

## **ABSTRACT**

Poor waste management is caused by improper waste segregation that damages the environment and causes unhealthy conditions [1]. According to statistical data from the Ministry of Environment's National Waste Management Information System (SIPSN) in 2021, the proportion of household waste in Bandung City is 60% (955.53 tons), compared to other waste that can be recycled. only 48,936.23 tons per year. . This shows how poor waste management in Bandung City is and sorting must start from the smallest scale, namely in the household. This research focuses on the use of YOLOv8-based Raspberry Pi 4 to create an object detection system that can assist in home-scale waste sorting according to the type of waste. Several functions have been proposed in this system, namely waste classification, waste distribution and waste capacity information. Waste classification is performed by YOLOv8s and provides four classification results namely organic, inorganic, plastic and mixed waste with 88% accuracy. Waste and capacity data distribution is performed using a finite state machine (FSM) integrated into the hardware and actuators to perform automated tasks from the initial workflow to the final capacity data workflow.

**Keywords:** Smart trash can, YOLOv8, Automation waste sorting, Object detection