IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

QUANTITATIVE DETECTION AND PREDICTION OF ASPHYXIATING GAS MONITORING IN THE ENVIRONMENT

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Abstract: Accident caused by broken or missing drainage overs are becoming more common these days. In poor countries, manhole are not properly monitored. Monitoring the drainage system critical to keeping the city clean and healthy. Because human monitoring is ineffective, drainage problems are handle slowly and to address this issue. We've include a slew of sensors to keep track of the manhole cover in real time, preventing similar mishaps. This system monitors air temperature, poisonous gas emission, drain overflow, and manhole lid position, among other things and sends information to an authorized user via IOT(Ubidots). The pixel ratios of the lung anatomy between normal and abnormal situations can be determined using bounding box pixel analysis to determine the amount of the pleural effusion. Then, to improve the present functions of the traditional drainage tool and ensure drainage safety, a smart drainage monitoring system is designed, which includes drainage volume and necessary time detection, unplanned removal warning, and physiological condition monitoring.

Index Terms - Drainage Monitoring ,Manhole cover ,Asphyxiating Monitoring ,Cloud System ,Pixel analysis ,Pleural effusion ,Real time system ,Sewage system

1.INTRODUCTION

Gas leaks are a major threat to employees, structures, and the environment. Leak detection can help to mitigate these dangers. Backflow must be prevented, and sewer gases must be kept away from indoor places. Sewer gas detection using the Internet of Things (IOT) is discussed in this chapter. IoT is a collection of interconnected computing devices, mechanical and digital equipment, items, animals, or persons with a unique identifier and the ability to exchange data across a network without the need for human interaction. The prior work on crack and sewage gas leakage level detection is discussed in this chapter. It contains information on the proposed feature descriptors that make up the Tristate Pattern. The examination of bounding box pixels.The extentof a pleural effusion can be assessed by comparing pixel ratios of lung structure between normal and pathologicalsituations. Then, to improve the existing functions of the traditional drainage tool and ensure drainage safety, a smart drainage monitoring system is created, which includes (a) drainage volume and necessary time detection,(b) unplanned removal warning, and (c) physiological condition monitoring. Edema and hemothorax (exudates and exuded), chylothorax, and biliothorax are the pathologic symptoms of the accumulation of body fluids in thechest cavity surrounding the lungs, and they can be separated into numerous categories. Heart illness, pneumonia,pulmonary hypertension, pleuropulmonary malignancy, trauma, and chest surgery are all causes of this aberrant condition (open heart surgery). Pleural effusion is the most common of these illnesses.Pleural drainage is the mostusually done technique in cases of heart disease or chest surgery. Okyay Kaynak, an associate editor, was in chargeof managing the evaluation of this paper and authorising it for publication after vascular catheterization and tracheal intubation. Pleural effusion affects 41% of patients admitted to the ICU, according to reports. When the effusion amount exceeds 1,000–1,500 mL, this pathologic situation interferes with breathing by limiting lung expansion, causing atelectasis, dyspnea, and arrhythmias. Pleural effusion can be detected with a stethoscope andobserved with chest ultrasonography, chest computed tomography (CT) scan, and upright chest X-ray techniquesduring physical examinations. CT is the gold standard, but it isn't perfect.

2.LITERATURE REVIEW

"Development and test of manhole cover monitoring device using lora and accelerometer" in this reference paper In the development of underground pipe networks, manhole cover monitoring devices are critical. People are grappling with three major issues: how to measure the title angle or status of the manhole cover, how to communicate data from beneath the manhole cover, and how to work in low power for a long servicelife, all of which are being investigated and tested. Lora requires only a computer to read updates, and the Lora mobile app and website are not connected to the Lora.

"Road manhole cover delineation using mobile laser scanning point cloud data" in this reference paper From mobile laser scanning data, a procedure for defining road manhole covers was created. The delineatingmanhole covers of varied states and on complicated road surface settings is based on the superpixel -based patch creation technique, the convolutional capsule network classifier, and the marked point process of discs.Quantitative evaluations on three test data sets revealed that the proposed method achieved average completeness, correctness, quality, and F1-measure values of 0.965, 0.961, 0.929, and 0.963 a superpixel segmentation strategy for object-oriented patch generation; a deep convolutional capsule network classifier with capsule convolution operations for manhole cover detection; and a marked point process of discs for accurate manhole cover delineation.

