

Mini Project – 1B

IoT Based Smart Dustbin

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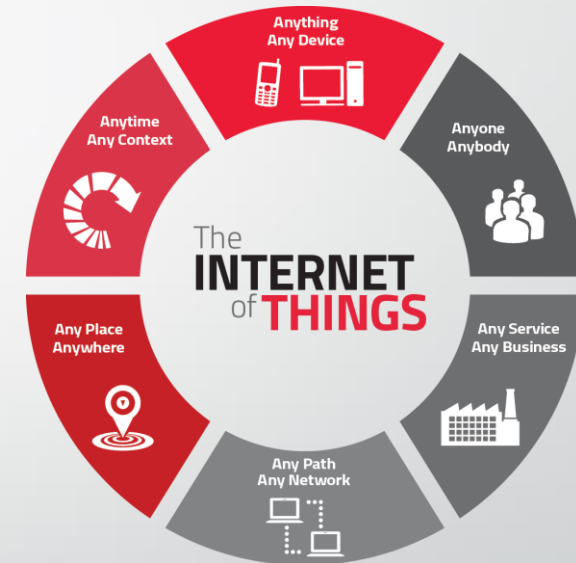


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Introduction

- The IoT refers to the interconnected network of physical objects that communicate with each other and with centralized systems, often for the purpose of monitoring, control, and automation
- The Smart Dustbin project combines innovative hardware components with IoT technology to revolutionize waste management
- This project aims to make waste management more efficient, environmentally friendly, and cost-effective



Literature Survey

Sr. No.	Name of Paper	Author	Advantages	Limitations
1.	lot Based Smart Dustbin ISSN 2277-8616 02/2020	Telugu Maddileti, Harish Kurakula	1. Visual feedback, indicating the status of dustbin 2. Real Time Monitoring is possible	1. Segregation of waste is not possible 2. Lacks GPS tracker to locate dustbin
2.	A survey of smart dustbin systems using the IoT and deep learning Vellore Institute of Technology 02/2024	Menaka Arthur, Aru Pandey, S. Shobha	1. Segregation of waste is possible 2. Project is planned for entire city	1. Lacks automatic cleaning and sanitization 2. Object detection accuracy

Sr. No.	Name of Paper	Author	Advantages	Limitations
3.	IOT Based Smart Dustbin ISSN:1583-6258 03/2021	Srinivasan P, Thiyaneswaran B, Jaya Priya	1. Real Time Monitoring is possible 2. Less complex System design	1. Lacks Automatic lid opening mechanism 2. Sends notification through e-mail
4.	IOT BA.SED SMART WASTE MANAGEMENT SYSTEM eISSN:2349-5162 03/2021	Zareena Banu, Meghana SL, Pooja CV	1. Efficient and reliable 2. Provides the easiest way of recycling through segregation	1. Very high in Cost 2. No Smart route system for waste collection is provided

Limitations of Existing System

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graph TD; A[Limitations of Existing System] --> B[Lack of Management]; A --> C[Overflowing Bins]; B --> D[Odour and Pests]; B --> E[Maintenance]; B --> F[Power Management];
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Lack of
Management

Overflowing
Bins

Odour and
Pests

Maintenance

Power
Management

Problem Statement

Urban waste management faces challenges like inefficient collection, overflowing bins, and poor recycling. Traditional systems lack real-time monitoring, hindering resource allocation. Service inconsistency and maintenance problems increase operational costs and decrease public satisfaction, while hygiene and littering pose health and environmental risks. Modern, data-driven solutions are needed for better efficiency, sustainability, and service quality.

