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IOT Based Waste Management System

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Abstract: ***Urban India generates tones of wastes annually. Our country faces major challenges related with waste management. Conventional garbage collection is not efficient since authorities are not notified until waste bin is full, and this leads to overflow of waste material. Efficient way of waste disposal and collection of disposed garbage is crucial for a sustainable and clean India. This paper presents smart waste management using IoT based waste bin for collection and monitoring level of waste inside bin. system is applied using two ultrasonic sensors which is being controlled by Node MCU. One of ultrasonic sensor detects level of waste in bin and or detects person approaching bin to dispose waste. This detection helps in automatic opening and closing of lid. Servo motor is connected to lid which assists action of closing and opening of lid. In this system, level of waste in bin will be sent to concerned authorities. IoT data is kept and observed using Blynk app. offered system is reliable, cost effective and can be implemented.***

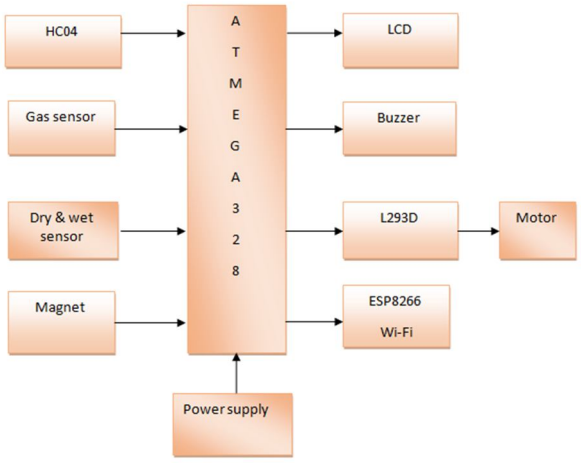
Keywords: ATMEGA328, The ultrasonic sensor, dry and wet sensor, IOT.

I. INTRODUCTION

Management and disposal of waste is a challenge in today's world. dumping of garbage wastes at open landfill sites is common method of disposal. disposal method of dumping in open land sites has an adverse effect on environment. Uncontrolled dumping of waste on borders of towns and cities has created overfull landfills which are not only impossible to reclaim because of random manner of dumping but also has serious environmental implications. When viewed on a larger scale, poor recovery rate has impeded growth of country as well as economy of nation. Smart cities are covering population that are seeking best lifestyle and fulfilling ir needs. Through smart cities, necessary modern facilities using ICT emerging technologies such as internet of things (IoT) had been fitted to ensure sustainability of city. In perspective of waste management, different IoT-based solutions also had been proposed as an alternative to monitor and to ensure health of societies
It will be very useful and can be installed in trash cans at public places as well as at home.

II. METHODOLOGY

In this system AT-Mega 328 Microcontroller recovers data from various sensors and transmits it through IOT. In proposed system two ultrasonic sensors and one gas sensor module has been employed along with dustbin by using Atmega328 .Ultrasonic sensor is used to check garbage level in dustbin, so dustbin can be clean timely. gas senor will be detect gases from surrounding. And all data save on IOT platform.



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IOT based waste management system is a very innovative system which will help to keep cities clean. system is composed of components: Atmega328, ESP8266 Wi-Fi module, Gas sensor, dry & wet sensor.

This system monitors garbage bins and informs about garbage collected is dry or wet and separate it. HC-04 it is ultrasonic sensor will detect level of garbage. Gas sensor detects gases from surrounding. If level of garbage is detected n alert system through buzzer. And show result on LCD display. L293D is a 16-pin Motor Driver IC which can control a set of two DC motors simultaneously in any direction If object is identified as dry by dry and wet sensor detector n motor rotates & dumps in dry bin. Else if object is wet n motor rotates with an angle of dumps in wet bin. In this system 12 v of adapter power supply is used. This Power supply is given to Arduino board.

Two are VCC and distance GND which will be connected to 5V and GND of Arduino while or two pins are Trig and Echo pins which will be connected to digital pins of Arduino. All data will save on IOT and present in graphically format.

