



**TRASHFORMER: INNOVATING WASTE MANAGEMENT THROUGH
AUTOMATED WASTE SEGREGATION AND RECYCLING
TECHNOLOGY ON CAPSTONE RESEARCH**

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ABSTRACT

This study presents TrashFormer, an automated waste segregation and recycling system designed to improve waste management efficiency. In response to increasing environmental concerns and improper disposal practices, the project offers a technological solution that automates waste classification and disposal, minimizing the need for manual sorting. By encouraging responsible waste practices, TrashFormer aims to promote environmental awareness and sustainability.

A quantitative research method was employed, using surveys and experimental trials to evaluate the system's performance. The study involved STEM students from three Grade 11 sections at Tuy Senior High School, who assessed the system's accuracy, usability, and potential impact. Results revealed that TrashFormer effectively performs automated segregation, offering convenience and enhancing waste handling efficiency. Despite its promising outcomes, the system faced challenges in accuracy, power usage, and operational reliability.

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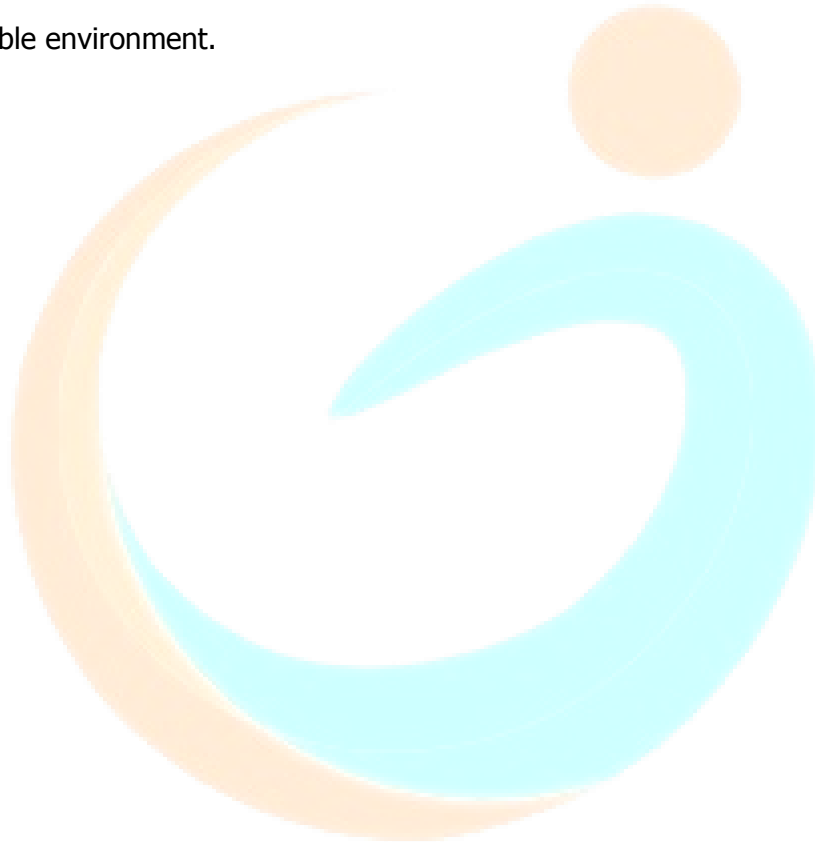
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The researchers conclude that TrashFormer has strong potential for implementation in schools, homes, and public spaces. To enhance its reliability and scalability, future improvements may include AI-based waste recognition, optimized power consumption, and better accessibility features. By addressing existing limitations, TrashFormer can evolve into a more robust and practical solution for modern waste management, contributing to a cleaner, more sustainable environment.



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