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INTELLIGENT TRASH BIN

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ABSTRACT: Today's operating system application is based on Embedded System with some dedicated function which controls all the OS mechanism. By contrast, a personal computer (PC) which is a general-purpose computer, is signed to be flexible and to meet a wide range of the needs of end-users. In common use todayembedded systems control many devices.

Microcontrollers are based on modern embedded system that is CPUs withperipheral interfaces and/orintegrated memory. But ordinary microprocessors will use external chips forperipheral interface and memory. They are all common and exclusively in more complex systems. In other cases, the processor may be used in many types ranging from general purpose to more specialized in some classes of computations and even custom designed for some applications at hand. Digital signal processor (DSP) is the common standard class of dedicated processors.

In this project, we present the intelligent trash bin system that identifies fullness of dust bin. The system is designed to deliver the data through wireless mesh networkandto collect data. The system also employs duty cycle technique to maximize operational time and toreduce power consumption. The Intelligent trashbin system was tested in an outdoor environment. Through the test bed, we collected dataand litter bin daily seasonality information and applied sense-making methods to obtain litter bin utilization. With such information,cleaning contractors and wastage bin providers are able to make better decision to increase productivity.

KEYWORDS: embedded, microprocessor, wireless mesh network, smart bin.

I .INTRODUCTION

Today, one of the challenges of most townsandcities are confrontingregarding the garbage management is the decline in condition of cleanness of the environment. This occurs due to the collection of garbage mismanagement. This kind of mismanagement that creates the unhealthy condition to the environment though it creates the spread of garbage in community. It also degrades the beauty of the areaand stimulates several serious diseases amongst the people in close proximity. To improve the cleanness of the societyand to avoid mismanagement of the garbage, Garbage monitoring system is designed. In the proposed system the garbage level is detected with the help of ultrasonic sensor and it send intimation through GSM system to the authorised agency for garbage collection. PIR sensor is used to detect the motion of the people coming to the trash bin with garbage while the bin is at full status and block adding of any more garbage to the bin through informing the user by speaker. The GSM and the peripheral sensors are used for interfacing through the Arduino microcontroller. To monitor the desired information related to garbage bins for different selection locations, a GUI is also developed.The LCD displays the desired messages through the GSM at control room. The garbage is collected by the authorized person to inform the drivers on time. This helps the garbage monitoring system to monitor and make the environment clean and safe.

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II.LITERATURE SURVEY

The garbage system available in India is fully done by humans. But now in our project we have reduced the human work regarding to the present situation. The waste which is produced across the world is innumerable if we try to reuse with the man power it may consume much time and which needs much energy for these activities. Waste management is a mandatory process in order to face the challenges in our daily routine life. The entire management includes three parts: 1)Waste collectors,2)stack holders 3) Users who generate waste. Existing waste management systems are difficult to handle manually and not user friendly. This project is very useful and aids in many effective ways to make environment friendly. The waste bins are equipped with the sensors and connected to cloud with push mechanism. Hence the stack holders are able to get the all data from the cloud.

Solid waste management, disposaland monitoring are very important issues for most of the countries. Efficient waste management and disposal is required to maintain greenclean and safe environment. Solar Powered Electronic Trash which has a magnetic sensor to scans the waste; classify it to either metallic or non-metallic waste. The control system opens the particular Can where such type of waste is to be disposed and then closes automatically after few seconds. However, despite all the amazing operations of the trash can, its limitation is that the bin will operate automatically when any material passes in front of the scanner even if not intended as waste. Also, the use of multiple controllers makes the design more expensive.

In this system, the level of the garbage is detected with the help of ultrasonic sensor and sent to the authorized agency for collection of garbage through GSM system. PIR sensor is used to detect the motion of the people coming to the garbage bin with trash while the bin is at full status and block adding of any more garbage to the bin through informing them by the speaker. Theperipheral sensors and theGSM used are interfaced through the Arduino microcontroller. To monitor the desired information related to the garbage bins for different selected locations GUI is also developed. Depending on the received messages through the GSM it is displayed on LCDat control room and the authorized person inform the drivers, and the collection of garbage will be doneon time. This will capably help to monitor the garbage collection to make the environment green, clean and safe.

