

SMART DUSTBIN USING ARDUINO ULTRASONIC SENSOR

→ Dr. Udai Chandra Jha → P. Suresh Kumar → Bhukya Dheeraj

School of Mechanical Engineering,

Lovely professional University

Phagwara, Punjab, India

ABSTRACT

As people are becoming more intelligent, so are the things. Since we are entering in the era of smart cities we need a smarter waste mechanism too. The existing design of dustbins we are using is not enough to cater the requirement of future. We need such a robust waste mechanism which would help us to keep our environment clean as well as should be eco friendly. Most of the existing dustbins are full of garbage due to the absence of quick disposal of waste, it is neither good for the locality nor good for the environment.

We propose smart dustbin based on ARDUINO and ULTRASONIC SENSORS technology. This smart dustbin will be helpful for keeping our environment safe and hygiene.

Keywords :- Arduino, Ultrasonic Sensors.

INTRODUCTION

As we know India is the most populous country. Our population is increasing day by day. In our daily Life we create a lot of waste, like groceries packaging, carry bags, milk packets and medicine wrappers etc, we throw all these wastes in regular dustbins. This will lead to a great loss to our environment. We are using these dustbins by physical touch, but in case this gets indisposed in a shorter period it will cause problems like spread of insects, mosquitoes and flies. The

in hygiene surroundings will lead to spread of diseases and cause air pollution. We have to move step forward and choose smart dustbin instead of normal ones, we need to use smart dustbin based on ARDUINO and ULTRASONIC SENSORS technology, it will work on automated lid opening system by sensing human movements. This smart initiative will be helpful, it will be a new way of cleanliness. Broadly, it opens when a person desire to throw waste in front of it, allows few seconds and closes automatically, there is absolutely no need of physical touch.

REQUIREMENTS

ARDUINO
ULTRASONIC SENSOR
BATTERY
SERVO MOTORS
DUSTBIN

PROCEDURE

- CONCEPT BEHIND SMART DUSTBIN USING ARDUINO

A object orientation is the basic notion behind the Arduino smart dustbin project. The ultrasonic sensor is mounted on the trash lids top and which anything is ascertained by the sensors Arduino will trigger to open the lid.

- CONNECTING THE SERVO MOTOR

A servo motor is an electrical device that can capable of precisely pushing or spinning an item, if we want to spin an object at a given angle or from a specific distance they make use of servo motor. It is simply constructed consisting of a simple motor that is controlled by servo mechanism.

Let me now walk you through the procedure of the smart dustbin setup and construction method using arduino. According to set up first I will begin with the lid opening mechanism, we used a servo motor for this intention, as we previously know this actual set up of the design of the waste container create the system using an

Arduino, let us begin with the mechanism a servo motor is employed to open the dustbin lid, I employed to remove the lid from the trash can, I used quick glue to secure a little plastic tube to the servo horn, similar to an empty ball point pen refill.

