***Smart Trash Tracking*** **Berbasis ANN Untuk Optimalisasi Penjadwalan Pengambilan Sampah Di Perumahan Graha Bumi Pertiwi**

*(Optimization of Smart Trash Using ANN to Measure Waste Flow and Separate Organic and Inorganic Waste in Residential Areas)*

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## *ABSTRACT*

Smart trash bins aim to maximize the efficiency of real-time waste flow monitoring and provide recommendations for the most effective waste collection scheduling. Additionally, the smart trash bins support the automatic sorting of waste with an intelligent mechanical system embedded within the system. This system is directly integrated through a website with the ESP32 microcontroller. A combined method of Artificial Neural Network (ANN) and time series is applied for predicting the ideal waste collection scheduling. The K-means clustering method is used for classifying waste volume, and rulebase is applied to maximize the performance of structured waste sorting. The system was tested with data collected over 100 days from a sample house in Graha Bumi Pertiwi, Sidoarjo. The test results show that the system can function well and provide results in line with the expected functionality, positively impacting waste management to be more efficient and environmentally friendly.

**Kata Kunci :** Smart Trash, Artificial Neural Network, Internet of Things, ESP32, Intelligent System.