

Optimum Waste Collection System with Smart Mobile Application

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Irregular disposal and collection of wastage is a huge problem in cities. Due to rapid population growth and manipulation of urbanization, huge garbage emissions and environmental pollution may occur. It is effective and important to manage waste collection to get rid of the issues related to inefficient process of collections, irregular removal of garbage trash bins, overflowing bins and to prevent health issues. Another major challenge for daily life is the current pandemic situation that we have been facing with COVID-19. Therefore, during this pandemic, it is very important to carry out the garbage disposal and collection process in a well-safe and efficient manner at the right time, to minimize contact with outsiders and it will be immensely useful in preventing and controlling the spread of this epidemic. Without proper waste disposal, a home is vulnerable to the spread of disease. This research work plans to develop an optimum waste collection application for truck drivers and citizens. The system will facilitate truck drivers to find the shortest path for the only fullest bin by using route optimization. Arduino and ultrasonic sensors have been used to create the smart bins by facilitating relevant sensor data and Google map API for tracking the location in the proposed application. Mainly Firebase for backend resources to the device, including data storage, user authentication, static hosting has been used, while Flutter has been used as the mobile application development platform. As per the studies and analysis of the related technologies and platforms, the Flutter is used to develop cross-platform applications for Android, iOS, Linux, Mac, Windows operating systems. The proposed work provides an accurate, convenient, user-friendly Android mobile application as the final research output.

Keywords: *route optimization, urbanization, firebase, Google map API*