Smart Wi-Fi Dustbin System

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Abstract
Now a days in world scenario garbage waste management is very critical issue. It creates some unhygienic problems like problems related to Society health issue, it create multiple type of diseases etc. Many time in city, public areas we scene the garbage waste is outside the bin, also internet is very important part in our life for digitization. To avoid all such type of situation we are implement the smart Wi-Fi dustbin system. When somebody thrown the garbage or waste into bin then the micro-controller display the random no. On display these random no. Is used to gain the access of free Wi-Fi. Sensor checks waste in dustbin and the Wi-Fi router provides free Wi-Fi to user.

Keywords:- *IR Sensors, Micro-controller, Wi-Fi Routers, Software Development Kit(SDK),Web Application.*

1   Introduction

In the present day scenario, many times we see that the garbage bins or Dust bin are placed at public places in the cities are overflowing due to increase in the waste every day. It creates unhygienic condition for the people and creates bad smell around the surroundings this leads in spreading some deadly diseases and human illness, to avoid such a situation we are planning to design Internet of Think based Wi-Fi Dustbin.

In this proposed System there are multiple dustbins located throughout the city or the Campus, these dustbins are provided with low cost embedded device which helps in tracking the garbage bins and a unique ID will be provided in every dustbin in the city so that it is easy to identify by user. When user put this Id into the web application he /she gives back password for Wi-Fi and after submitting this password admin provides the internet facility for user.

In recent time Garbage waste collection and its management is very critical issue. for that In India 2 October 2014 Indian Prime Minister Mr. Narendra Modi announced Clean India Mission launched by Government of India. In this mission covering 4,041 cities and infrastructure of country. Inspiring by these mission we proposed the smart wi-_ dustbin system for smart garbage waste collection. The work proposed in this paper illustrates how the Smart bin solution empowers cleaning public area like Railway stations, Global store,

Colleges, Hotels etc. to detect cleanliness issues in real time. Thus, the system is able to help in increasing overall productivity and cleanliness.

2 Literature Survey

In[1],this paper objective is the study of implementation of smart garbage management system using IR sensor, micro controller and Wi-Fi module. This system provide only the cleaning of dustbins when the garbage level reaches its maximum.

In [2], it describes the application of our model of Smart Bin in managing the waste collection system of an entire city. The network of sensors enabled smart bins connected through the cellular network generates a large amount of data, which is further analysed and visualized at real time to gain insights about the status of waste around the city. This paper also aims at encouraging further research in the topic of waste management.

In [3], the proposed system describes that the level of garbage in the dustbins is detected with the help of Sensor systems, and communicated to the authorized control room through GSM system. Micro controller is used to interface the sensor system with GSM system. A GUI is also developed to monitor the desired information related to the garbage for different selected locations. This will help to manage the garbage collection efficiently.

In [4], they came to a point It is important to understand the societal concerns over the increased rate of resource consumption and waste production and therefore the policy makers have encouraged recycling and reuse strategies to reduce the demand for raw materials and to decrease the quantity of waste going to landfill.

In [5], this paper objective of the study was to determine the characterization of the waste and the current system of management activities. The paper high- lights an overview of the current municipal solid waste management (MSWM) system of Thousand Municipality and it concludes with a few suggestions, which may be beneficial to the authorities to work towards further improvement of the current management systems.

3 Proposed System

This architecture shows overall description of our system. The first part of our system the user simply put the some garbage in to the dustbin. The hardware which is the electronic device is already connected I to the dustbin, after user put the some garbage the sensor identify it and display the unique id for user. User read the number then open the address of our web application in to the browser. The second part of our system is the web application, user put the unique id in to the textbox and submit. Then system checks the id and compare with database value, if it matches system give password of Wi-Fi network device to user or if it not matches it send failed message for user. After matches the password user can free to use internet facility.
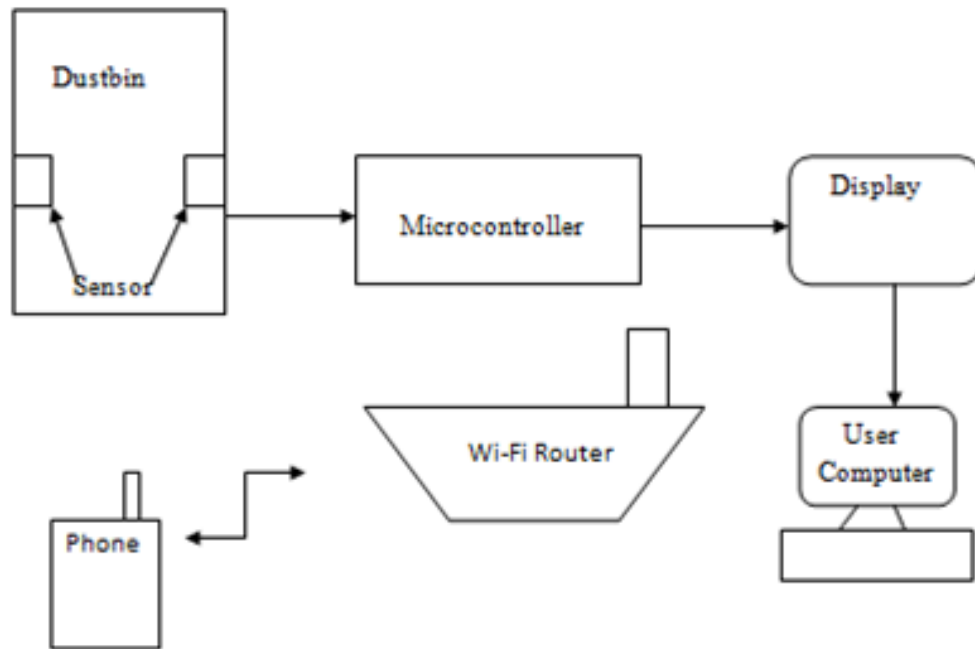
Figure 1: System Architecture

In Smart Wi-Fi dustbin system design two main modules:
1. Hardware Module.
2. Web Application.

