HYGIENE HIVE MONITOR

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ABSTRACT:

In modern days, we desire a healthy and hygiene-friendly environment for our society. We see multiple dustbins with an overflow of waste in urban areas. This situation is created pathogens, which spread diseases in our society. Its affect clean India mission. So, we designed the system aimed at improve the effectiveness and sustainability of waste collection and disposal processes. In this setup, once the dustbin reaches its maximum capacity, a notification containing its live location is dispatched to the corporation. The detection of the dustbin's capacity is facilitated by employing an ultrasonic sensor. Then level of garbage is displayed by LCD and the level is sent to the corporation. This helps the timely collection of garbage. As the rain is fell into the trash can; the stink was affecting our society. The rain drop sensor detects the rain drops; trashcan will be automatically close. This helps to reduce the stench and improves healthy environment. If suppose, after sending the live location notification, the dustbin does not cleaned by workers then the notification sent to the higher authority. Then if the dustbin is empty or less than capacity of 80, message is sent to the corporation (Cleaned). It is helping the higher official, whether the workers are working properly or not. We used an efficient and cheap component to make this project economical. It can be easily understood by the workers. It reduces the overflow of garbage. A system is used to improve our nation. Concluding that the system helping us to save the time, energy, cost, and fuel. Improve the concept of less human and speedup process.

Key Words: **Ultrasonic sensor, raindrop sensor, IR sensor, IoT, Dustbin**

1.INTRODUCTION:

In our India yearly producing enormous amount of waste including solid, industrial, medical waste nearly 60 tons. According to State of India's Environment's 2023 report, India estimated municipal solid waste around 150000 ton per day. According to the Environmental assessment report, India ranks 4th in the MWI (mishandled Waste Index) scores poorly in the handling of plastic wastes, with 98.5% of created waste being mishandled.

As per the International telecommunication Union and the United Nations University 1.96 million tons of E-waste are estimated in 2016. In future waste range is expected will be increased in triple times from the above range. In this situation causes a greater number of diseases to human and also animals.

People following the proper manner of disposing a waste will be improve our environment. There are many smart dustbin projects are there for solution to these problems. We will revising many different technologies and research about these issues from different article. Then conclude all of them together to create this idea for efficient and energy saving smart dustbin for our world.

2.LITERATURE REVIEW

In the period of 2016-2017, the first smart dustbin was installed in the hill station of Dharamsala. There are many smart dustbin systems are there in the nation. The people didn't dispose the waste in correct manner. They throw the garbage outside the dustbin. They put the biodegradable waste and debiodegradable waste in same trash can. They put all the waste (solid waste, e-waste) in

common dustbin. Sometimes the cleaning workers lost their respect while collecting the waste from each house. To reduce these kinds of actions. The smart dustbin was introduced.

According to study, the sensor detects the person Infront of trash can then it automatically opened. The waste was filled with certain level then the message sends to the corporation. For this process the ultrasonic sensor was used. The drawbacks of the system was only message send to the corporation. They doesn't know about the level of garbage and no of days the waste was dumped. The proposed system extend the existing system to save the time and energy of the workers by sending the live location to the concern corporation officer with level of garbage in the dustbin.

In different studies shredders are used. The purpose of the shredder is to improve the dustbin's capacity by shredding solid garbage. Waste is ground in shredders till the weight falls within a certain range. They give the range to the weight sensor. If the weight is reached then the sensor detects and give the message to the corporation. The drawback of the system it grind all the waste(biodegradable and non biodegradable) in common dustbin. The proposed system doesn't contain weight sensor. The waste level is determined by the ultrasonic sensor.

In another article, If anyone throw the garbage outside the dustbin then buzzer is on. In this process the IR sensor is used to detects the garbage. If any detection appears then it automatically triggered.

3.REQUIREDMENT ANALYSIS:

Before created design plan for the Project, First we knew about the requirements (hardware and software) we used in this project.

3.1 Hardware Requirements

4.1 Design

The hardware are setup with the dustbins

- Arduino Uno – Arduino Uno is a device that interfaced with other device and can control the motors, LED, etc…
- GSM module – GSM Module is device that allow device communicate with each other via GSM network.
- GPS module – GPS module is a chip and it used for navigation whi
- ch means it helped us to tracking and monitoring the system.
- Ultrasonic sensor – Liquid and solid object levels are measured using ultrasonic sensors.
- Raindrop sensor – Raindrop Sensor is used for detecting the rain and also it used for measuring the intensity of the rain.
- IR sensor – IR sensor is a motion detector.
- LCD Display – LCD is used to show the on screen information of microcontroller

Apart from these the jumped wires is used to connect all the hardware , 5v power supply and zero PCB are used in this project

