LITERATURE SURVEY

SMART WASTE MANAGEMENT SYSTEM FOR METROPOLITAN CITIES

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SMART WASTE MANAGEMENT USING IOT:

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At present solid waste management is a major concern in the metropolitan cities of the developing and developed countries. As the population is growing, 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 simulator and finally the study of various literatures available on smart waste management system using IOT.

Cloud-based Smart Waste Management for Smart Cities :

Mohammad Aazam, Marc St-Hilaire, Chung-Horng Lung, Ioannis Lambadaris

With the increasing population, urbanization, migration issues, and change in lifestyle, municipal solid waste generation levels are increasing significantly. Hence, waste management becomes a challenge faced not only by the developing nations, but also the developed and advanced countries. The overall waste management involves three main types of entities: 1) users who generate waste, 2) waste collectors/city admin., 3) stakeholders. Waste management directly effects the lifestyle, healthcare, environment, recycling and disposal, and several other industries. Current waste management trends

are not sophisticated enough to achieve a robust and efficient waste management mechanism. It is very important to have a smart way of managing waste, so that not only the waste status is notified in-time when to be collected, but also, all the stakeholders are made aware in timely fashion that what type of waste in what quantity is coming up at what particular time. This will not only help in attracting and identifying stakeholders, but also aids in creating more effective ways of recycling and minimizing waste also making the overall waste management more efficient and environment friendly. Keeping all this in mind, we propose a cloud-based smart waste management mechanism in which the waste bins are equipped with sensors, capable of notifying their waste level status and upload the status to the cloud. The stakeholders are able to access the desired data from the cloud. Moreover, for city administration and waste management, it will be possible to do route optimization and select path for waste collection according to the statuses of waste bins in a metropolis, helping in fuel and time efficiency.

Smart Prediction and Monitoring of Waste Disposal System Using IoT and Cloud for IoT Based Smart Cities

Jacob John, Mariam Sunil Varkey, Riya Sanjay Podder.

One of the prominent applications of Internet of Things (IoT) in this digital era is the development of smart cities. In IoT based smart cities, the smart objects (devices) are connected with each other via internet as a backbone. The sensed data by the smart objects are transmitted to the sink for further processing using multi hop communication. The smart cities use the analyzed data to improve their infrastructure, public utilities and they enhance their services by using the IoT technology for the betterment of livelihood of the common people. For IoT based smart cities, waste collection is a prominent issue for municipalities that aim to achieve a clean environment. With a boom in population in urban areas, an increasing amount of waste is generated. A major issue of waste management system is the poor process used in waste collection and segregation. Public bins begin to overflow for a long period before the process of cleaning starts, which is resulting in an accumulation of bacteria causing bad odours and spreading of diseases. In order to overcome this issue, in this paper an IoT based smart predication and monitoring of waste disposal system is proposed which utilizes off-the-shelf components that can be mounted to a bin of any size and measure fill levels. An Arduino microcontroller is employed in the proposed model to do the interface

interface the infrared (IR), ultraviolet (UV), weight sensors, and a Global Positioning System (GPS) module is used to monitor the status of bins at predetermined intervals. The proposed system transmits the data using the cluster network to the master module which is connected to the backend via Wi-Fi. As data is collected, an intelligent neural network algorithm namely Long Short-Term Memory (LSTM) is used which will intelligently learn and predict the upcoming wastage from waste generation patterns. Moreover, the proposed system uses Firebase Cloud Messaging to notify the appropriate people when the bins were full and needed to be emptied. The Firebase Cloud Messaging (FCM) JavaScript Application Programming Interface (API) is used to send notification messages in web apps in browsers that provide service work support. Hence, the proposed system is useful to the society by providing facilities to the governments for enforcing stricter regulations for waste disposal.