3.1 Hardware Module
In our system the hardware part is design by the using of the IR sensor, Microprocessor 8051, LCD. In that hard for generating the unique number we use Embedded C language.

3.2 Web Application
In this system for developing the web application we use the java technology and for maintaining the database of admin details and the passwords data set we use the My SQL database for storing the data.

4 Mathematical Model

Let U is the set of complete system
$U = \{.......0$
Let G is the Garbage thrown by user.
$G = \{G1, G2, G3, ..., Gn\}$
Let K is the set of Genrated Keys.
$K = \{K1, K2, K3, ... , Kn\}$
Let P is the set of Passwords for di_erent users.
$P = \{P1, P2, P3, ... , Pn\}$
Here,
U = {G,K,P} Mathematical Representation of the system using Set theory.

5 Technical Specification
5.1 Advantages
1)Security:

For security purpose the only provide to user, who have the unique ID which matches the system database values.
2)Reliability:
User get the number from the system which is already stored in the system.
3)Maintainability:
Maintain the previous password by user and also block the unauthorized user.
5.2 Applications
1) This system is used in both private as well as public sector.
2)This system used in Government sector.
3)This system used in various public sector like Railway station, Bus stop,
Colleges, Mall, Multiplex, Shopkeepers, Gardens.

6 Implementation and Result Set

In this system, we are going to develop a Smart Wi-Fi dustbin system. The first part of our system the user simply put the some garbage in to the dustbin. The hardware which is the electronic device is already connected I to the dustbin, after user put the some garbage the sensor identify it and display the unique id for user. User read the number then open the address of our web application in to the browser.

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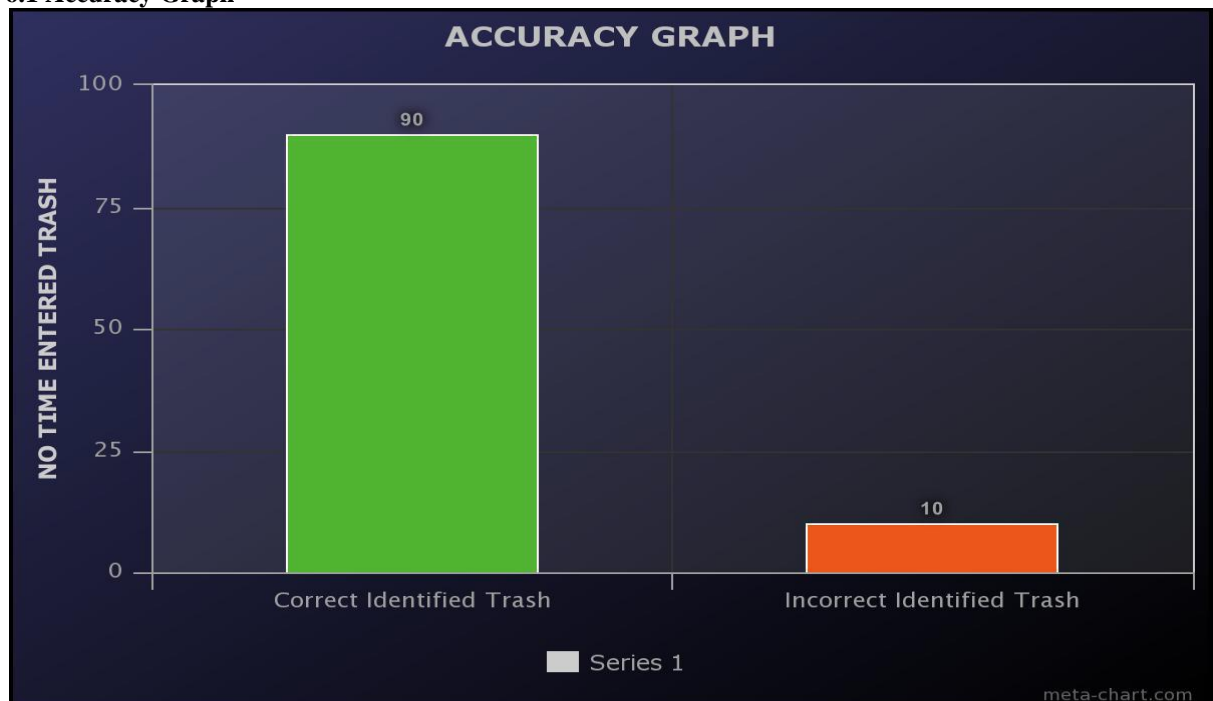| Sr.No	Sense Garbage	Key Generation	Generated Key is Match with user key	Password Generation	Wifi Access
1.	Yes	Yes	Yes	Yes	Access
2.	No	No	No	No	Denied
3.	Yes	Yes	No	No	Denied

Figure 2: Result set

6.1 Accuracy Graph

Figure 3: Accuracy Graph

7 Conclusion

In this system, we implement the system which the dust bins are connected to the electronic part get the real time information for the use of free Wi-Fi. We developed the system for idea to remove the garbage from cities and our area by the smart dustbin technique.

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