UNIVERSITI TEKNOLOGI MARA

DEVELOPMENT OF AUTOMATIC WASTE SEGREGATOR WITH MONITORING SYSTEM

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ABSTRACT

In the present scenario, there is a direct correlation between the addition of the population and the increment of waste. Automatic Waste Segregator and Monitoring System" is an automated dustbin which can be used by all level of society. This paper proposes an Automatic Waste Segregator and Monitoring System which is designed to sort the wet waste, paper, plastic and aluminium material into each bin respectively. The best waste economic value is realized when it is separated. The main objective of this project is to automatically segregate the waste based on its material and monitor daily waste disposal rates and apply proper maintenance of the dustbin. Besides that, this project aims to promote 3R (reuse, recycle, reduced) concept among citizens. Additionally, and prototype development allows janitors to monitor the level of garbage in the dustbin by means of sensors inside the dustbin. When the bin reaches its threshold limit, the janitors are notified via Telegram message by using LoLin NodeMCU V3 ESP8266 12E module. The IoT platform used in this project is Cayenne IoT platform that enables the user to monitor the status of each dustbins and download the data to perform further analysis. This project has been tested at the Faculty of Electrical Engineering UiTM Shah Alam. Five samples of plastic bottles, aluminium can, paper and wet waste were used in an experiment that is repeated five times. Upon completion, the automatic waste segregator was able to segregate all the samples correctly.

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INTRODUCTION

1.1 BACKGROUND OF STUDY

The high number of students and staffs at Faculty of Electrical Engineering UiTM, leads to large amount of waste generation especially during peak hours for example lunch and breakfast. This project focuses on improving waste collection effectively while promoting 3R concept among UiTM community. It is a great challenge to ensure orderly waste management around the faculty due to the lack of workforce and inefficient maintenance systems. Sometimes, the garbage overflow due to lack of waste management system and the janitors do not collect garbage at the right time. Overflow of rubbish will cause clutter when the wind blows. Furthermore, most of the students do not practice recycling and are less aware of the importance of segregating garbage based on its type.

According to the World Bank report, by 2025, around 2.2 billion of waste are expected will be generated. Then, approximately 1.3 billion tons of municipal waste are generated per year [1]. Currently, waste segregation is done by using different bin colors for each type of material such as glass, paper, plastic and aluminium. If waste is segregated by category, it has high potential for reuse and recycle. Perbadanan