

SMART WASTE MANAGEMENT SYSTEM FOR METEROPOLITAN CITIES

TEAM ID:

PNT2022TMID15872

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ABSTRACT

The alarming rate of population growth has led to increase in the consumption of various products like food items, industrial products, medicines and plastic among other things. The main objective of this project is, it helps us in detecting the garbage overflow in various areas through notification so that we can easily clean those particular areas and make it an unpolluted environment. An ultra sonic sensor is placed at the lid of each dustbin and it is connected with the solenoid lock. Once if the dust bin is filled, ultrasonic sensor senses the information and activates the lock. Thus the dustbin cannot be opened by other people. Only municipality workers can remove the lock and dispose the waste. Thus we can avoid spilling and overflowing of waste in public places. Thus we can also reduce the health problems like respiratory diseases, typhoid, hepatitis, skin infections, parasitic infection.

LITERATURE REVIEW

AUTHOR: Gade, Dipak

DESCRIPTION: The paper has discussed in detail the architecture and building blocks of the proposed Smart Waste Management System, along with the details of software tools, sensors, and technologies proposed in iSmartWMS. The Paper has finally discussed results concerning the prototype implementation of iSmartWMS and plans to further improve the iSmartWMS smart waste management system. The iSmartWMS software prototype was built using IoT sensors and a Cloud-based Server running with custom software incorporating specialized algorithms and a graphical user interface. A model was simulated on a local machine network to check if the required goals can be met and if the proposed solution serves the purpose. The proof-of-concept prototype for iSmartWMS Solution is found to work well at a limited scale. The solution can very well serve the purpose of waste management if it is implemented as per specified architecture at a wider scale considering many stakeholders. Using IoT Sensors for waste monitoring and through Cloud-based Server software running with specialized algorithms, it is possible to automate waste management end-to-end activities.

AUTHOR: Lundin, Andre Castro

DESCRIPTION: Through a user-centred design approach, an inexpensive monitoring system developed and tested in pilot study. The system consists of wireless nodes that use ultrasonic sensors to measure the empty space in the bins, a sensor gateway that is based on Long Range Wide Area Network (Lora WAN) protocol and cloud-based back/front end for data collection, analysis and visualization. The system was evaluated through a pilot test, where six outdoor trash bins were remotely monitored at a university campus and several stakeholders were observed and interviewed. The results show that the existing technologies are mature enough to be able to develop and implement inexpensive add-on sensors to existing trash bins and employing such a system can provide the necessary insights to optimize waste collection processes, to avoid overfilled bins, and to improve the experience of the citizens. The design process starts with identifying the needs, deriving requirements, conceptualisation of the solutions, evaluating the concepts and finalizing the design.

AUTHOR: Anuj Razdan , Mehtab Alam , Ihtiram Raza Khan

DESCRIPTION: In the age of smart cities, everything is planned out and organised. The population issue we are currently dealing with is one of fast population growth. Urban migration has increased dramatically in recent years. The accumulation of rubbish waste everywhere is the outcome of this. Garbage disposal in public areas pollutes the environment in the community. It might spread a number of deadly diseases to others nearby. The evaluation of the afflicted area will be embarrassed by this. We need a methodical approach to the issue in order to eliminate waste and uphold excellent hygiene. We suggest a solution to this waste issue that effectively handles the rubbish waste. The Internet of Things (IoT) is an ecological system of connected internet objects. The IoT "object" may prevent a mobile device's capacity to communicate data directly from the base station and to distribute information via IP address. IoT may communicate

with a variety of web programmes. In order to incorporate IoT green environment into autonomous garbage disposal and offer an effective solution, a new methodology has been created in this project.

AUTHOR: Arpitha V R, Likhitha S M, Chaithra P L, Smitha P S

DESCRIPTION: The internet and its applications are becoming an essential component of modern life. It is now a necessary tool in every context. Due to the overwhelming need and demand, researchers did more than simply connect computers to the web. These studies produced the ground-breaking technology known as the "Internet of Things" (IOT). Nowadays, gadget interactions take the place of user engagements in online communication. Although the IOT concept has been around for a while, it is still in its early stages of commercial deployment. With IOT, the home automation and transportation industries are expanding quickly.

