

Design and implementation of intelligent dustbin with garbage gas detection for hygienic environment based on IoT

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ABSTRACT

Rapid population expansion necessitated increased resource use in everyday living. As a result, the pace of trash generation has increased dramatically, affecting the environment's hygiene system and other health concerns. Waste overflows in public spaces, and improved management is necessary. The purpose of this study is to develop a model of an intelligent trashcan for usage in smart cities. Additionally, to identify dangerous gases emitted by dustbins for subsequent management operations, as well as to monitor the amount of trash in the waste bin and warn the municipality through SMS. This system includes two ultrasonic sonar sensors for measuring trash level, a GSM module for sending SMS, three gas sensors for detecting harmful garbage gas, an infrared sensor for counting garbage droplets, and an Arduino Uno for managing all activities. The system notifies you whether the bin is full or empty and can also be controlled by voice command. Additionally, released gas may be monitored to determine the severity of the impairment and to notify the appropriate authorities. Most significantly, it will identify a failed trash drop in the bin and alert the user through alarm for truly considering the reduction of spilled garbage surrounding bins while using the system.

KEYWORDS

Arduino-UNO; Blynk; Gas Sensor; GSM Module; Ultrasonic Sonar Sensor

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