**CHAPTER 2**

**LITERATURE SURVEY**

**2.1 INTERNET OF THINGS [IOT] BASED SMART GARBAGE**

**MONITORING AND CLEARANCE SYSTEM**

**Author:** Janaki.S, Nanthini.N, Yamini.S

Swachh Bharat Abhiyan is a campaign by the government of India that aims to make it as a best and clean country of the world. With expansion of Internet of Things (IoT), devices such as Smartphones& sensors, we present a solution about the Smartbin is a network of dustbins which integrates the idea of IoT with wireless Sensor Network. It is possible to collect large amount of garbage. In the metropolitan cities it is not possible to check each and every place where the garbage dump yard is full or not. So these dustbins are interfaced with microcontroller based systems having sensors system. In this approach the sensors are placed in the dustbins that are located in the public areas, to sense the level of garbage in the dustbins. When the garbage reaches the threshold limit, the status of the dustbin is updated and this status is concerned by the authorities. Then the authority will give an indication to the concerned person by sending SMS using GSM technology. The webpage created shows the collection of waste and the particular date and arrival time of the vehicle. The main motto of the system is to avoid overflowing and stinking dustbins. The presented solution provides calculation of more efficient garbage truck routes. As an output, we manage the waste in different type of box using automation. The system detect the wet and dry waste and also separate it by automatically.

**DRAWBACKS**

* Due to usage of costly processors, it not cost efficient.

**2.2** **AUTOMATED WASTE BIN MONITOR**

**Author:** Md Ahad Bin Alam

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. Foul smell from these rotten wastes that remain untreated for a long time due to negligence of authorities and carelessness of public may lead to long term problems. This may even cause dreadful diseases. So waste management has been a crucial issue to be considered. In this project, smart automated waste bin monitor is built on a microcontroller based platform Arduino Uno board which is interfaced with GSM modem and Ultrasonic sensor to eradicate this problem.

**DRAWBACKS:**

* It is only used for monitoring that already has been used in market.

**2.3 SENSOR BASED SMART DUSTBIN FOR WASTE**

**SEGREGATION AND STATUS ALERT**

**Author**: Kavya M, Sahana P, Shruthi G, Sunitha M C, Jyothi A P

Technology always help mankind in making life easier. Now presenting an innovative way which revolutionize the trash management system through this we are taking a step towards clean India. Present scenario in the public places where proper disposal is not being done because of which we come across overflow dustbins. Even the private areas which are clean enough failed to utilize the resources efficiently. To properly manage the waste it has to be handled, segregated, transported and disposed so as to reduce the risks to the public lives and sustainable environmental There is a rapid increase in capacity and categories of solid waste as a result of urbanization, constant economic growth, and industrialization. Global Waste Management Market reported that the amount of waste generated worldwide produced is 2.02 billion tones. This method is easy and simple solution of segregation of three types of wastes dry, metal and wet. It is designed to sort the trash into metallic waste, wet waste and dry waste ready to be processed separately for the next process of operation for this. Using Embedded technology to continuous monitoring the dustbin in order to check whether dustbin is full or not. Wireless sensors sense the amount of waste in the containers if it reached the maximum container capacity, sends instant messages to the trash management department which deploy them to collect the garbage in no time. By implementing this product at different location, instead of driving blindly on the static routes, we can optimize the collection schedule

**DRAWBACKS:**

* The main drawback of this system is that outdated version of microcontroller and lots of sensors for different stage identification.

**2.4** **INVOLUNTARY METHOD FOR SEPARATING WASTES BY USING**

**REGIONAL SENSORS**

**Author:** S. Sharma, K. Suriyan, K. Prem Kumar, S. Thambi Prabhakaran, S. Emimal

IMS bin consist of three slots in order to segregate the waste respectively depending on whether it is organic, inorganic or else reusable. However the waste will be belongs to one among the three categories. With the help of sensor the organic and inorganic wastes are sensed and segregated. If the waste which doesn’t fall under any of these mentioned, the things will be sensed by electromagnet and consider that as a reusable. Finally the things which is remained will be blow off by using air blower.

**DRAWBACK:**

* Due to the usage of larger devices, it is not usable in homes.

**2.5** **AUTOMATIC METAL, GLASS AND PLASTIC WASTE SORTER**

**Author:** Syeda Madiha Samreen, Dr. Baswaraj Gadgay, Veeresh Pujari, Pallavi B.V

The nation and world is facing a huge problem today of disposal, segregation and recycling of solid waste, and improper management of these wastes are hazardous and dangerous to human health and ecological system. There is a rapid increase in capacity and categories of solid waste as a result of urbanization, constant economic growth, and industrialization. Global Waste Management Market reported that the amount of waste generated worldwide produced is 2.02 billion tones. “Wastes are not always waste if it is segregated as it was”. To properly manage the waste it has to be handled, segregated, transported and disposed so as to reduce the risks to the public lives and sustainable environmental. The economic value of waste is best comprehended when it is segregated. Currently there is no such system employed of segregation of glass, plastic and metallic wastes at industrial level. Here we propose an Automation of Waste material Segregation in scrap industry. This method is easy and simple solution of segregation of three types of wastes glass, metal and plastic. It is designed to sort the trash into metallic waste, plastic waste and glass waste ready to be processed separately for the next process of operation. The method uses inductive sensors for metallic items, and capacitive sensors to distinguish between and plastic and glass waste. Experimental results show that the segregation of waste into metallic, plastic and glass waste has been successfully implemented using the Automation of material segregation (AMS) method.

