SMART WASTE MANGEMENT FOR METROPOLITAN CITIES

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LITERATURE SURVEY

INTRODUCTION :

In this paper, a system is introduced to manage waste in big cities effectively without having to monitor the parts 24×7 manually. Here the problem of unorganized and non-systematic waste collection is solved by designing an embedded IoT system that will monitor each dumpster individually for the amount of waste deposited. Here an automated system is provided for segregating wet and dry waste. A mechanical setup can be used for separating the wet and dry waste into separate containers here sensors can be used for separating wet and dry. For detecting the presence of any waste wet or dry can be detected using an IR sensor in the next step for detecting wet waste a moister sensor can be used. In this process, if only IR is detected motor will rotate in the direction of the dry waste container if both the sensor detects the waste then it will go to the wet container. Both these containers are embedded with ultrasonic sensors at the top, the ultrasonic sensor is used for measuring distance. This makes it possible to measure the amount of waste in the containers if one of the containers is full then an alert message will be sent to the corresponding person.

S No	TITLE	AUTHORS	ABSTRACT	DRAWBACKS
1	A Smart IoT System for Waste Management.	• Whai-En Chen • Yu-Huei Wang	The waste management is one of the challenges in the smart cities. The waste containers are typically placed in the public areas. Without well management, the waste containers may be overflowed or give off unpleasant smell, which affect the public health. This paper proposes a smart waste management system, by using the IoT (Internet of Things) technology.	System requires more number of waste bins for separate waste collection as per population in the city. This results into high initial cost due to expensive smart dustbins compare to other methods.
2	Design a Smart Waste Bin for Smart Waste Management	• Aksan Surya Wijaya • Zahir Zainuddin	In this paper, we presented the smart waste-bin that can managed the waste in a smart city project. The system consist of sensors to measure the weight of waste and the level of waste inside the bin. The system also adapt with network environment, to manage all information from waste management. As the result we proposed a prototype of smart waste-bin that suitable for many kind of conventional waste-bin.	Sensor nodes used in the dustbins have limited memory size.
3	Smart Waste Collection Monitoring and Alert System via IoT	• Mohamad Azeer • Zainal Hisham	The uncollected waste material when the waste bin is full is a common problem nowadays. Thus, an efficient waste management for the waste material is essential in ensuring a clean and green	There is revenue in recycling. Cities that do not implement proper removal and recycling of wastes miss on this. They also miss out on the resources that can be reused and on the employment

			surrounding environment. This paper presents an Internet of Things (IoT) based Smart Waste Collection Monitoring and Alert System to monitor the waste material at the selected site of garbage collection area. The system is implemented using an ultrasonic sensor which is connected to Arduino UNO as to monitor waste bin garbage level. In this system, waste bin depth level will be sent via Arduino Ethernet Shield with an Internet connection to the Ubidots IoT Cloud. The Ubidots store the collected waste bin level data into IoT database and display the waste bin depth level on online dashboard for real-time visualization. The Ubidots Event manager invoke a notification alert to garbage collector mobile phone via a SMS when the waste bin is nearly filled for immediate waste collection. Therefore, the waste collection became more effective and systematic.	opportunities that a recycling centre brings.
4	IoT assisted Waste Collection and Management system using QR codes	• Aparna H • Bhumijaa B • Thenmozhi K	With a population of around 136 crores, India is one of the largest developing nations of the world. It is also one of the largest producers of solid waste, generating around	Wireless technologies used in the system such as zigbee and wifi have shorter range and lower data speed. In RFID based systems,

			150000 tons per day, according to the Ministry of Housing and Urban affairs. The main problem lies with the management of the generated waste efficiently. Although the government has taken up several measures to ensure proper waste management techniques, most of them have not given the desired result. IoT and smart sensors can be used to manage waste efficiently. The proposed method makes use of Quick Response (QR) codes to track and monitor the waste collection procedure. The QR codes are designed to be scanned via an android application, which verifies, stores data and alerts the user. QR codes are used as they are safe and can be printed on any surface and can be scanned easily using smartphones.	RFID tags are affected by surrounding metal objects.
5	Implementation of an Smart Waste Management system using IoT	• P Haribabu • Sankit R Kassa • J Nagaraju	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	It reduces man power requirements which results into increase in unemployments for unskilled people.

			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.	
6	Architecture for Waste Management in Indian Smart Cities (AWMINS)	• Arunima Sharma • Ramesh Babu Battula	Smart cities require smart and effective solutions to tackle the problems faced by them. Traffic, Surveillance, Security, Medical, Transportation and other basic services need to be managed by the city administrators efficiently. Waste Management is one of	The trainining has to be provided to the people involved in the smart waste management system.

			issue faced by almost all countries around the globe. The Waste generation is a continuous process and is harming biodiversity and ecology is many ways. Many countries are trying to mitigate the harm by developing strategies using technology. Internet of Things (IoT) is one of the prominent solutions that can effectively and efficiently help in dealing with waste management. Indias waste management system will become more effective by incorporation of IoT in waste management architecture. In this paper, Architecture for Waste Management in Indian Smart Cities (AWMINS) has been proposed. This uses smart bins for garbage classification and collection. The smart bins are fitted with sensors and other necessary hardware equipment. These are then integrated with the IoT environment for efficient waste management thereby reducing the wastage of the citys resources.	
7	Smart Waste Management using Internet of Things: A Survey	• Pallavi K N • Dr. Ravi Kumar • Chaithra B M	At present solid waste management is a major concern in the metropolitan cities of the developing and developed countries. As	Misunderstanding of the operations of smart sensors: Because this is a new and emerging

			the population is growing, the garbage is also increasing. This huge unmanaged accumulation of garbage is polluting the environment, spoiling the beauty of the area and also leading to the health hazard. In this era of Internet, IOT (Internet of Things) can be used effectively to manage this solid waste. In this paper, we have discussed the definition of Internet of Things and its elements, testing and prototyping tool cooja simulator and finally the study of various literatures available on smart waste management system using IOT.	technology, there is a general misunderstanding of its operations. A lot of people believe that it is a complicated and expensive method to dispose of waste, which is not. They are actually very affordable, easy to use, durable and save costs.
8	Intelligent Waste management for Smart Cities	• Nimisha Mital • Prerna Sharma	With accelerated technology development, much focus has shifted towards a green economy, concentrating on sustainability, recycling, and reuse. A smart waste collection is the center of a smart waste management system and an intelligent bin is a pivot for any step towards the development of an Integrated Platform for Waste Management. This paper presents an IoT-based smart dustbin that is capable	Setting up the smart sensor: While smart sensors are easy to use, you cannot just buy one and install it on your waste bin. There are other steps that need to be taken after purchase to ensure its effectiveness like ensuring there is a communication technology in place for your sensor. This is responsible for collecting information about your garbage bin and sending alerts to appropriate ports for attention.

			of integrating with contemporary society as well as catering to future smart cities. The proposed implementation presents an end-to-end scalable solution for disposal as well as collection and transfer. Beyond just bin level detection, the smart bin can also detect odor and flames inside the bin, ensure bin safety, consider the weight capacity of the container, and provide a non-touch interface for disposal to ensure hygiene. The proposed system resolves the nuisances of spilling garbage bins, ill-maintained bins, untimely and unorganized collection. Insightful data is collected to facilitate future ventures. The paper also attempts to highlight some of the prevailing hurdles in devising and achieving sustainable development plans.	