"Simulation model and case study of drainage process after pressure test of large drop natural gas pipeline"in this reference paper The intake pressure of the pipeline has no major influence on the pig's movingspeed when adjusting the inlet pressure and outlet flow, and the outlet flow rate is the key factor affecting thepig's moving speed when managing the inlet pressure and outlet flow. (2) If the input pressure and output velocity are controlled, the pressure change at each point in the pipe is about equal to the elevation change before the point. When the pig is travelling uphill, the liquid pressure in front of it is rising; when the pig is moving downhill, the liquid pressure in front of it is lowering. If you want to regulate the incoming gas flowrate.

"A better view over titan drainage network through RGB fusion of cassini SAR images" The PDS data (considering BIDR photos with the greatest resolution of 256 pixels/degree) cover over 60% of Titan's surfacebetween 60° N and 90° N, with half of this region covered by at least two overlapping images and a quarter by three or more images. If there are just two photos, one of them should be assigned to two of the available channels. The technique can be repeated if there are more than three. The similar method may be used to increase the percentage of overlapping regions in lower quality BIDR pictures. We're starting a mission to apply this strategy to all of Titan's drainage networks that have been observed several times by the Cassini SAR instrument.

"Biophotonic strategies of measurement and stimulation of the cranial and the extracranial lymphatic drainage function" Photomodulation of the cranial and extracranial lymphatics might be a viable treatment option for brain ailments caused by CSF outflow problems. Recent findings reveal that infrared laser irradiation has a considerable impact on the lymphatic drainage and cleaning function in the brain meninges and the cribriform plate, which is the major CSF exit point from the brain. In this regard, ILILT may be an useful noninvasive approach for treating cribriform plate obstruction, which can result in the development ofa variety of brain diseases owing to a blockage of CSF drainage. Several study organisations' pilot results clearly show that the lymphatic system is a doorway not just into the brain but also out of it.

3.RELATED WORK

The sensor is a multifunctional low-power integrated system with a tiny footprint. The sensor collects datafrom its surroundings, which is then exchanged among the sensors and with the base station via a Sink node. In urban locations, drainage is critical for preventing flooding. Although many researchers have studied the drainage system, little has been stated about drainage management research. The modelling of sewage systemcontrol for monitoring sensors and instrumentation drainage conditions was the subject of these investigations.While no research has been conducted on the use of a wireless sensor network to regulate drainage systems.The proposed study will focus on the development of an underground drainage monitoring system based on a wireless sensor network.

4.PROBLEM IDENTIFICATION

The world today is moving at breakneck speed, thanks to the rapid advancement of technology. People mustact quickly to keep up with it so that they do not miss out on new technologies available today. With the passageof time, it has become imperative to develop an application or product that is beneficial to all parts of society,regardless of their socioeconomic status. The basic project concept is to design an underground drainage overflow detection system that would automatically notify the current status of drainage water level in variousunderground manholes throughout the city and would have real-time monitoring capabilities using wireless sensor network techniques. To solve the citizen's problem.The open drainage system causes health problems and accidents due to mosquitos. It prevents mosquito-borne disease transmission and ensures a healthy and clean environment.

5.PROJECT OBJECTIVES

The purpose of this project is to satisfy the criteria of the Underground drainage monitoring system by achieving the following objectives. To design a simple subsurface drainage system. To avoid becoming involved in an accident caused by an open manhole. To develop a cost-effective method. To stop the spread ofthe mosquito-borne illness. To maintain a healthy atmosphere throughout the city.

