

LITERATURE SURVEY

Smart Waste Management System For Metropolitan Cities

TEAM MEMBERS:

Hari Vignesh K [310619205033]

Harish Kumar G [310619205036]

Aakash S.K [310619205001]

Ajay R [310619205006]

Chadurvedhi [310619205501]

1) Smart City Waste Management System Using Internet of Things and Cloud Computing:

Prof. Aderemi A. Atayero, Segun I. Popoola, Rotimi Williams

Indiscriminate disposal of solid waste is a major issue in urban centers of most developing countries and it poses a serious threat to healthy living of the citizens. Access to reliable data on the state of solid waste at different locations within the city will help both the local authorities and the citizens to effectively manage the menace. In this paper, an intelligent solid waste monitoring system is developed using Internet of Things (IoT) and cloud computing technologies. The fill level of solid waste in each of the containers, which are strategically situated across the communities, is detected using ultrasonic sensors. A Wireless Fidelity (Wi-Fi) communication link is used to transmit the sensor data to an IoT cloud platform known as ThingSpeak. Depending on the fill level, the system sends appropriate notification message (in form of tweet) to alert relevant authorities and

concerned citizen(s) for necessary action. Also, the fill level is monitored on ThingSpeak in real-time. The system performance shows that the proposed solution may be found useful for efficient waste management in smart and connected communities

2) Smart waste management using Internet of Things:

K N Fallavi; V Ravi Kumar; B M Chaithra

At present solid waste management is a major concern in the metropolitan cities of the developing and developed countries. As 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.

3) IOT Enabled Smart Waste Bin with Real Time Monitoring for efficient waste management in Metropolitan Cities:

Manju Mohan, Kuppan Chetty Ramanathan

Waste bins are part of our lives for decades and mostly its condition are overflowing due to improper waste dumping, collection and management, which leads in foul smell and unhygienic condition, thus inherently results in environment pollution. Therefore, in this paper, design of a Waste Bin with real time monitoring is presented and a smart waste management system is proposed using the recent technical advancements of automation and Internet of Things

(IoT). The capacitance sensor in the bin continuously monitors the level of the bin in real time and communicates to the central cloud where the bins are connected. Ultrasonic sensor is used to open and close the lid of the bin whenever the persons are nearby the bin. Such smart bins are connected to the cloud, where the bin status are communicated, recorded and monitored by the local bodies through an android app or a centralized server. Thus the designed smart bin and proposed waste management system have a better level of smartness compared to existing ones in metropolitan cities in a centralized manner.

4) Waste Management Improvement in Cities using IoT:

Shivam Jagtap, Raviraj Bocharé, Ashwinkumar Patil

Garbage collection is one of the most critical problems faced by Municipal Corporation. While implementing the waste management in cities the biggest challenge is the management of waste in a cost optimal way with high performance. The current process of collecting the waste, separating it and transporting the containers everyday which is a complicated process. This paper deals with the concept of waste management and the smart system for waste management with higher benefits to the society. The proposed system for waste management will use various sensors for sensing the type of waste and separate the waste in different categories and an actuator to inform the management to collect the waste container. This system will save money and time compared to the already available process of waste management and also improves the society cleanliness.

5) 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 odors 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 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. Additional features such as automated calibration of bin height, a dynamic web data dashboard as well as

collation of data into a distributed real-time firebase database are also provided in the proposed system.