This idea can be implemented for Smart Buildings, Colleges, Cities,Public spots, Hospitals, and Bus stands. Every trash can contain a smart device for level detection of the trash can transmit the trash level with its token ID, awhich is accessed by municipal authorities with the mobile app.It can take immediate actions to clean the garbage. The setup consists of an Arduino Uno, GPS, Wi-Fi module and ultrasonic sensor.

A smart alerting system is used for trash clearance by giving a signal to the regional web server for instant cleaning of trashbin with proper instructions based on level of trash filling. These processesaredone by the ultrasonic sensor which is connected with Arduino UNO to check the level of trash filled in the trash bin and sends the alert messageto the regional web server once if trash is 90% filled via Internet of Things. If the alert is received, Municipal Corporation take an initiative to clear the trashes and wastes. After clearing the trash bin, regional web server gets updated thetrash bin will be cleaned. This system canprovide some information regarding the status of the waste collected by the municipality authority.

III.INTELLIGENT TRASH BIN SYSTEM

A sensor node is installed in every Smart trash bin. It senses bin fullnessand sensor statuses and report readings. The bin IR which is used to detect the object nearby to the smart bin and will open the trash bin automatically. The proximity sensor is used to alert the user on difference between the bio degradable and non-biodegradable. The ultrasonic sensor is used to determine the fullness of the smart bin. Whenever rain falls occurs the smart bin will be detected with the help rain fall sensor to avoid unwanted loading bin. Gas sensor will detect hazardous gases on the dustbin due to some bio-wasteandchemical waste and it is communicated to the end user so that the accident that may occur due to the poisonous gas can be prevented. The GSM will be used to update the status of the bin whether is full through internet to the public to which the intelligent trash bin is connected to, will keep the public updated about the status of the garbage bin. The buzzer will give alert when abnormal activity is detected from the smart bin. If the bin is

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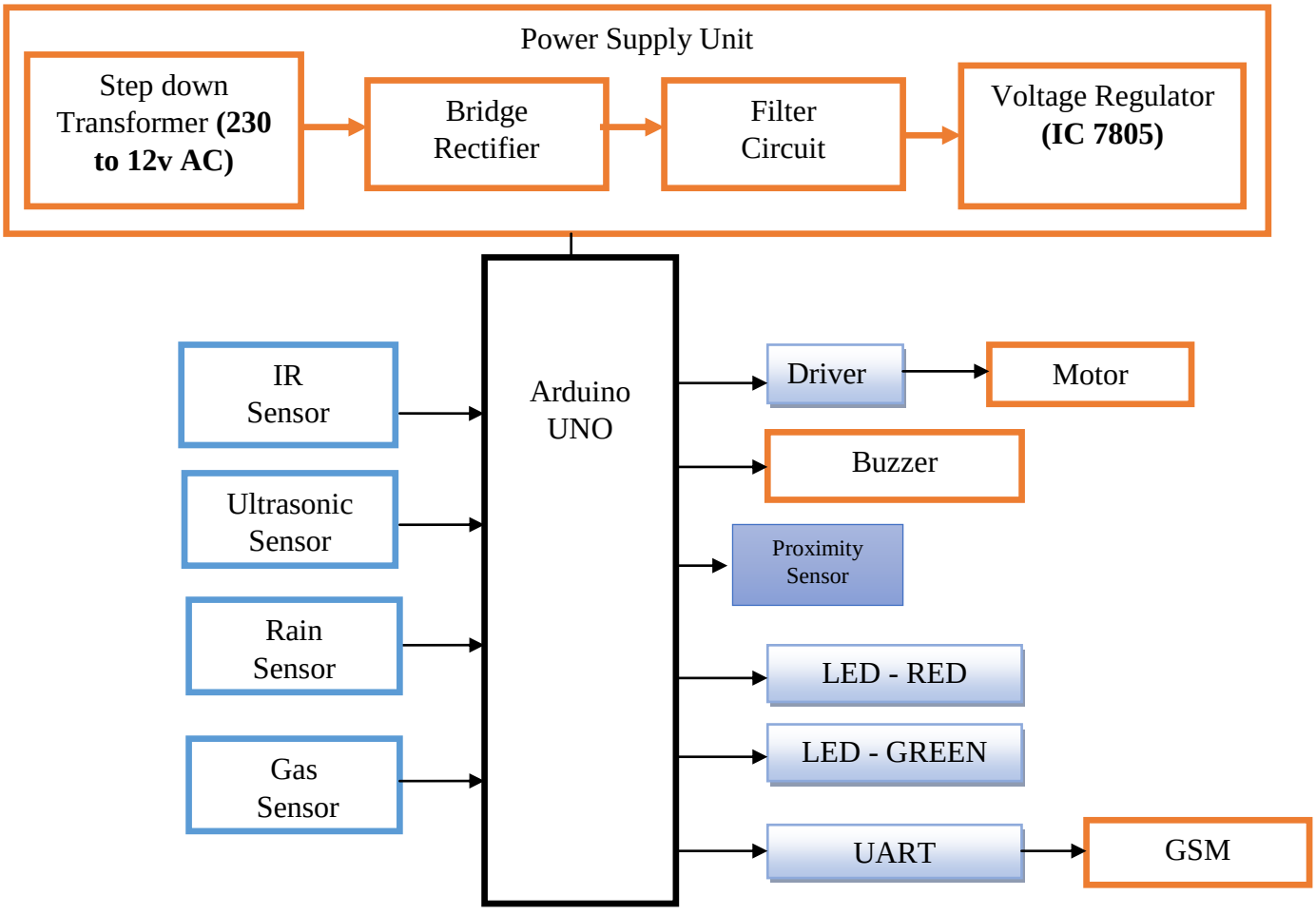
full, red led will glow and green led glows when the bin is not full. The Information will be maintained via wireless application. The information is communicated using the mesh network topology in which nodes connect to many other possible nodes efficiently, so that many number of connections can be connected to the intelligent trash bin as possible to keep all the public in the locality updated with its status and activities.

