: *In recent decades, Urbanisation has increased tremendously. At the same phase there is an increase in waste production. Waste management has been a crucial issue to be considered. We are inspired from Swachh Bharat Mission. Nowadays technologies are getting smarter day-by-day so, as to clean the environment we are designing a smart dustbin by using Node MCU . This paper is a way to achieve this good cause. Ultrasonic sensor is placed at the top of the dustbin which will measure the stature of the dustbin. It's properly running or not. For social it will help toward health and hygiene, for business for we try to make it affordable to many as many possible. Once the garbage reaches the threshold level ultrasonic sensor will trigger the At regular intervals dustbin will be squashed. Once these smart bins are implemented on a large scale, by replacing our traditional bins present today, waste can be managed efficiently as it avoids unnecessary lumping of wastes on roadside. Breeding of insects and mosquitoes can create nuisance around promoting unclean environment. This may even cause dreadful diseases.*

Keywords: Node MCU , Microcontroller, IOT, Circuitry

I. INTRODUCTION

The rate increasing population in our country has increasing rapidly and also, we have increase in garbage which have increased environmental issue. Dustbin is a container which collects garbage's or stores items which recyclable or non-recyclable, decompose and non-decompose. They are usually used in homes, office etc, but in case they are full no one is there to clean it and the garbage are spilled out. The surrounding of a dustbin is also conducive for increasing the pollution level. Air pollution due to a dustbin can produce bacteria and virus which can produce life harmful diseases for human. Therefore, we have designed a smart dustbin using ultrasonic sensor which will sense the item to be thrown in the dustbin and open the lid with the help of the motor. It is an IOT based project that will bring a new and smart way of cleanliness. It is a decent gadget to make your home clean, due to practically all offspring of home consistently make it grimy and spread litter to a great extent by electronics, rappers and various other things. Since the smart dustbin is additionally intriguing and children make fun with it so it will help to maintain cleanliness in home.

- We provide greater access to the garbage disposing points (public dustbin).
- System is efficient in terms of fuel and time cost.
- Provide data collection facility which shows that, how much a city generates garbage and accordingly plan disposing process.
- Detection of wet and dry garbage in dustbin.

II. SCHEMATIC DIAGRAM
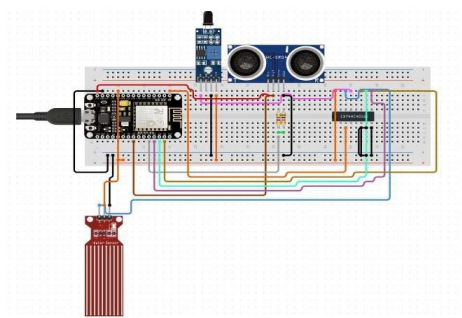
III. ALGORITHM

- Step 1 : Start
- Step 2 : Sense the object and open the lid
- Step 3 : Detect the storage of the bin
- Step 4 : If the dustbin is full close the lid and show message if not only close the lid
- Step 4 : Stop

IV. WORKING

After setting up the Smart Dustbin and making all the necessary connections, upload the code to NodeMCU and provide 12V power supply to the circuit. Once the system is powered ON, NodeMCU keeps monitoring for any object near the Ultrasonic Sensor. If the Ultrasonic Sensor detects any object like a hand for example, NodeMCU calculates its distance and if it less than a certain predefined value, NodeMCU will activate the Servo Motor and with the support of the extended arm, it will list the lid open. After certain time, the lid is automatically closed.

V. RESULT

Smart Dustbin it works smartly, or we can say that it is an automatic dustbin. It will work like when you will come Infront of this dustbin it will open automatically with the help of a servo motor. So there's some sensor work to detect the object Infront of the dustbin.

VI. CONCLUSION

This project work is the implementation of Automatic Garbage Fill Alerting system using Ultrasonic sensor, Arduino Uno, Buzzer and Wi-Fi module. This system assures the cleaning of dustbins soon when the garbage level reaches its maximum. It will take power supply with the help of Piezoelectric Device. If the dustbin is not cleaned in specific time, 37 then the record is sent to the Sweeper or higher authority who can take appropriate action against the concerned contractor. This system also helps to monitor the fake reports and hence can reduce the corruption in the overall management system. This reduces the total number of trips of garbage collection vehicle and hence reduces the overall expenditure associated with the garbage collection. It ultimately helps to keep cleanliness in the society. Therefore, the Automatic Garbage Fill Alerting system makes the garbage collection more efficient.

REFERENCES

[1]. M. A. Al Mamun, M. A. Hannan, and A. Hussain, "Real time solid waste bin monitoring system framework using wireless sensor network," 13th Int. Conf. Electron. Information, Commun. ICEIC 2014 - Proc., pp. 1–2, 2014.

[2]. A. F. Thompson, A. H. Afolayan, and E. O. Ibidunmoye, "Application of geographic information system to solid waste management," 2013 Pan African Int. Conf. Inf. Sci. Comput. Telecommun. PACT 2013, pp. 206–211, 2013.

[3]. A. S. Wijaya, Z. Zainuddin, and M. Niswar, "Design a smart waste bin for smart waste management," Proc. 2017 5th Int. Conf. Instrumentation, Control. Autom. ICA 2017, pp. 62–66, 2017.

[4]. T. P. Fei et al., "SWM: Smart waste management for green environment," 6th ICT Int. Student Proj. Conf. Elev. Community Through ICT, ICT-ISPC 2017, vol. 2017-January, pp. 1–5, 2017.

[5]. S. S. Chaudhari and V. Y. Bhole, "Solid Waste Collection as a Service using IoT-Solution for Smart Cities," 2018 Int. Conf. Smart City Emerg. Technol. ICSCET 2018, pp. 1–5, 2018.

[6]. S. Aleyadeh and A. E. M. Taha, "An IoT-Based architecture for waste management," 2018 IEEE Int. Conf. Commun. Work. ICC Work. 2018 - Proc., pp. 1–4, 2018.

[7]. M. Adam, M. E. Okasha, O. M. Tawfeeq, M. A. Margan, and B. Nasreldeen, "Waste Management System Using IoT," 2018 Int. Conf. Comput. Control. Electr. Electron. Eng. ICCCEEE 2018, pp. 1–4, 2018.

[8]. H. Poddar, R. Paul, S. Mukherjee, and B. Bhattacharyya, "Design of smart bin for smarter cities," 2017 Innov. Power Adv. Comput. Technol. i-PACT 2017, vol. 2017-January, pp. 1–6, 2018.

[9]. A. M. Furqan Durrani, A. U. Rehman, A. Farooq, J. A. Meo, and M. T. Sadiq, "An automated waste control management system (AWCMS) by using Arduino," 2019 Int. Conf. Eng. Emerg. Technol. ICEET 2019, pp. 1–6, 2019.