

ABSTRACT

As the volume of plastic waste in Indonesia increases, the need for an efficient waste management system becomes more urgent. One solution is to design a color-based plastic waste sorting system using automated technology. This research aims to design and test a plastic bottle sorting tool based on color recognition using the TCS3200 sensor to detect plastic bottle colors (red, green, blue, and white). The system is built using an Arduino UNO microcontroller, servo motors, and a DC motor as the main actuators. The test results show that the device can automatically sort plastic bottles with an accuracy of 91.67% out of 60 test cases. With the integration of appropriate components and algorithms, the system has proven to be stable and accurate in the sorting process, and it holds potential to support efficient plastic waste management and recycling efforts.

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Keywords: *plastic waste sorting, TCS3200 sensor, Arduino UNO, servo motor, recycling.*