SMART DUSTBIN USING ARDUINO NANO

B. Tech – Electronics and Communication Engineering

Manual Report

A Mini Project

Done By

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1. Introduction

Our nation's population has been growing at a rapid pace, and there has also been an increase in trash, which has made environmental problems worse. The dustbin is a receptacle used for gathering trash or storing materials that either decompose or do not decompose. Typically, they are utilized in residences, workplaces, etc., but if they are full, the trash spills out because no one is around too clean. Because of the dustbin's surroundings, the pollution level is also conductive. Dustbin pollution can lead to the growth of bacteria and viruses that can cause fatal illnesses in humans. As a result, we created an automatic dustbin using an Arduino Nano that detects when an object is approaching the sensor, the motor will open the dustbin lid. This project will introduce an intelligent and replacement approach to cleaning. It's a great tool to keep your house tidy because almost every child who grows up there contributes to its general filth and littering through devices, wrappers, and other items. The smart dustbin will aid in keeping the house clean because it is entertaining for kids and adds to the excitement. It will be used with different kinds of waste. When an object or person approaches the dustbin from a distance of 10 to 20 cm, the dustbin will automatically open its lid, wait 10 seconds, and then close. Here, the lid closes when not in use and opens only when necessary.

2. Methodology

The idea behind the automatic/contactless trash can is the Internet of Things. The ultrasonic sensor (HC-SR04) will be used to detect the object, and the Arduino IDE will be used to upload the code. It will use technology to bring about drastic changes in terms of cleanliness. Technology is making everything smarter for the benefit of humankind. Thus, with the aid of technology, this will aid in keeping the environment clean. Since it is sensor-based, people of all ages can easily access and use it. Making this as affordable as possible will allow more people to benefit from this contactless dustbin. And everyone ought to be able to use this and find it beneficial.

2.1 Software Tool

ARDUINO IDE

2.2Required Hardware:

1.ARDUINO NANO

2. SERVO MOTOR

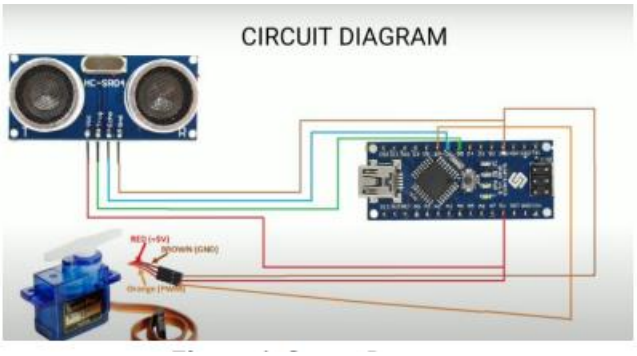
3. ULTRASONIC SENSOR

4. 9V BATTERY

5. DUSTBIN

6. JUMPER WIRES

3.Working and Circuit Connections



Once all the parts have been connected to the Arduino Nano, connect the USB cable to the Arduino Nano and a PC to upload the code. Use the Arduino IDE to upload the code after it has been compiled. When the system is turned on, the Arduino continuously scans the given range for anything that might be close to the sensor. The ultrasonic sensor is used.

The Arduino decides whether to instruct the servo motor to open the lid when the ultrasonic sensor (HC-SR04) detects any object. The lid will either open or remain closed depending on whether the threshold value is less than the value specified during coding. The code specifies that the lid will open for ten seconds before automatically closing.

4.Output

5.Conclusion

Now is the time to make evolutionary adjustments in the direction of cleanliness. The project has smart device integration, including Arduino and ultrasonic sensors. When an object approaches the sensor, the dustbin's lid will automatically open; it will then close after ten seconds. We will work to keep this as cheap as possible for as many people as possible so that everyone can use it. It will aid society in creating a clean and hygienic environment. I think this could lead to changes in both technology and cleanliness. Thus, the next task we have is to install a second sensor that can determine whether or not our trash can is full. Additionally, a display will be added so that users can determine whether the dustbin is full or not.