Requirement Gathering

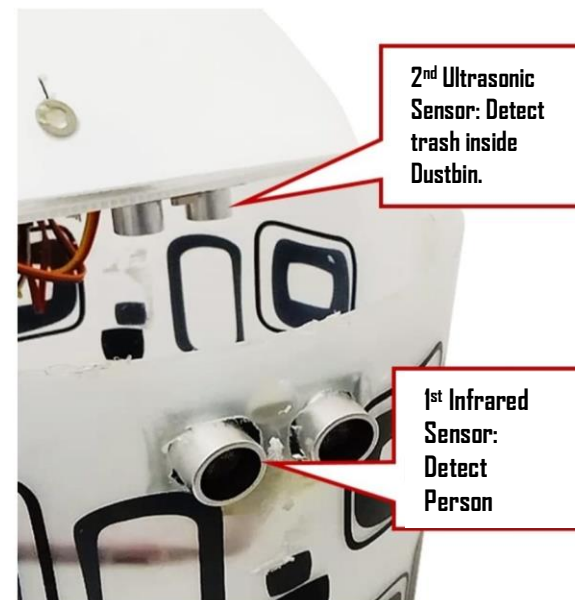
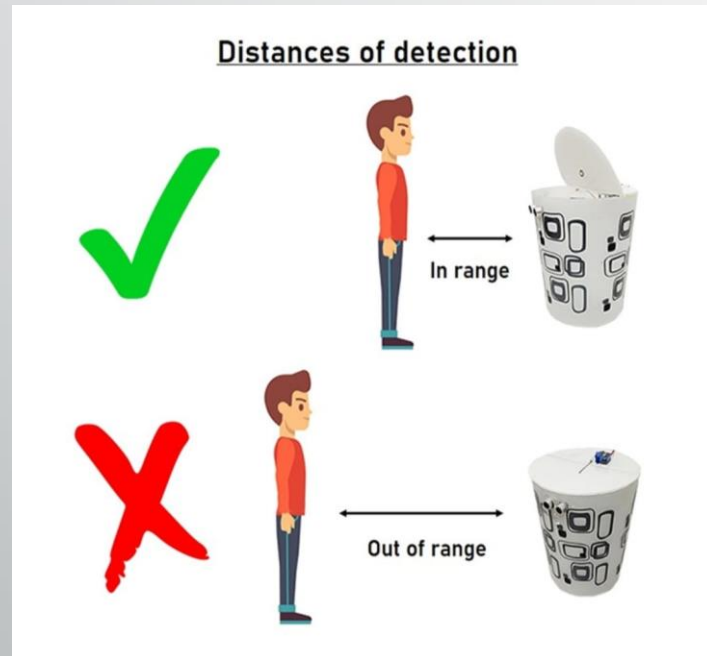
Software Requirements