**DRAWBACK**:

* The usage of conveyer belt and large motor makes the device noisier.

**2.6** **IOT BASED SMART GARBAGE AND WASTE COLLECTION BIN**

**Author**: S.S.Navghane, M.S.Killedar, Dr.V.M.Rohokale

Many times, in our city we see that the garbage bins or dustbins placed at public places are overloaded. It creates unhygienic conditions for people as well as ugliness to that place leaving bad smell. To avoid all such situations we are going to implement a project called IoT Based Smart Garbage and Waste Collection bins. These dustbins are interfaced with microcontroller based system having IR wireless systems along with central system showing current status of garbage, on mobile web browser with html page by Wi-Fi. Hence the status will be updated on to the html page. Major part of our project depends upon the working of the Wi-Fi module; essential for its implementation. The main aim of this project is to reduce human resources and efforts along with the enhancement of a smart city vision.

**DRAWBACK**:

* The usage of Wi-Fi makes the device more dependable on its user.

**2.7 AUTOMATIC WASTE SEGREGATOR AND MONITORING**

**SYSTEM**

**Author:** Aleena V.J., Kavya Balakrishnan, Rosmi T.B., Swathy Krishna K.J., Sreejith S, T.D. Subha

Rapid increase in population has led to improper waste management in metro cities and urban areas which has resulted in spreading of diseases. It is estimated that 2.02 billion tons of municipal solid waste was generated universally in 2006. The segregation, transport, handling and disposal of waste must be managed properly to minimize the risks to the public, and the environment. An efficient method to dispose the waste has been designed in our project, “automatic waste segregator and monitoring system”. This paper proposes an automatic waste segregator (AWS) which is a cheap, easy to use solution for a segregation system at households, so that the wastes can be sent directly for processing. Automatic waste segregator is designed to sort the waste into three main categories namely; metallic, organic and plastic, thereby making the waste management more effective. Ultrasonic sensors are added for monitoring waste collection process.

The sensors would be placed in all the garbage bins. When the garbage reaches the level of the sensor, then the indication will be given to a microcontroller. The microcontroller will give indication to the driver of garbage collection truck by sending SMS using GSM technology

**DRAWBACKS**:

* This system is not suitable for all test cases.

**2.8 AUTOMATIC WASTE (METAL AND NON-METAL) SEPARATION**

**USING IR SENSOR LEARNING**

**Author:** G.Krishna Veni P.Srilakshmi B.Uma

In India, the collection, transportation and disposal of waste are unscientific and chaotic. Uncontrolled dumping of waste on outskirts of towns and cities has created overflowing landfills, health hazards for the surrounding public.

Many machines work to divide and segregate, recycle the waste in various methods like incineration. But for household waste, bag pickers play an important role in the recycling of urban solid waste. Rag pickers and conservancy staff have higher morbidity due to infections of skin, respiratory, gastro-intestinal tract and multisystem allergic disorders, in addition to a high prevalence of bites of rodents, dogs and other vermin.

**DRAWBACK:**

* Due to the usage of only metal detect sensor, it is not possible for other type of waste segregation.

**2.9 AN ECONOMIC AUTOMATIC WASTE SEGREGATOR USING**

**ARDUINO**

**Author:** Archana Babu S, Arunima SJ, Athira J, Bhavana Chandran, Naveen

Efficient waste management is one of the major problems of the present era. The segregation, handling, transportation and disposal of waste are to be properly managed so as to minimize the risk to the environment. The economic value of waste is best realized when it is segregated. The traditional way of manually segregating the waste utilizes more human effort, time and cost. This work proposes An Economic Automated Waste Segregator (AWS) which is a cheap and easy to use solution for a segregation system at households, so that it can be sent directly for processing. It is designed to sort the refuse into metallic waste, wet waste and dry waste.

**DRAWBACKS**:

* The main drawback of this system is that it is not possible to detect the food wastes and other type of wastes.

**2.10** **SMART BIN IMPLEMENTATION FOR SMART CITIES**

**Author:** Narayan Sharma, Nirman Singha, Tanmoy Dutta

Hierarchical dynamicspectrum access has received the most attention in recent years as the solution for better spectrum utilization. In this paper, on the other hand, we develop a framework for dynamic spectrum leasing. Power control in hierarchical DSA networks only involves that of controlling secondary user transmissions. Thus, in game theoretic formulations of power control in cognitive DSA networks only secondary users are considered as players of the game. In proposed dynamic spectrum leasing, on the other hand, the primary users are rewarded for allowing secondary users to operate in their licensed spectrum.

Thus, in the proposed DSL networks the primary users have an incentive to allow secondary users to access the spectrum whenever possible to the maximum extent. We develop a game theoretic framework for such dynamic spectrum leasing in which primary users actively participate in a non-cooperative game with secondary users by selecting an interference cap on the total interference they willing to tolerate. We establish that the proposed primary-secondary user power control game has a unique Nash equilibrium. Performance of a DSL system based on the proposed game model is compared through simulations under different linear receivers at the

Secondary base station.

**DRAWBACK**:

* Waste segregation is more important than the waste monitoring because it is the problem to be solved in developing countries