

IOT BASED AUTOMATIC WASTE MANAGEMENT SYSTEM

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KEYWORDS:

Smart Trash Bin, Local Base Station ,Vehicle System, Smart Monitoring and controlling Hut, Login Page, Data Control Panel.

INTRODUCTION:

One of the main concerns with our environment has been solid waste management which in addition to disturbing the balance of the environment also has adverse effects on the health of the society. The detection, monitoring and management of waste is one of the primary problems of the present era.

The process of making the things automatic is being exploited in almost all the major fields of life. Solid waste which is one of the sources and causes of environmental pollution has been defined under Resource Conservation and Recovery Act as any solid, semi-solid liquid or contained gaseous materials discarded from industrial, commercial, mining or agricultural operations and from community activities .

The type of wastes which constitute environmental pollution and which this work emphasizes on is domestic refuse consisting of degradable food wastes, leaves, dead animals and non-degradable ones such as plastics, bottles, nylon, medical and hospital wastes, generated in households, hospitals, industries and commercial centers . In other words, solid wastes may be defined as the organic and inorganic waste materials produced by various activities of the society and which have lost their value to the first user . To overcome this problem a new approach, Automatic waste management system is proposed.

OBJECTIVES:

1. The proposed system would be able to automate the solid waste monitoring process and management of the overall collection process using IOT (Internet Of Things).
2. The Proposed system consist of four main subsystems namely Smart Trash System(STS), Local Base Station(LBS), Vehicle System(VS) and Smart Monitoring and Controlling Hut(SMCH).

3. In the proposed system, whenever the waste bin gets filled this is acknowledged by placing zigbee at the waste bin, which transmits it to the receiver at the desired place in the area or spot.
4. In the proposed system, the received signal indicates the waste bin status at the monitoring and controlling system.

METHODOLOGY:

In this approach, the overall system of waste detection is divided into four subsystems viz Smart Trash System, Vehicle System, Local Base Station and Smart Monitoring and controlling Hut as shown in fig1.