- C : User friendly language
- Arduino IDE
- Blynk IoT App

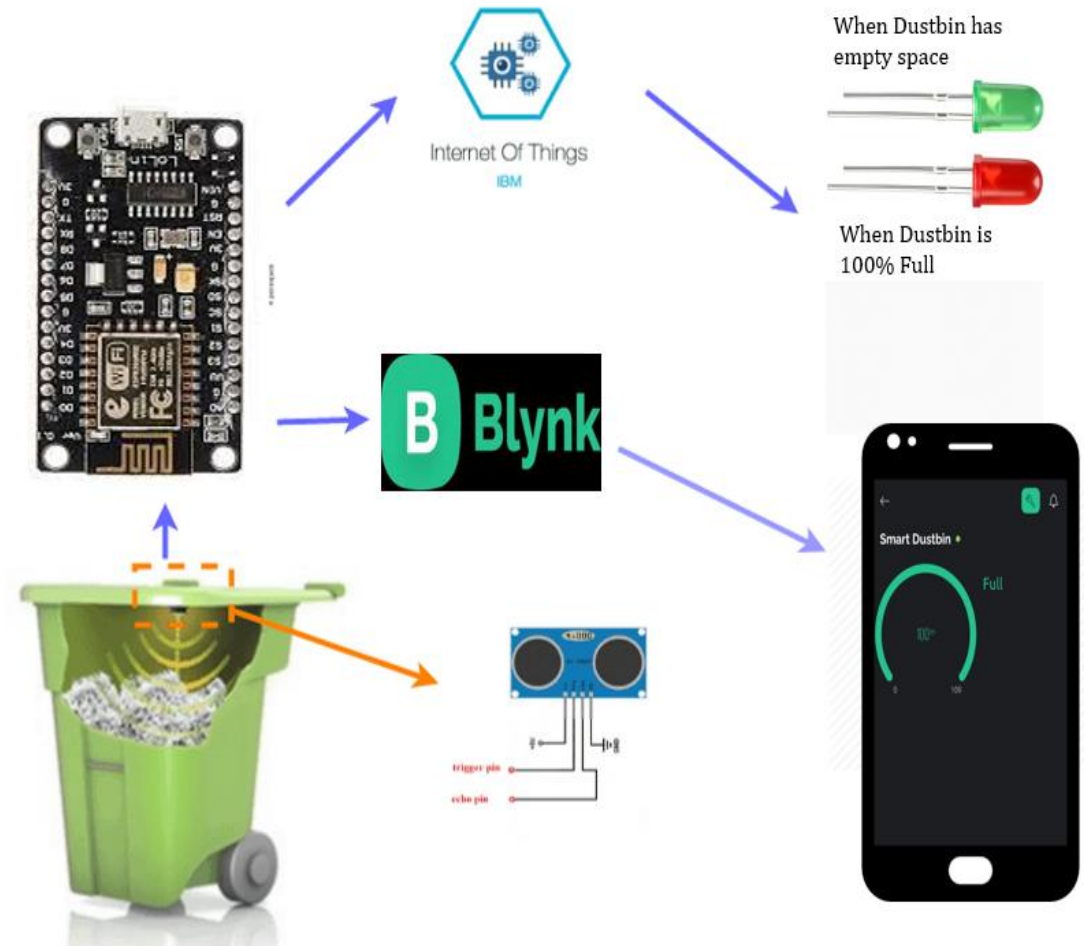
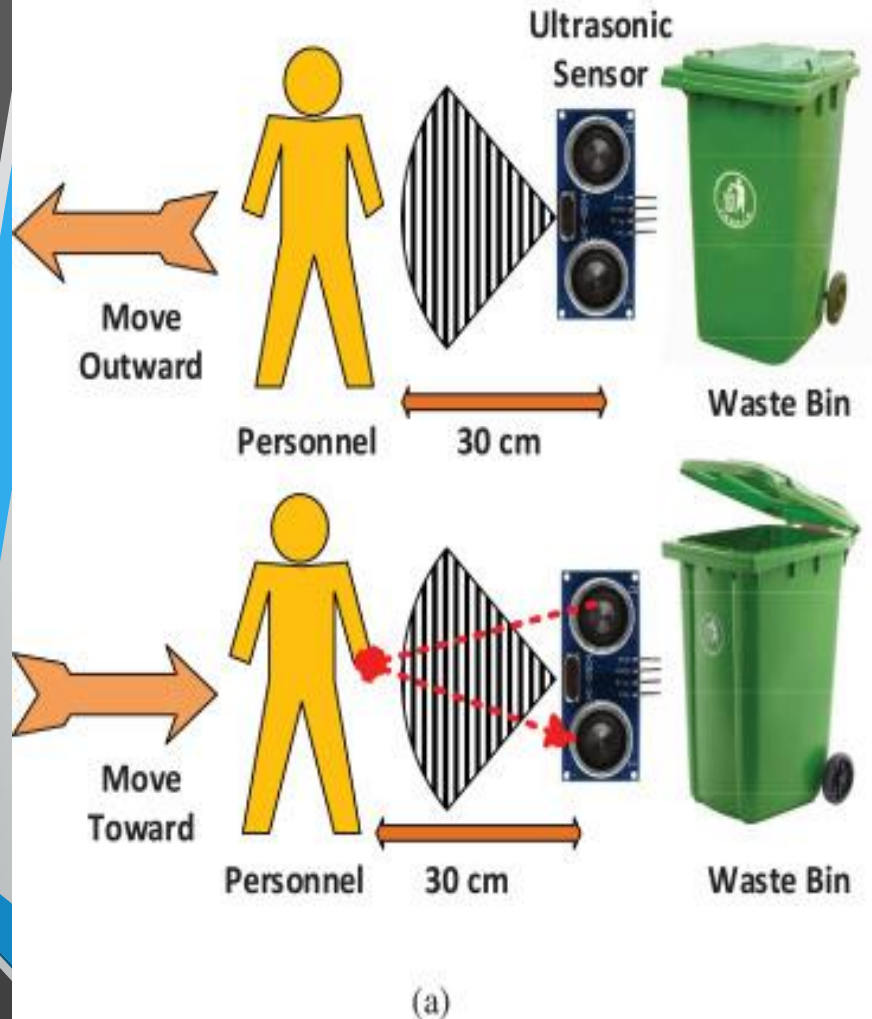
Hardware Requirements

- Node MCU esp8266 Wi-fi Module
- Ultrasonic Sensor HC-SR04
- Servo Motor
- IR Sensor
- Bread Boards
- Connecting Wires
- Battery

System Architecture



System Architecture



Smart Dustbin

- ❑ We have designed an Innovative and Sustainable solution for waste management
- ❑ Our project works on the principle of object detection using an ultrasonic sensor that detects waste if it comes closer and opens the dustbin lid
- ❑ It makes the system Automated by sending real-time notification to user when dustbin is full and User friendly making it easier to manage waste and hygiene



Conclusion

The smart dustbin aims to revolutionize waste management by automatically detecting waste. It seeks to optimize waste, reduce overflowing bins, and promote efficient, cost-effective, and environmentally sustainable waste disposal practices. Through technology and data-driven insights, smart dustbins intend to enhance cleanliness, public health, and overall waste management efficiency in urban areas.

Scope

This project aims to improve waste collection efficiency, reducing operational costs, enhancing public health, and promoting environmental sustainability through real-time monitoring and data-driven waste management.

It focuses on :

- Automation
- Reducing Man Power
- Cleanliness

References

- [1] S.S. Navghane, M.S. Killedar, Dr. V.M. Rohokale, “IoT Based Garbage and Waste Collection Bin”, May 2016
- [2] Meghana K C, Dr. K R Nataraj, “ IOT Based Intelligent Bin for Smart Cities”
- [3] Guerrero, L.A., Maas, G., Hogland, W. : Solid waste management challenges for cities in developing countries. Journal of Waste Management
- [4] Github Repositories



THANK YOU