3.2 Software Requirements

1. Arduino IDE – Writing code and uploading it to the microcontroller unit are done via the Arduino IDE.

4. PROPOSED WORK

This section will examine the architecture of proposed system, workflow of the system and design. It help us to know about the connection between various components.
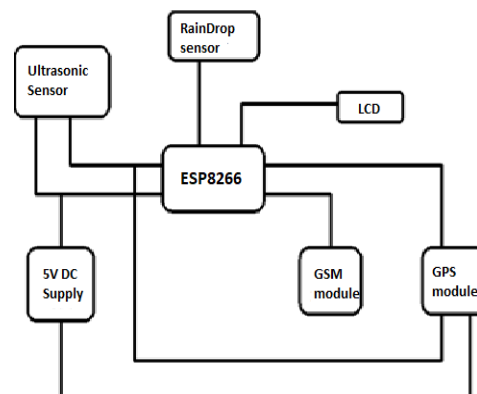
Our model in this design describes how the garbage level is shown on the LCD and how the GPS is connected to the microcontroller and what are the components are used int this system is shown in this model. The connections between the microcontroller and other devices are shown by the architecture.

4.2 Work Flow

Ultrasonic sensors are employed in this system to determine the level of rubbish. The dustbin's top is where the sensor is located. When the trash amount hit a specific threshold, the notification (live location with garbage level) send to the corporation. If Suppose the Workers not cleaned the dustbin for more than 3 hours then it will notify to the higher authority.
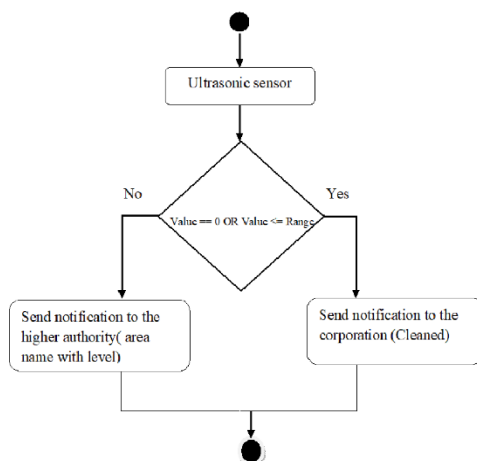
4.3 Implementation

The dustbin's top is where the sensor is located and connected to the microcontroller, and the sensor gives the output to the microcontroller when the dustbin reaches its level. The garbage level is reached, and then the location and garbage level are sent to the corporation. The GPS module is connected to the microcontroller, and the microcontroller gives the input to the GPS module after getting the output from the ultrasonic sensor. The raindrop sensor is connected to the microcontroller. It placed on the top of the dustbin lid and it gives the output to the microcontroller when the sensor detects raindrops. If it rains it will help to cover the garbage can.It prevent the waste from wet and produces the bad smell. One more feature is added. If the trash can is empty or the trash level is less than its maximum range, then the message (the area name of the dustbin is cleaned) is sent to the corporation. If the workers didn't clean the dustbin, then the area name with the level of garbage is sent to the higher authority. These features help the workers by saving their time, reduce their work and monitor the workers.

The circuit connections are shown below.
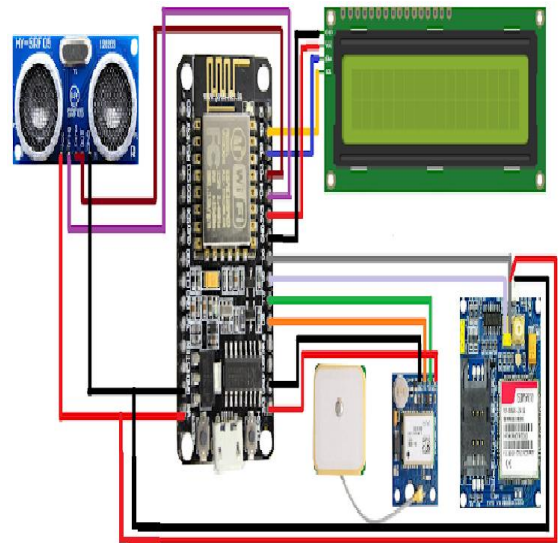
5. RESULTS AND CONCLUSION

This project is mainly focused on the worker's time, energy, and respect. The worker wasted the fuel to travel every street without knowing the garbage level. This project gives a notification of garbage levels to the corporation workers. The worker gets notification only when the dustbin fills to 80% and supposes it is less than 80%, but if too much wet waste generates a bad smell, then it also senses and gives notification to the corporation. The workers do not need to go to every street daily. If they get a notification, then only they go and collect the garbage in that specific street. If the worker doesn't clean the dustbin within 5 hours, then it will notify the higher authority. We used an efficient and cheap component to make this project economical. It can be easily understood by the workers. It reduces the overflow of garbage. It monitors the workers to see whether they work properly or not. This is an efficient smart dustbin system in the modern world.

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