IOT technology can be characterised as a link between people, computers, and objects. With the help of IOT, any device utilised in modern life may be managed and observed. In IOT, sensors are used for the vast majority of processes. There are sensors installed all over, and these sensors transform unprocessed physical data into digital signals before sending them to their control centre. Even if the world is upgrading, there is still a problem that needs to be solved. Garbage! There are numerous images of garbage cans that are overflowing with junk and that have garbage spilling out of them. Due to the enormous number of insects and mosquitoes that breed there, this causes a variety of ailments. It is necessary to use technological resources to protect the environment.

AUTHOR: Rajesh K,Rohini B, Agalya R, Janani S

DESCRIPTION: In this project, we present a waste management system that tracks the amount of trash in cans using the Internet of Things. The neighbourhood corporation

does not compile reports on overflowing trash cans because of a manpower shortage. It might result in unhygienic circumstances in urban areas, endangering the health of residents. It can cut down on both human intervention and the amount of fuel used in the waste collection system. An answer to this problem might be found in the Internet of Things. The Internet of Things (IoT) is a network of actual physical items that have internet connectivity, software, and sensors attached in order to gather data and information. Using IoT technologies, we may be able to develop a smart waste collection system. Using IoT technologies, we may be able to develop a smart waste collection system. Using IoT, we might be able to develop a smart garbage collection system. The system's goal is to gather data and transmit it over wifi. This design's primary objective is to create a system for tracking trash using data collected via sensors.

AUTHOR: K. Maheshwaran , P. S. Alexpandian , A. Anton , V. Subramaniyan , S. Satheesh Kumar

DESCRIPTION: Whether a country is developed or developing, waste management is one of the biggest issues it faces today. The main problem with waste management is that the trash cans in public areas overflow well before the next cleaning procedure starts. It then brings about a number of risks to that area, including unpleasant odours and ugliness, which may be the main factor in the spread of a number of diseases. This work is mounted on a smart waste system to prevent all such dangerous situations and to maintain public cleanliness and health. The ultrasonic sensor, which is connected to an Arduino UNO to monitor the level of waste in the dustbin and transmit an alarm to the municipal web server when garbage is full, aids in this procedure. The driver confirms using an RFID tag to empty the trash after cleaning the trash can. RFID is a computing technology that is used for the verification process. In addition, it improves the smart garbage alert system by automatically identifying rubbish that has been emptied into the dustbin and sending the status of cleanup to the server, confirming that the job is finished. An embedded module integrated with RFID and IOT facilitation supports the entire

procedure. An Android application is developed and linked to a web server to intimate the alerts from the microcontroller to the urban office and to perform the remote monitoring of the cleaning process, done by the workers, thereby reducing the manual process of monitoring and verification.

AUTHOR: Sarmila S S , Siva Kumar V,Vasanth Kumar P K

DESCRIPTION: Waste collection containers with sensors are used to determine whether or not the garbage containers are full or empty. In order to alter the garbage collection timetable save money and act accordingly. True time wastage employing intelligent trash cans as a management system to check whether or not the trash cans are full, or their degree of fill Whether accurate or not, this method provides access to all. Access to smart trash cans is possible from anywhere, and any moment by the concerned individual. It will educate the real-time information on the status of each and every trash can. Interested parties may request the rubbish pickup. It is impossible to check every major city and anywhere there is a full rubbish dump yard or not. Consequently, we have introduced a fresh idea leveraging ultrasound detector. A sensor like this one alerts regarding the weight put on it. in order for the trash can also examined in this manner. We observe the trash cans or dustbins positioned at the public spaces are crowded. It results in unsanitary both the human conditions and the ugly nature of that location leaving an unpleasant odour. To prevent any such occurrences, we are launching an initiative named IoT Based Smart Waste and garbage collection containers.