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Mr. Bin: An IoT-Based Smart Waste Management System

Mst. Swagat Ninad Patil[1], Mst. PranavBapurao Shimpi[2], Mst. Shubham Navnath Havale[3], Prof.Suwarna Nimkarde[4]
Students, Department of Computer Technology[1,2,3]
Lecturer, Department of Computer Technology[4]
Bharati Vidyapeeth Institute of Technology, Navi Mumbai, Maharashtra, India

Abstract: *Efficient waste management is a crucial aspect of urban sustainability. "Mr. Bin: An IoT-Based Smart Waste Management System" is an innovative approach that automates waste collection through real-time monitoring. The system utilizes an Arduino microcontroller, ultrasonic sensors, and a GPS module to detect waste levels in bins and track their location. A Python middleware receives sensor data from Arduino and stores it in a MySQL database, which is then accessed by an Android app for real-time monitoring. This solution minimizes manual effort, reduces overflow issues, and enhances urban cleanliness. Future enhancements may include AI-based predictive analytics, cloud integration, and machine learning algorithms for optimized waste collection strategies.*

Keywords: Smart Waste Management, IoT, Arduino, Ultrasonic Sensor, GPS, Web Dashboard, Waste Level Monitoring, Python Middleware, MySQL

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