

## ABSTRACT

Garbage collection is one of the most complex logistical problems to be faced in any city. One form of waste collection services provided by local government waste collector car is used to haul garbage from TPS to TPA. Sometimes waste transportation at TPS implemented vans are very slow, resulting in a buildup of waste that exceeds the capacity of TPS. Because the overflow of waste that enters the body and make the area look very rundown.

To overcome these problems, built a system to help determine the state of fullness of the garbage. The system was built utilizing ultrasonic ability to obtain elevation data garbage and also utilize radio network to communicate data. The system is installed in a polling station named Smart Trash System (STS). Data fullness trash monitoring results will be sent to a system called the Local Base Station (LBS) to be sent to the server.

STS can identify the level of fullness of garbage from the TPS. Accuracy STS success rate for identifying the fullness of the waste based on trial-scale implementation of TPS 1: 2 of the size of the original TPS 10m<sup>3</sup> with an accuracy rate of 94% in accordance with the conditions of the fullness level of trash. STS can be integrated with LBS system using radio communication with the concept of Wireless Sensor Network (WSN) with a star topology with a delivery time of 41 ms. The ideal distance in data transmission using radio communication nRF24L01 + namely a maximum of 300 meters. Data fullness level waste that has been identified STS can be forwarded by LBS to be sent to the server by sending parameters and device id high free space on the TPS-time delivery to the server 0.3 minutes.

**Keywords:** Waste Monitoring System, Ultrasonic Sensors, GSM, Smart Trash System (STS), *Local Base Station (LBS)* and *Wireless Sensor Network (WSN)*.