A Seminar Presentation for the Degree of Bachelor in Computer Engineering

Waste Segregation System

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Domain/Area of Interest: IOT
Application:
      promote recycling,
      reduce environment pollution
      conserve resources

Table of Contents

▪**Introduction**

This paper presents a comprehensive overview of waste segregation using (IoT). Smart bins with many sensors, including moisture, infrared, and ultrasonic ones, connectivity elements like power supply and battery, make up the Internet of Things-based trash segregation system

▪Recent trends in the domain/area of interest

In recent times, the world has been experiencing an increase in medical cases due to the inappropriate disposal of hospital waste. Hazardous wastes in medical facilities are not properly managed, leading to the spread of various viruses.

Hazardous waste in hospitals includes:
- Chemical Waste: Expired or unused chemicals,
- Pharmaceutical Waste: Expired, unused, or contaminated medications
- Radioactive Waste: Materials containing radioactive isotopes
- Infectious Waste: Waste contaminated with infectious agents, such as blood-soaked bandages, used needles

Proper management and disposal of hazardous waste in hospitals are critical to protect the health and safety of patients, healthcare workers, and the environment. This involves segregating hazardous waste from non-hazardous waste, using designated containers, appropriately labelling containers, and ensuring safe storage and transportation to prevent contamination. Specialized treatment methods, such as incineration or autoclaving, may be used by hospitals to treat hazardous waste before disposal.

Application/Framework/Technology:

A Arduino board uses different capacitive sensor ultrasonic sensor and also LED screen to implement the solution a its maximal

The major advantage of this solution is that it holds a scope of tracking back which may prove to be the biggest stand out feature making the solution a more efficient one

Key components include:

- Ultrasonic Sensors: Measure the distance of waste within the bin, working with a servomotor to control the lid's opening and closing. Camera Module: Attached to an Arduino UNO for waste image recognition and classification according to the bin colour.
- Gas Sensor: Monitors gas levels within the bin, triggering an alert via a buzzer if the gas exceeds a predefined threshold, indicating the presence of hazardous fumes .
- Buzzer: Alerts when the bin is filled to capacity.
- GSM Module: Sends SMS alerts to frontline workers when bins are full or emitting foul odours
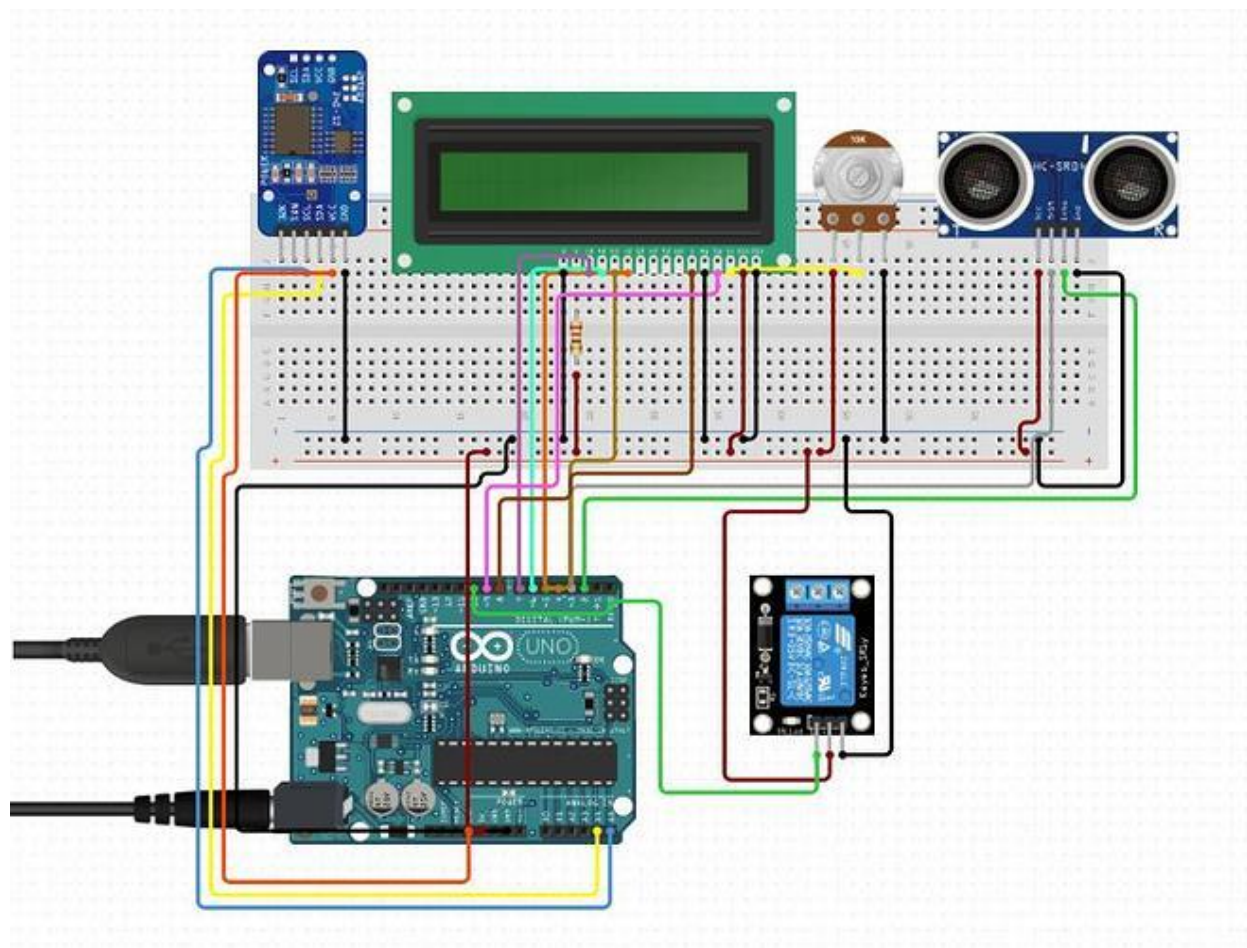
FEATURES:

- Efficient waste segregation
- Easier for collector to collect out the waste
- Ease the tracking back of waste production
- Encourages society to adopt other sustainable practices

This solution for waste segregation involves the use of various technologies including IOT and Al. Here IOT plays a major role in smoothing the segregation

References:

- Ramdoss Prabha and Venkatesh Ramani, "IoT based smart healthcare monitoring system using Iot component WSN,

- Gayathri Betal., "Smart Garbage Monitoring System using IoT," International Journal of Advanced

Conclusion:

This IoT-enabled system ensures proper waste segregation, treatment, and disposal ,Enhancing safety for healthcare employees, patients, and the environment