ADVANTAGES: Accuracy, Optimized character axis, Less delay, Low cost.

BLOCK DIAGAM:

TRANSMITTER SECTION:



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REFERENCES

1. Smart Waste Management System Dr. S. Anan[1], Pradeep. R, Ahamed Sathik.Associate Professor, ECE Department,Mepco Schlenk Engineering College, Sivakasi, India
2. Design and Development of a Smart Waste Bin Michael E., Otaru C.O., Liman A. D., Bomoi M. I.,Awotoye.
3. Automated Garbage Monitoring System Using ArduinoFetulhakAbdurahman, Sileshi Aweke, Chera AssefaFaculty of Electrical and Computer Engineering, Jimma University Institute of Technology, Ethiopia.
4. Smart Trash Can Monitoring System using IoT - Creating Solutions for Smart Cities Sunil Raj Thota1, S. Neelima2, K. V. N. Lalitha Pruthvi3, K. Mounika4, M. Pravallika5,CMrs. N. Sowmya, Asst. Prof, Students of Department of Electronics and Communication Engineering Gayatri Vidya Parishad College for Degree and PG Courses School of Engineering Visakhapatnam, Andhra Pradesh, India. Professor of Electronics and Communication Engineering Gayatri Vidya Parishad College for Degree and PG Courses School of Engineering Visakhapatnam, Andhra Pradesh, India.
5. Smart Garbage Monitoring System for Waste Management NorfadzliaMohd Yusof1, AimanZakwan Jidin1 , and Muhammad Izzat Rahim Faculty of Engineering Technology, UniversitiTeknikal Malaysia Melaka, Malaysia.
6. WIRELESS DUST BIN MONITORING AND ALERT SYSTEM USING ARDUINOP.Siva Nagendra Reddy , Assistant Professor, Department of ECE, Kuppam Engineering College,Kuppam,A.P.
7. IOT based smart garbage alert system using Arduino UNON. Sathish Kumar; B. Vuayalakshmi; R. Jenifer Prarthana; A. Shankar 2016 IEEE Region 10 Conference (TENCON)
8. IoT based solid waste management system for smart cityKrishnaNirde; Prashant S. Mulay; Uttam M. Chaskar2017 International Conference on Intelligent Computing and Control Systems(ICICCS)
9. Human safety system in drainage, unused well and garbage alertingsystem for smart cityV. S. Velladurai; M. Saravanan; R. Vigneshbabu; P. Karthikeyan; A. Dhlipkumar2017 International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC).