

ABSTRACT

The increasing amount of waste requires more effective solutions for waste management. This study aims to design an automatic trash bin system based on the Arduino Uno ATmega328 using ultrasonic sensors to detect users and monitor waste capacity. The system is equipped with a servo motor to open and close the trash bin lid, LEDs as capacity indicators, and a buzzer to signal when the bin is full. The test results show that Ultrasonic Sensor A can detect users at a distance of 30 cm, allowing the lid to open automatically. Ultrasonic Sensor B can detect the waste level, indicating an empty condition at a distance of 30 cm (green LED), a nearly full condition at 20 cm (yellow LED), and a full condition at 10 cm (red LED and active buzzer). Based on the testing results, the system operates according to its intended functions.

Keywords :Automatic Trash Bin, Arduino Uno ATmega 328, Buzzer, LED, Servo Motor, Ultrasonic Sensor.