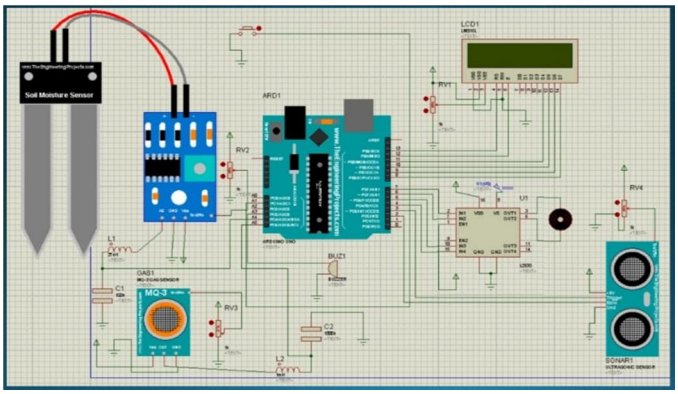


Fig: Circuit Diagram





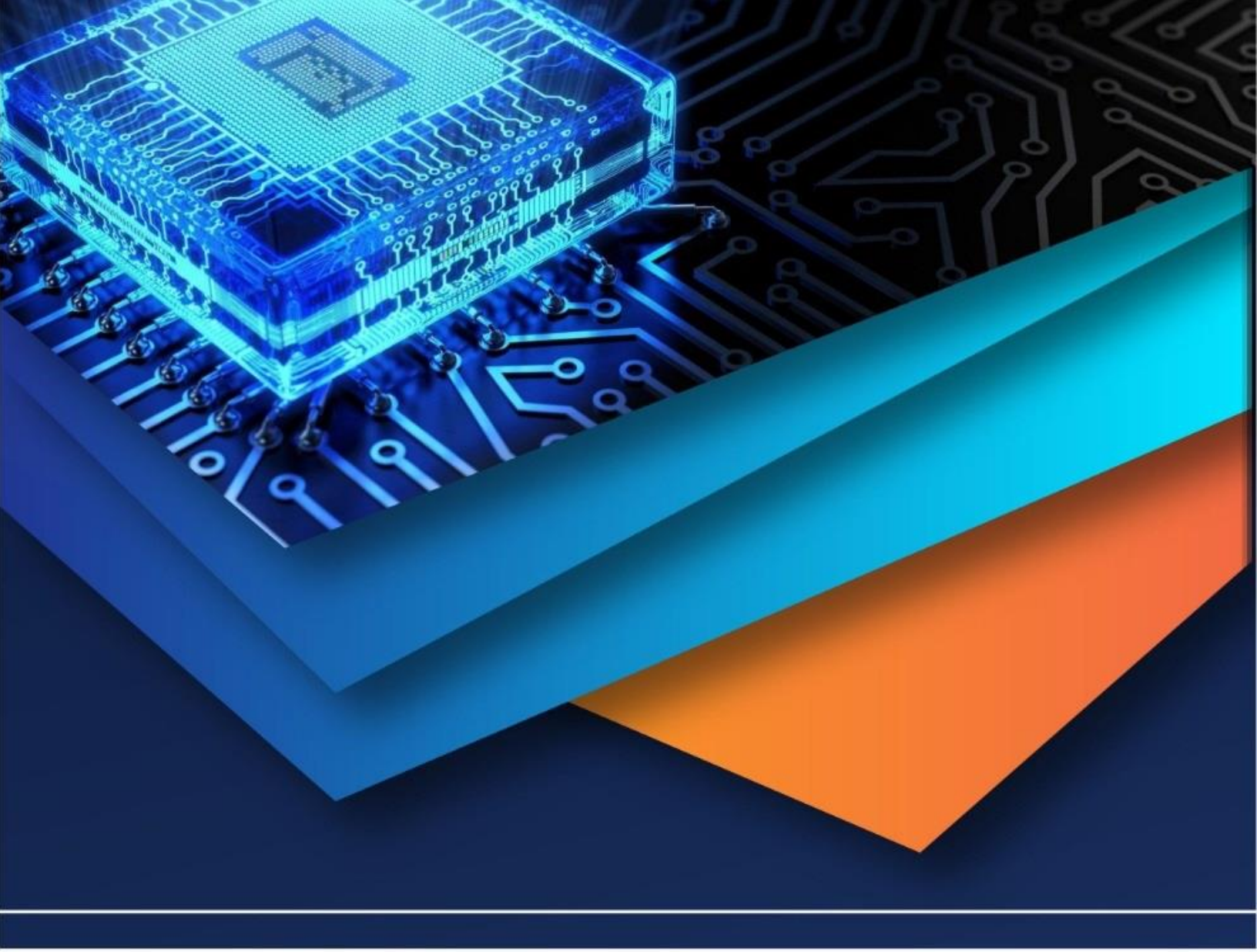
III.CONCLUSIONS

This system presents a smart and cost effective solution for waste segregation. proposed Smart Bin is an efficient waste segregation system that requires no human intervention to separate dry and wet waste and all data of is save on IOT Module. Improper disposal and improper maintenance of domestic waste create issues in public health and environment pollution thus this system attempts to provide practical solution towards managing waste collaborating it with use of IOT i.e. providing free internet facilities for a specific time once trash is dumped into bin. offered system will definitely help to overcome all serious issues related to waste and keep environment unpolluted

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