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AI Based Waste Segregation System

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Abstract: *This project presents an AI-based waste segregation system that classifies waste into wet and dry categories using a Convolutional Neural Network (CNN) model. A camera captures images of the waste item, and the CNN model processes these images to identify the category based on learned visual features. An ultrasonic sensor detects the presence of waste and triggers the classification process. Based on the CNN output, a command is sent to an Arduino microcontroller, which rotates the bin mechanism toward the wet or dry section. The system removes the need for manual sorting, improves hygiene, and provides an affordable automation solution for homes, offices, and public waste bins. The design remains simple, relying only on a camera, CNN model, ultrasonic sensor, and rotating mechanism without using robotic arms or additional sensors.*

Keywords: *Convolutional Neural Network*

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