REMOTE CONTROLLED SMART DUSTBIN

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Keywords:

Ultrasonic sensor, ARDUINO UNO, servo motor, GSM module, Bluetooth module

Introduction:

The rate of increasing population in our country has increased rapidly and also the increase in garbage has increased environmental issues. The dustbin is a container that collects garbage or stores recyclable or non-recyclable, decompose or non-decompose. They are usually used in homes, office, etc., but in case they are full no one is there to clean them and the garbage are thrown out. The surrounding of a dustbin is also conducive to increasing the pollution level. Pollution due to a dustbin can produce bacteria and viruses which can produce life harmful diseases for humans. Therefore, we have designed a smart dustbin using ARDUINO UNO, ultrasonic sensor which will sense the item to be thrown in the dustbin and open the lid with the help of the motor.

Therefore, a Remote-controlled smart dustbin using ARDUINO UNO, ultrasonic sensor, GSM module, Bluetooth module, and Motor Drive, will sense the item to be thrown in the dustbin and open the lid with the help of the motor. It alerts the authority when the dustbin is filled up to a specified level, so the authority can remove the waste. It also segregates the waste materials as wet and dry materials and dumps them into separate boxes provided.

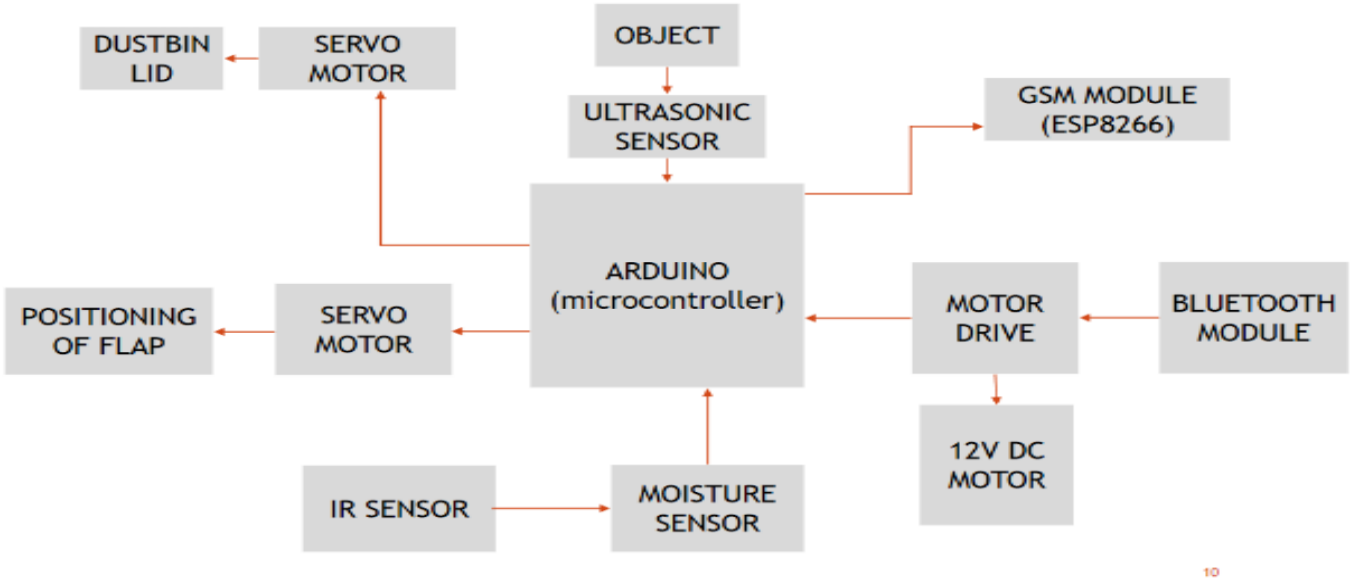
Objectives:

1. To design and build a smart dustbin dustbin that can automatically open the lid when it detects the people who want to throw out their trash. It also can detect the level of the trash inside the dustbin and alert the authority. The waste bin also segregates the waste materials into dry and wet .
2. The wet waste can be used to generate biogas, and dry waste can be sent for recycling. If waste is separated at the household level, then it can be directly sent for recycling instead of sending them to industries first for segregation which becomes a huge task and the waste does not get segregated accurately.

List of Components:

Arduino UNO, ultrasonic sensor, servo motor, GSM module, bluetooth module, motor drive, 12V DC motor, moisture sensor, IR sensor.

Methodology:



When an object get detects in front of the dustbin it sends a signal to the Arduino which acts as a Controller and automatically opens the lid. There are two types of sensors used here to detect the waste material and dump it in a specific box. The moisture sensor detects dry and wet materials. Then it sends the information to the Arduino modules to direct the servo motor to position the flap to dump the waste into the separate box provided. Ultrasonic is placed inside the dustbin to determine the level of garbage-filled. When the garbage level reaches the specified level then the ultrasonic sensor alerts the Arduino that the bin is full, then Arduino passes this message to the GSM module. GSM provides a data link to a remote network. Since the GSM module is provided with a SIM card that links the data to the user, the message is received to the authority that the bin is full. So, the authority can remove the waste quickly. To control the dustbin, an application connects with the Bluetooth module. The driving of the wheels provided to the dustbin is controlled by the motor drive while it gets information from the Bluetooth module.

Conclusion:

There is the production of 62 million tons of municipal solid waste (MSW) each year in Urban India. 70% of which is collected and 20% gets treated. Hence this indicates the increase in requirement for efficient processing of the waste to maintain ecological balance. The model developed is efficient and durable since it requires less power for its operation and no human supervision. The model can also detect when the bin is full asking the authorities to come and collect. At the industrial level methods used for the segregation of waste are hazardous to human health and also the process involves manual effort and also complete segregation is not obtained. By segregating waste at the root source, not only can waste be recycled but the beauty of the surroundings can be maintained.

Future Scope:

Product can be marketed in large scale since the amount of waste materials is increasing day by day. The structure size can be increased in order to manage large amount of waste and also in order to handle more weight the power of the motor can be increased. This will bring tremendous change in maintaining healthy and clean environment