

ABSTRACT

Indonesia is facing an environmental problem with waste. Approximately 34.29% (7.2 million tonnes) of the total national waste production is unmanaged. The 'collect-transport-dispose' approach is both ineffective and expensive. To address this issue, waste segregation should be implemented starting at the source. As an innovative solution, this research develops a sensor-based automatic waste sorting system to improve the efficiency of waste sorting. This research develops an Arduino uno based automatic waste sorting sensor system (PEPSAO) to improve the efficiency of waste sorting. The system uses a combination of Light Dependent Resistor (LDR) sensors, inductive proximity sensors and ultrasonic sensors to detect and classify organic, inorganic and metallic waste. Results show promising success rates: 60% for organic waste, 70% for inorganic waste and 95% for metal waste. These results demonstrate the potential of PEPSAO to improve the efficiency and effectiveness of waste segregation. The implementation of PEPSAO is expected to help reduce environmental contamination and pollution, and improve the sustainability and reliability of waste management systems. This research is expected to make a positive contribution to waste management in Indonesia. Sensor optimisation, AI/machine learning integration and multi-stakeholder collaboration are needed to ensure the adoption and sustainability of this system.

Keywords: *Waste Sorting, Arduino Uno, Sensor, PEPSAO, Light Dependent Resistor Sensor, Inductive Proximity Sensor, Ultrasonic Sensor.*