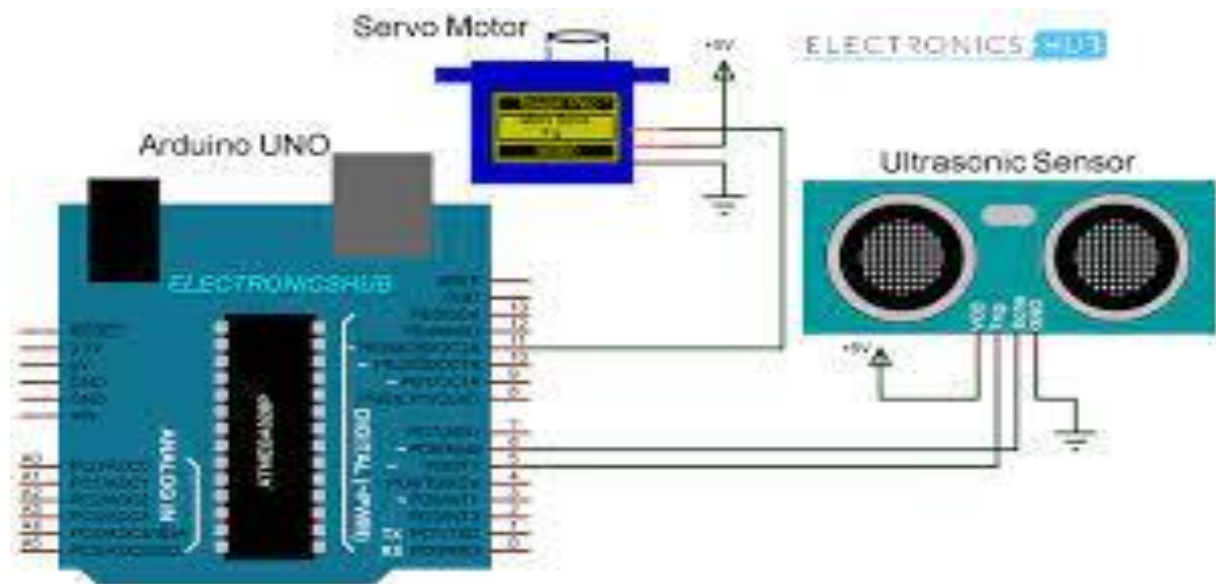
- CONNECTING THE ULTRASONIC SENSOR

After confirming that servo motor is properly positioned, we can now turn our attention to the ultrasonic sensor, and secure the location with the assist of adhesive.

- WIRING UP THE COMPONENTS

The last phase in the construction procedure is to assemble any imperative connection as seen in the circuit schematic, lengthy connecting wires are used and securing these wires as per the circuit schematic wires from these both components from the ultrasonic sensor and servo motor are connected to the appropriate pins on the Arduino. This is how it ends. And with all hardware and software we will run code with the help of software ide.

CIRCUIT DIAGRAM



WORKING

Following the installation of the smart dustbin and the completion of all necessary connection provide power to the circuit by uploading code to Arduino. Once the system is activated Arduino keeps monitored any items that come close to the ultrasonic sensors. When ultrasonic sensor finds any object like a hand for example if the ascertained is less than a predetermined value Arduino will engage the servo motor, which will assist in lifting the lid open with the assistance of the extended arm.

Lid remains open for certain time and closes by self operation.

ADVANTAGES

- A dwindle of upto 80% in the number of waste collections required, resulting and diminished by labour, pollution, fuel use and obstruction in the road ways.
- It keeps our Environment clean and hygiene
- It reduces the Environmental pollution and reduction in the number of waste bins needed
- It helps in data mining regarding waste collection management and many more, a step towards more efficient arrangement of containers.

APPLICATIONS

- To collect dustbins placed at public places in city,
- Automatic open –closed lid for easy to use
- Between the dustbin and the individual there is no contact, as a result germ and illness prevention is essential and totally safe.

CONCLUSION

An uncomplicated and efficacious project called smart dustbin using Arduino is contrived and precocious. It is accoutered smart devices like sensors lid of the dustbin opens when an object approaches to the trash can.

For social purpose this smart dustbins contribute a lot for building a smart city requires a lot of attention to clean and hygienic environment.

The technology, though is very new, Government should conduct some campaigns in large scale to spread awareness in public to familiar with these technology.

In future we should plan to add components like solar panels and water proof circuit design, virtual servers it will help for future scope.

REFERENCES

[1]Sudharani Ashok Ghadage, Mrs.Neeta Anilkumar Doshi.

A.lot based garbage management system {Monitor and acknowledgement system} using Arduino UNO. In 2017 International conference on intelligent sustainable systems {CISS}

[2]DR.N.Sathish kumar, B.vijay lakshmi,R.Jenifer prarthana.

A.lot based smart garbage alert system using Arduino UNO.in 2016 IEE region 10 Conference [TENCON]

[3]Mr.Gopal V.Masane ,Mr.Dnyaneshawar R.Raut.

Smart garbage Monitoring system present and future.International journal of Trend in scientific Research and Development [IJTSRD]

[4]Jaya priya. Dr. N.Shunmunga Karpagam.

Smart dustbin Application Using IOT with Gsm.International journal of scientific Research & Engineering Trends.