IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 10, June 2025
Impact Factor: 7.67

IOT-Enhanced Smart Dustbin with Real-Time Weight and Level Monitoring Using ESP32

Yogesh H M[1], Shivalingappa[2], Suman M[3], Vinodh B[4], Mrs. Malini V L[5]
UG Scholars, Department of Electronics and Communication[1-4]
Assistant Professor, Department of Electronics and Communication[5]
East Point College of Engineering and Technology, Bangalore

Abstract: *The rapid increase in waste generation necessitates smarter waste management solutions to ensure efficiency and sustainability. This project presents Eco Bin, an IOT-enabled smart dustbin designed to optimize waste disposal processes by leveraging advanced technologies. Eco Bin integrates an ESP32 microcontroller, load cells, and an ultrasonic sonar sensor to monitor the weight and fill level of the dustbin in real-time. The data collected is uploaded to Firebase Realtime Database (RTDB) for seamless storage and accessibility. A user-friendly mobile application, developed using MIT App Inventor, provides real-time updates on the dustbin's status, such as weight, fill percentage, and alerts when the dustbin is full. This system aims to reduce manual checks, prevent overflow, and enhance the efficiency of waste collection operations. By promoting automation and real-time monitoring, Eco Bin offers a scalable solution to modern waste management challenges, contributing to cleaner and more sustainable urban environments*

Keywords: *waste generation*

DOI: 10.48175/IJARSCT-28841