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Smart Waste Detection and Segregation Using Deep Learning

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Abstract: *Object identification is an essential area in computer vision, with a variety of uses, especially in recognizing and classifying objects in photos and videos. One major difficulty in modern city environments is the efficient handling of trash, particularly in the accurate separation of garbage into appropriate categories. Inadequate waste disposal causes environmental harm and disrupts recycling processes. To tackle this problem, we suggest employing the YOLOv8 model, a cutting-edge deep learning framework celebrated for its rapid processing speeds and exceptional precision in object detection. Our system is designed to pinpoint and categorize different types of waste, including paper, metals, plastics, and more, through real-time image analysis methods. The advanced object detection capabilities of YOLOv8 make it especially suitable for implementation in intelligent garbage detection systems. Using this paradigm will help us to simplify the procedure of waste sorting, improving efficiency while minimizing reliance on human interaction. The system's direct response helps to Ultimately increasing recycling rates, policymakers and waste management companies in making more educated judgments and encouraging more environmentally friendly urban surroundings. To sum up, including YOLOv8 into waste management can help to Change the way cities handle and process waste in a green way.*

Keywords: Waste categorization, visual computing, advanced neural networks

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