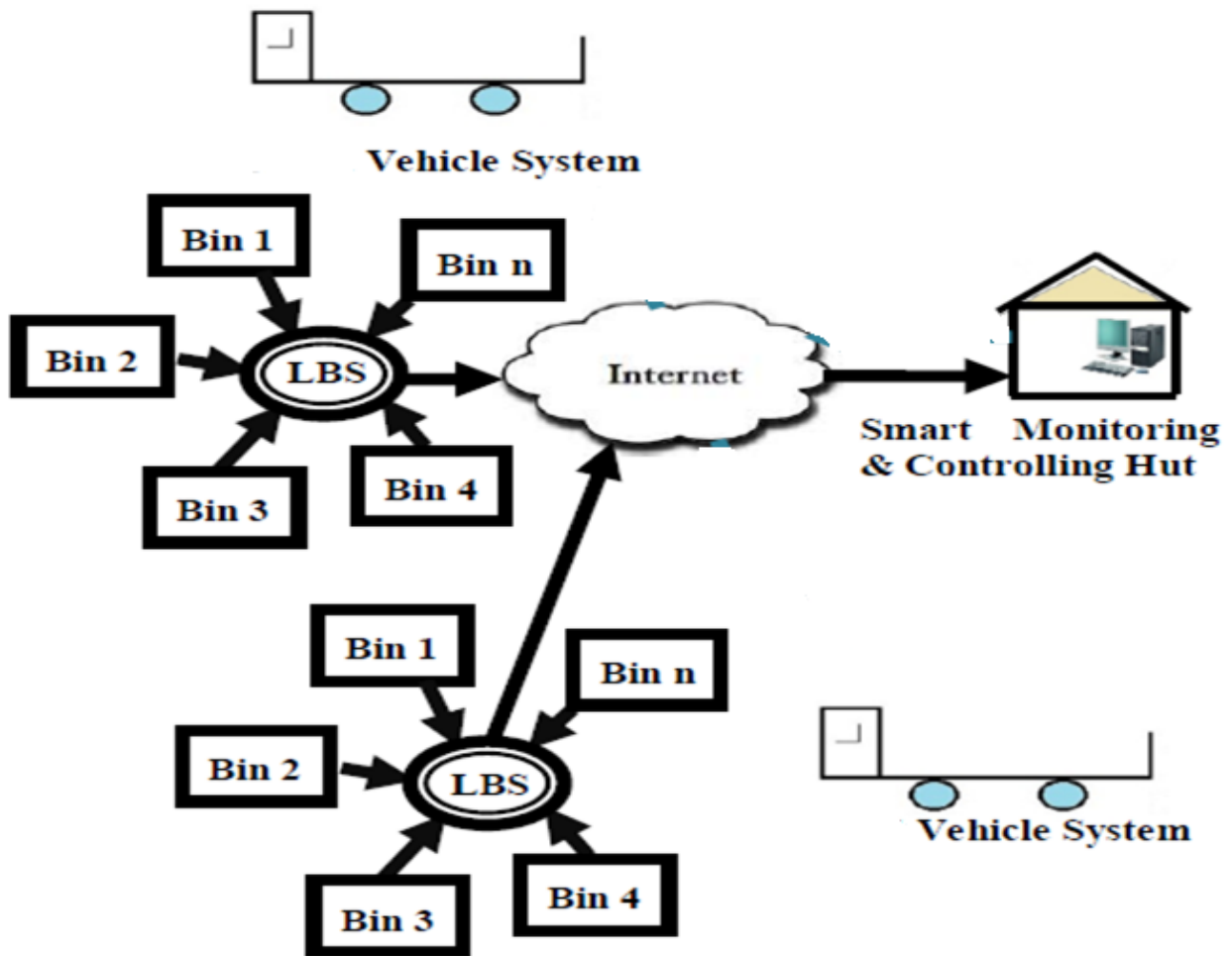


Fig (1): Architecture of Automatic Waste Management System

Since the AWMS consists of four sub-systems and the main system on which the others work is the Smart Trash System which has the functional unit called as Smart Trash Bin. It

consists of ultrasonic and load sensors and zigbee. Sensors are used to detect the load as well as the level of the waste in the Smart Trash Bin. Whenever the Smart Trash Bin gets filled, the sensors get activated and generate a high signal which is transmitted through the zigbee. This transmitted signal is received by the another zigbee tag which is placed in the local base station.

The zigbee in local base station receives the signal and then the signal is sent to monitoring cum controlling hut over the internet. At this monitoring cum controlling hut site, the information and status of the Smart Trash Bin is displayed. The details like weight and status of the filled Smart Trash Bin are displayed on the Smart Monitoring and controlling Hut Interface. The Smart Monitoring and controlling Hut then sends the information signal to the Vehicle System. Once the job detail is received by the vehicle, the person in the vehicle moves to the spot and disposes off the waste from that Trash bin.

RESULTS AND CONCLUSION:

The proposed method for the management of wastes is efficient and time saving process. This automation of waste also reduces the human effort and consequently the cost of the whole process. This system can be implemented at any place with ease and within reasonable amount of time. The implementation costs for the automation is also affordable. The overall method for the detection and management of waste becomes efficient and intelligent. This proposed system would not only function for collecting and updating data automatically and timely, but also it could analyze and use data intelligently. The use of Internet in this automation makes this system efficient and reliable with long distance coverage.

SCOPE FOR FUTURE WORK:

For future, instead of person in the vehicle we can make use of a line follower robot which does not require a man power to move the vehicle. This path follower robot is able to follow line marked on contrasting background usually black line on a white surface or white line on a black surface. So using line follower robot technology vehicle moves to the particular trash bin area based on the information sent from the SMCH. So this makes the system more reliable.