IOT BASED MANHOLE MONITORING SYSTEM

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Abstract— Drainage system monitoring plays an important role to keep the city clean. In fact, not all areas have drainage monitoring teams. It leads to irregular monitoring of the drainage condition. The irregular monitoring leads to the blocking of the drainage that implies the salutation which triggers flood. Manual monitoring is also incompetent. It requires professionals but they can only monitor very finitely and maintain low accuracy. Also sometimes due to lack of knowledge the worker may meet with an accident as they have no idea what will be the conditions in those manholes. This project is about the application and design function of a smart and real-time Drainage and Manhole Monitoring System with the help of Internet of Things.

- *Keywords*— *Counterfeiting, Image processing, Pre-processing, Segmentation, Edge detection, Noise cancellation.*

I. INTRODUCTION

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Drainage system plays a very important role in big cities where millions of people live. Drainage system is known as the base for land dryness from the excess and unused water. Rain water and wastewater. Drainage conditions should be monitored in order to maintain its proper function. In fact, not all areas have drainage monitoring teams. It leads to irregular monitoring of the drainage condition. The irregular monitoring has a contribution on the blocking of the drainage that implies to the salutation which triggers flooding in the neighborhood. Manual monitoring is also incompetent. It needs a lot of dedicated people who are only able to record limited reports with low accuracy. The problem arises in such drainage lines that can cause serious issues to the daily routine of the city. Problems such as blockage due to waste material, sudden increase in the water level as well as various harmful gasses can be produced if the proper cleaning actions are not taken from time to time. Today's drainage system is not computerized due to which it is hard to know if blockage is occurring in a particular location. Also sometimes due the waste in those drainage lines can produce various gasses like methane (CH4), carbon monoxide (CO), etc which are harmful and can

cause serious problem if inhaled by humans in large amount and these problems are generally faced by the drainage workers due to which death can occurs. Also, we don't get early alerts of the blockage or rise in the amount of those gasses or the increase in water level. Hence detection and repairing of the blockage becomes time consuming and hectic. WSN is a monitoring technology which incorporates node sensors that expand and integrate use of a wireless network system. Every node consists of the data processing (microcontroller, eg - Arduino) memory (program, data, flash memory), NRF transceiver, power supply system and involves one or more sensors. WSN systems have a higher level of precision than wired network systems with respect to cost; flexibility and reliability are expected to replace hybrid or combined technology.

1.1 Problem Statement

1.1 Problem Statement-Today's drainage system is not high-tech. So, whenever there is blockage it is difficult to figure out the exact location of the blockage. Also, early alerts of the blockage are not received. Hence detection and

Repairing of the blockage become time consuming. It becomes very inconvenient to handle the situation when pipes are blocked completely. Due to such failure of drainage line people face a lot of problems So, this system proposes:

● Detect the location

● The system governing the flow of sewage from the pipes.

●Use of flow sensors to detect the variations in the flow.

●Get the prior alerts of blockages and locate them using

●Trace location using GPS and send SMS through GSM.

II. LITERATURE SURVEY

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Automated Internet of things for uunderground ddrainage and mmanhole mmonitoring ssystem for mmetropolitan ccities. This research paper discusses the importance of sensor networks in the IOT world. Since there are a lot of devicee of different varieties which sometimes lead to issues in defining common requirements for the WSN nodes and platforms. Real world approach to resolve this issue and making the system more accurate, less costly and easy to maintain. This model checks water level, temperature as well as pressure in drainage system IoT technology for improving and maintaining sewage conditions and providing solutions to fatal issues that will have features like low maintenance, low cost, fast deployment, and a high number of sensors, long life-time and high quality of service. There can be improvement by providing more features like blockage preventions, safety precautions, and concerns for sewage cleaners by checking sewage lines conditions, live analysis of every sewage linee analyzing sewage waste.

A. *IOT based Sewage Monitoring System*

The sewage inspection framework forms were used to save workers' lives in unsafe conditions. It sends a reminder to the offices that employ these workers when the ppm levels of specific gasses go beyond the prescribed levels. Arduino is used in the survey but Arduino cannot handle so many sensors at a time so it would not be an effective approach.

B. *An Effective Safety System for Identification and Removal of Toxic Gasses in Drainage Cleaning Process*

It detects the toxic gasses and alerts the system by microcontroller. The hazardous gasses like H_2S,CO,CH_4 will be sensed and displayed each and every second in the LCD display. If the gas concentration level is increased then an alarm is
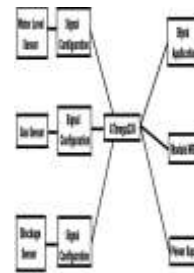
generated immediately and a message will be sent via GSM.

