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Cleanique – A Smart Dustbin

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Abstract: *This study focuses on the innovative design and development of a Smart Dustbin system aimed at transforming waste management into an efficient, hygienic, and user-friendly process. The Smart Dustbin integrates advanced technologies such as IoT, sensors, and automation to provide features including automatic lid operation, waste sorting, mobility, and vacuum cleaning. The system addresses the growing need for sustainable and contactless waste disposal solutions, significantly reducing manual intervention while promoting hygiene. Through systematic testing and integration of components such as microcontrollers, ultrasonic sensors, and moisture detectors, this research establishes the functionality and applicability of the proposed system in diverse environments such as homes, offices, and public spaces. Furthermore, this paper explores potential future enhancements, including AI integration and solar charging, to advance the system's capabilities.*

Keywords: Smart Dustbin, Waste Management, IoT, Automation, Sensors, Sustainability of components such as microcontrollers

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