BLOCK DIAGRAM

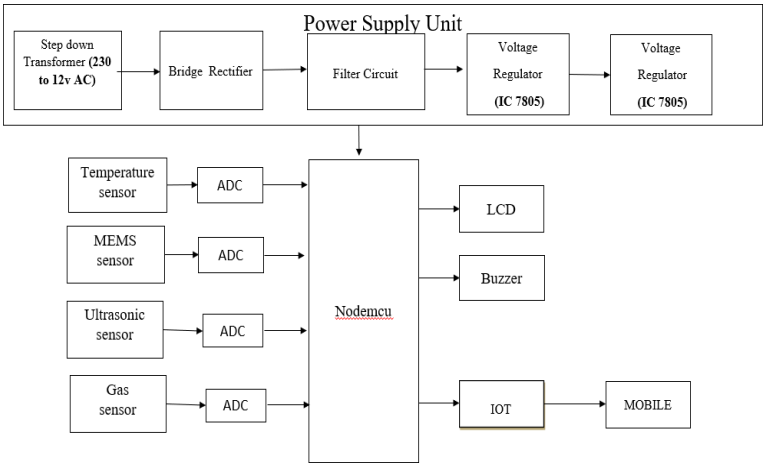

Fig-1: Block diagram of the system

PROPOSED SYSTEM

Our suggested system includes the Node MCU, gas sensor, ultrasonic sensor, temperature sensor, mems sensor, and buzzer. NodeMCU is an open-source platform based on the ESP8266 that allows devices to connectand data to be transmitted via Wi-Fi. They are commonly used to detect and monitor hazardous or explosive gases. In businesses and manufacturing facilities, gas sensors are used to detect smoke, carbon monoxide, andgas leaks. An ultrasonic sensor is an electronic device that detects the distance between a target item using ultrasonic sound waves and transforms the reflected sound into an electrical signal. They are devices that measure temperature data using electrical impulses. MEMS accelerometers are used in applications where linear motion is required, such as in robotics.Without a permanent reference, things like movement, shock, andvibration must be measured. A buzzer is a sound signalling device that is also known as a beeper.

PROJECT IMPLEMENTATION

Sensors to detect blockages, floods, and gases will be part of the intelligent system. The sensors' and system's intelligence will check for impediments within the system and may provide the most accurate positionand other data for additional actions. The system can also detect the presence of different harmful gases such as methane (CH4), oxide (SO2), CO (CO), and others. If the level of such gases exceeds the specified value, the system will create an alert via an alarm system, allowing the Health Department to take appropriate action.The module is implemented using wireless device networking technology, in which each node will carry its own data in addition to that of its neighbours, and may pass it on to the next node using hopping techniques.Theentrance node sends all of the data packets together and stores them in the cloud, where they are accessible in an amount state of affairs for continual monitoring are concurrently sent by the entry node and kept in the cloudof those data square measure accessible in quantity state of affairs for continuous monitoring.

6.OUTPUT

In output four sensors are used MEMS sensor, temperature sensor, ultrasonic sensor, and gas sensor are utilised to monitor the drainage system level in the output. The sensors are connected in Nodemcu and fix the device under the drainage, where we can observe the water level, temperature, angle detection level, and type of gas and the output is displayed using LCD and an IOT system(ubidots).

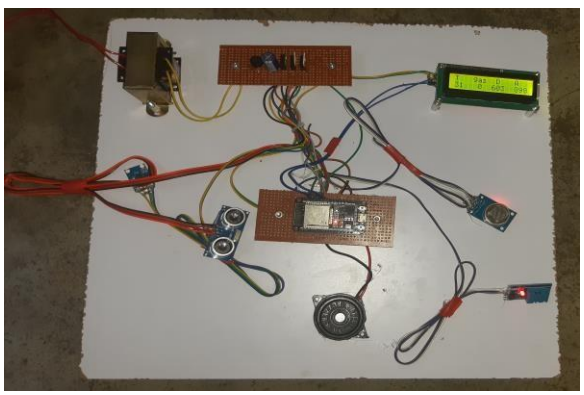

Fig-2: Design of QUANTITATIVE DETECTION AND PREDICTION OF ASPHYXIATING GAS MONITORING INTHE ENVIRONMENT

Fig-3: Reading of Temperature and Ultrasonic Sensor

Fig-4: Reading of Gas and Mems Sensor

MOTIVATION

An IoT-based system can provide data from linked devices to non-experts. We may easily collect real-timeinformation from any location using the cloud and GSM module. IoT makes automation easier. It's an excellenttime-saving device. It simplifies data retrieval. The ability to predict demand and act precisely using data fromthe Internet of Things network.

7.CONCULUSION AND FUTURE SCOPE

The purpose of this project is to develop a leak detection and monitoring system that meets safety requirements and prevents free accidents. The device detects gas, temperature values, and measures distance and angle deviation, all of which are simply visible via the mobile app. Compared to human approaches, our technology responds quicker and may transmit crucial information more swiftly. In the case of a leak, the system alerts the right person and responds swiftly by sending SMS. It can be used in large-scale enterprises inthe future. This is beneficial for manual scavengers as well as those who live in a neighbourhood with a drainage problem. More high-quality sensors might be used in this system to detect precise values. This project may be utilised in agriculture/crop/environment monitoring and control systems with little changes to the algorithm.

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