III. EXISTING SYSTEM

From the observation of the papers, it can be said that a system to detect fraud currency for Indian Notes. For the computerized module to be accurate and reliable, it is necessary to extract enough financial characteristics from the currency image. Clustering will be performed using K-means algorithm in an efficient way, in which it forms the aggregation of the image features individually. By recognizing the input picture, the SVM algorithm was then used to identify the input picture as 10, 20, 50, 100, 200, or 500, compare its features, and classify it as genuine or fake. K-Means algorithm is used for clustering the features of the image. The algorithm will be very useful for classification. It classifies into groups and make a cluster. Then it compares the cluster with the information store in the data base and displays the desired output. In SVM (support vector machine) algorithm as all the attributes are in different plane, it is difficult to execute and process. With the help of this module or libraries present in scikit learn help us to calculate and convert on dimension to another.

IV. PROPOSED SYSTEM

● The smart drainage system will have:
● 1. Sensors to detect blockage, flood and gasses.

- 2. The intelligence of sensors and systems will identify the clogging inside the drainage system and will give the details of the location and other information for further actions.

- 3. The system will also sense the presence of various harmful gasses such as Methane (CH_4), Sulfur dioxide (SO_2), Carbon monoxide (CO) etc.

- 4. As the level of such gasses pass the threshold value the system will generate the alert using an alarm system by which the Health department will take proper action on it.

- 5. The module is implemented using Wireless Sensor Networking (WSN) technology each node will carry its own data along with the data of neighboring nodes and will pass it to the next node by hopping techniques.

- 6. These entire data packets will be collectively sent by the gateway node and stored at the cloud. All these data will be accessible in a real-time scenario for continuous monitoring.

Fig 1 Block Diagram Of Proposed Syst
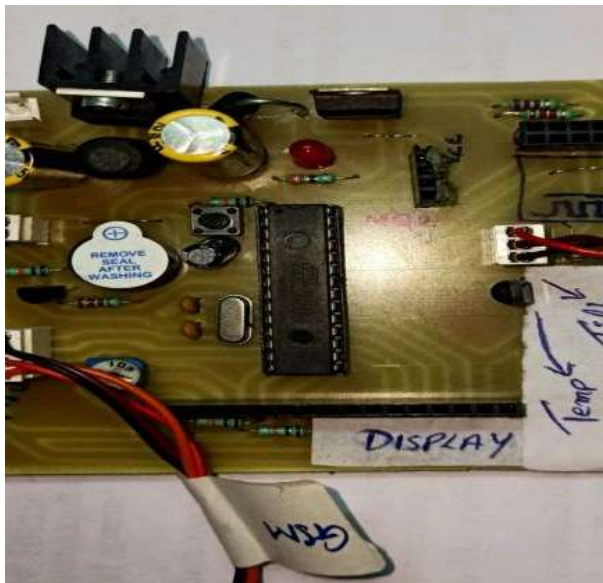
OBJECTIVES:

●Predictive drainage clogging system: The intelligence of sensors and predictive systems identifies the drain clogged spot and gives us the details for further actions to take.

●Completely connected: The sensors are communicated through communication modules to share information.

● The main objective of this project is to keep the city clean, safe and healthy. And replace the manual work of drainage monitoring for the safety of sewer workers, humans and the city.

● To help proprietors, contractors and workers to prevent gas poisoning in drainage work.

V. EXPERIMENTAL RESULTS

Fig.1 Existing System

Fig.3 Components Setup

Fig.4 GSM Module

Fig.2   Gsm   Setup

Fig.5 Display output

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VI. FUTURE SCOPE

In the future, we will work with this system so that it can overcome its limitations. We have a plan of presenting a proposal to the Government. If we can get a handsome fund from the Government, we have a plan to increase the quality of power source, server, water sensor quality, and implement a biometric switch system that will be used to press for emergency purposes. This emergency switch will send a message to the authority if our device has any functional problems. To avoid false messages or updates, we will use a biometric switch so that we can identify the person. This proposed system has the potential to solve the air pollution and the birth of Aedes mosquitoes and can be extended to have more features.

VII. CONCLUSION

Conclusion   Underground monitoring is a challenging problem. This project proposes different methods   for monitoring and managing the underground system. It explains   different   applications   like   underground drainage detection and manhole identification in day to day life. Various parameters like temperature, toxic gasses, flow and level of water are being monitored and updated on the net using the online of Things. This enables the person in-charge to need the mandatory actions regarding the identical. during this manner the unnecessary trips on the manholes are saved and will only be conducted as and when required. Also, real time updates online   helps   in   maintaining   the regularity in drainage check thus avoid the hazards.

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