Development of IoT Based Smart Sorting Recycle Bin Using Raspberry Pi3 B+

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Abstract Nowadays, the expansion in population and settlement pollutes the environment due to the community's laid-back attitude; this problem raises the authorities' management expenses and causes environmental concerns. As a result, the goal of this initial work is to create an automated system for sorting the recycle bin with both local and distant monitoring indicators using the Raspberry Pi3 B+. The locally accessible resources were used to design and fabricate the IoT-based smart recycle container. The system was driven by a 5 V/2 A rechargeable battery that powered the recycle container. It was also made to distinguish between three different types of garbage: paper, metal, and plastic. As a result, the system was able to recognise the different types of materials that were thrown into the recycle bin. Simultaneously, the user can use their smartphone to check the status of the recycle bin. In conclusion, the development of this IoT-based smart recycle bin can help to ensure that the surrounding area is clean and environmentally friendly.

Keywords Recycle bin · IoT · Raspberry Pi3 B+

1 Introduction

Solid waste is a developing issue as a result of the rapid growth of suburbanization and economic expansion seen in the total amount of municipal waste. Due to a lack of a comprehensive and well-organized solid-waste management program, many human activities, both industrial and residential, have a negative impact on the environment and pose health risks [1]. Landfills, burning, and environmental dumping have been the main methods of concealing solid waste [2]. In fact, in Ref. [3], there was around

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