



DEVELOPMENT OF A ECO-FRIENDLY BIN FOR DRY AND WET WASTE SEGREGATION USING MOISTURE SENSORS

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ABSTRACT

Proper waste segregation is crucial for sustainable waste management, yet traditional methods often suffer from human error and inefficiencies. This study develops an eco-friendly waste classification bin equipped with moisture sensors to automate the segregation process, reducing reliance on manual sorting. The system distinguishes between wet and dry waste based on moisture levels, ensuring more efficient waste handling and disposal. The results show that the bin accurately classifies dry waste (100%) but has a slightly lower accuracy for wet waste (86.67%), with occasional misclassification of materials with moderate moisture content, such as damp paper or semi-dry fruit peels. The moisture sensor performs at 80% accuracy, effectively detecting wet and dry waste but encountering challenges when processing items with varying moisture levels. Additionally, the button-press mechanism introduces slight delays, as users take longer to classify wet waste compared to dry waste. By ensuring proper separation of wet and dry waste, the system enhances waste processing efficiency, supports recycling efforts, and minimizes contamination. This study highlights the

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potential of sensor-based waste bins in promoting sustainable waste management and reducing environmental impact.

Keywords: *Waste segregation, moisture sensors, smart waste bin, sustainable waste management, automated classification*



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