

Smart Dustbin with a Web Based Point Reward System for Waste Management

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Sri Lanka is facing urbanization with the impact of globalization, which has results in an increase of needs and wants of people and increasing living standards of people tremendously. This economic and social advancement has resulted in a large amount of waste production in the urban areas of the country. The Government is still struggling to find a mechanism to manage this vast waste amount. The main issue government faces when managing waste is collecting pre-categorized garbage at collection points. The main reason behind this issue is lack of motivation of people to put garbage in to correct dustbins. The lack of mechanism to make aware the garbage collection center when the dustbins are full is another problem in current waste collection process. The researchers propose an Arduino based smart dustbin to overcome the above mentioned issues. The smart dustbin is integrated with a RFID reader which can identify its users and opens its lid only for the authorized users. A set of smart dustbins are assigned to certain number of households depending on their waste amount. When the user dump garbage in to the dustbin, the dustbin will measure the weight of the garbage using a load-cell and the user will be rewarded with eco points if a user dumps according to the relevant categories of garbage. Users can convert these eco points to financially benefited offers. The user can view their point balance and their details by accessing their profile through a web site. When the dustbin reaches its overflow level it is identified using an ultrasonic sensor and using a GSM module the relevant authorities are notified with a text message that the dustbin is full and about to overflow. These notifications help authorities to make the waste collection process smooth and effective. Eco points collection mechanism motivate people to dispose garbage in to categories and the smart dustbin make the waste collection process more effective and smooth. If the government involve in replacing conventional dustbin with this smart dustbin, this system will be an environmentally acceptable and economically feasible solution for the disposal of solid waste in Sri Lanka.

Keywords: Smart Dustbin, Waste Management, Arduino, Point Reward, Web System