

An Efficient & Smart Waste Management System

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Abstract:

Waste Management is the most challenging issue of modern society. Fast growth in population, increased factory presence and modern lifestyle have contributed towards the large amount of waste. An efficient waste management system mainly revolves around waste segregation and processing. Segregation makes it effective to recycle and reuse the waste conventionally. This paper proposes a novel and efficient automated waste segregator and management system at household level. The prototype of the proposed system is developed using an Arduino microcontroller and Raspberry Pi, website to govern the entire process with comfort and simplicity. The most important part of the proposed system is the sensory unit which helps in segregating different types of waste. The module contains sensors for detecting moisture, metal so as to categorize different categories of waste. The major units of the segregating module consist of four noticeable components such as metal sensor, a moisture sensor, segregation bins and the camera, while the waste management is performed at the software system. Identification of waste is done by respective sensors. The microcontroller controls all the activity of the DC motor accordingly. The dry waste collected will be segregated through image analysis by the images captured using the camera. This quantity and other metadata of the collected waste is monitored via a website.

A New Smart Waste Managing System

Author: Hassan Jabar, Rosilah Hassan, Abdulrahman Sameer Sadeq.

Publisher: IEEE

Year: 2020

Abstract:

The continuous growth of the generated volumes of waste and garbage grasps the attention of researchers and experts in various fields. The collection and management process of this massive and distributed amount of waste presents a challenge, as it needs to be collected and processed as fast as possible. The accumulated amounts of waste can be a fundamental source for emitting poisonous gases and producing toxic material to the soil which leads to deadly consequences for the environment and causes serious health issues for humans so it is critical to collect it as fast as possible. To handle this scenario, this study proposed an online waste management system to monitor the status of generated trash all-around smart cities then distribute and schedule available garbage trucks accordingly. The proposed solution provides a web-based system and a mobile application to manage the organization of these wastes and facilitate the garbage collection by the drivers. The proposed solution provides an 80% faster convergence system in comparison with traditional garbage collecting method. The mobile application makes the waste pick up easier for the drivers and enable them

to use better roads. Therefore, garbage collection costs and efforts have been saved, while less consumed energy is required.

Smart Waste Management System for Crowded area : Makkah and Holy Sites as a Model

Author: Rasha Elhassan, Mahmoud Ali Ahmed, Randa AbdAlhalem.

Publisher: IEEE

Year: 2019

Abstract:

In implementing the smart cities the great challenge is how to manage waste with low cost and high performance. Waste has a negative impact in the society quality which smart city aims to improve it. Makkah and holy sites [Mona, Arafat, and Muzdalifah] are very congested areas where waste management is a big challenge. Three factors make it a big challenge, behind its natural, small area, short period of time and the increasing of the Pilgrimages' member. The process of collected wastes, separated it, and transports the containers daily and quickly to avoid any prospect of a spread of diseases is a complex process. This paper aims to study the concept of the waste management and proposed smart systems for waste management system with recycling .The proposed system will use the sensors technique insite the container, as a lower level, to separate the waste into 4 categories [food, plastics, papers, and metal] and use actuator at a top level to inform the management system to collect the container. The proposed system will save time, money and efforts compared to the recent process of the waste management system and improve the society quality as all.

Implementation of an smart waste management system using IoT

Author: P Haribabu; Sankit R Kassa; J Nagaraju; R Karthik; N Shirisha; M Anila

Publisher: IEEE

Year: 2017

Abstract:

Waste collection services, today, are exhausted and unable to bear the burden of rising cities. It is one of the biggest ongoing challenges, being faced by developing economies, where a large variety of goods ranging from cars to metal and hardware end up in inadequately managed and uncontrolled dumpsites, spreading diseases and increasing pollution. However, most of these plans have been able to manage waste once it has already been created. We, therefore, propose a system through a mobile application associated with a Smart Trash Bin. The main aim of this application is to reduce human resources and efforts along with the enhancements of a smart city vision. At regular intervals dustbin will be squashed. Once these smart bins are implemented on a large scale, by replacing our traditional bins present today, waste can be managed efficiently as it avoids unnecessary lumping of wastes on roadside. Breeding of insects and mosquitoes can create nuisance around promoting unclean environment. This may even cause dreadful diseases.create nuisance around promoting unclean environment. This may even cause dreadful diseases.

IOT based smart garbage alert system using Arduino UNO

Author: N. Sathish Kumar; B. Vuayalakshmi; R. Jenifer Prarthana; A. Shankar

Publisher: IEEE

Year: 2016

Abstract:

Waste management is one of the primary problem that the world faces irrespective of the case of developed or developing country. The key issue in the waste management is that the garbage bin at public places gets overflowed well in advance before the commencement of the next cleaning process. It in turn leads to various hazards such as bad odor & ugliness to that place which may be the root cause for spread of various diseases. To avoid all such hazardous scenario and maintain public cleanliness and health this work is mounted on a smart garbage system. The main theme of the work is to develop a smart intelligent garbage alert system for a proper garbage management. This paper proposes a smart alert system for garbage clearance by giving an alert signal to the municipal web server for instant cleaning of dustbin with proper verification based on level of garbage filling. This process is aided by the ultrasonic sensor which is interfaced with Arduino UNO to check the level of garbage filled in the dustbin and sends the alert to the municipal web server once if garbage is filled. After cleaning the dustbin, the driver confirms the task of emptying the garbage with the aid of RFID Tag. RFID is a computing technology that is used for verification process and in addition, it also enhances the smart garbage alert system by providing automatic identification of garbage filled in the dustbin and sends the status of clean-up to the server affirming that the work is done. The whole process is upheld by an embedded module integrated with RF ID and IOT Facilitation. The real time status of how waste collection is being done could be monitored and followed up by the municipality authority with the aid of this system. In addition to this the necessary remedial / alternate measures could be adapted. An Android application is developed and linked to a web server to intimate the alerts from the microcontroller to the urban office and to perform the remote monitoring of the cleaning process, done by the workers, thereby reducing the manual process of monitoring and verification. The notifications are sent to the Android application using Wi-Fi module.