



# IJEAST

INTERNATIONAL JOURNAL  
OF ENGINEERING APPLIED SCIENCE  
AND TECHNOLOGY



**VOLUME : 6    ISSUE : 11    Print / Issue Publication Date: 11-May-2022**



**ISSN : 2455-2143**



**DOI : 10.33564/IJEAST.2022.v06i11.026**

Indexed In



[WWW.IJEAST.COM](http://WWW.IJEAST.COM)

[editor@ijeast.com](mailto:editor@ijeast.com)



# SMART MANHOLE DETECTION

Memane Abhishek Ganpat, Aher Omkar Ganpat Bansoe, Sumit Shivaji

Department of IT

JSPM's Jaywantrao Sawant Polytechnic

Sawant Pune, Maharashtra, India

**Abstract:** Communication through web is turning out to be a smart city is that the long term goal to possess cleaner and better amenities for the society. Smart underground infrastructure is additionally an infinite feature to be considered while implementing a wise city. system monitoring plays an unlimited role to remain town clean and healthy. Since manual monitoring is incompetent, this finally finally winds up in slow handling of problems in drainage and consumes longer to resolve. To mitigate of these issues, the system employing a wireless sensor network, consisting of sensor nodes is meant. The proposed system is low cost, low maintenance, IOT based real time which alerts the managing station through message when any manhole crosses its threshold values. this method reduces the death risk of manual scavengers who clean the underground drainage and also benefits the final public.

**Keywords:** Drainage monitoring system, IOT, Monitoring smart city, Infrastructure, Scavengers.

## I. INTRODUCTION

An integral a component of any system is that the access points into it when it involves cleaning, clearing, and inspection. Metropolitan cities have adopted underground system and so the city's municipal corporation must maintain its cleanliness. If the drainage outlet management is not at its best, H<sub>2</sub>O gets dirty and lead to infecting diseases. Blockages in drains during monsoon season, causes problems within the routine of the final public. Hence, there should be a facility within the city's corporation, which alerts the officials about blockages in sewers, their exact location. It mainly acknowledges within the sector of alerting the people about the gas explosion, increase within the water level and so the temperature level. It uses IOT to make the drainage monitoring system in an exceedingly highly automotive by using sensor for detecting and sending alerts through GSM and GPS module to the authorities. This project overcomes the demerits by detecting drainage water blockage by installing water rate of flow sensors at the intersection of nodes. When there is a blockage in an exceedingly particular node, there's variation within the flow of drainage water which when cross the set value will display the alert within the managing station. Also other demerits are solved by detecting temperature variations inside the manhole and alerting the similar to the

managing station. Also, rate of flow sensors are used to detect the over flow of the drainage water and alerting the a dead ringer for the managing station through automatic message. Maintenance of manholes manually is tedious and dangerous because of the poor environmental conditions inside so, the foremost focus of this project is to produce a system which monitors water level, atmospheric temperature, water flow and toxic evolved gas. If drainage gets blocked and sewage water overflows, it's sensed by the sensors and message is distributed to the municipal. It is, therefore dangerous to travel inside the manholes for inspection of its current state. to resolve all the problems related to underground sanitation, a distant alarm system is vital for transmitting data collected by the sensors set inside the manhole to the managing station. This includes components like controller, memory, transceiver and battery to supply power.

## II. RELATED WORK

An integral part of any drainage system is the access points into it when it comes to cleaning, clearing, and inspection. Metropolitan cities have adopted underground drainage system and the city's municipal corporation must maintain its cleanliness. If the sewage maintenance is not proper, ground water gets contaminated causing infectious diseases. Blockages in drains during monsoon season, causes problems in the routine of the public. Hence, there should be a facility in the city's corporation, which alerts the officials about blockages in sewers, their exact location. It mainly acknowledges in the field of alerting the people about the gas explosion, increase in the water level and the temperature level. It uses IoT to make the drainage monitoring system in a highly automotive by using sensor for detecting and sending alerts through GSM and GPS module to the authorities. This project overcomes the demerits by detecting drainage water blockage by installing water flow rate sensors at the intersection of nodes. When there is a blockage in a particular node, there is variation in the flow of drainage water which when cross the set value will display the alert in the managing station. Also other demerits are solved by detecting temperature variations inside the manhole and alerting the same to the managing station. Also, flow rate sensors are used to detect the over flow of the drainage water and alerting the same to the managing station through automatic message. Maintenance of manholes manually is tedious and dangerous due to the





- [6]. Prof S. A. Shaikh 1, Suvarna A. Sonawane2, “Monitoring Smart City Application using Raspberry PI Based on IOT” International Journal of Innovative Science, Engineering&Technology, VOL 5 Issue VIL, July 2017.
- [7]. Prof Mangesh Sk1, Santosh Rao2, “Automated Internet Things For Underground Drainage And Manhole Monitoring System For smart Cities” Innovative Science, Engineering&Tec

# IJEAST

INTERNATIONAL JOURNAL  
OF ENGINEERING APPLIED SCIENCE  
AND TECHNOLOGY

## ABOUT IJEAST

International Journal of Engineering Applied Science and Technology (IJEAST) is a peer-reviewed, open access journal that publishes high-quality research papers in the field of Engineering, Applied Science and Technology.

IJEAST aims to provide a platform for researchers, academicians, and professionals to share their innovative ideas, research findings, and practical experiences with the global scientific community.

## FOCUS AREAS

- Engineering
- Applied Science
- Technology
- Innovation & Development
- Interdisciplinary Studies



### PEER REVIEWED

All submissions are rigorously peer reviewed to ensure quality.



### OPEN ACCESS

Free and unrestricted access to research for all.



### GLOBAL REACH

Connecting researchers and professionals worldwide.



### TIMELY PUBLICATION

We ensure a swift and efficient publication process.



For more information, visit our website

[www.ijeast.com](http://www.ijeast.com)



INTERNATIONAL JOURNAL  
OF ENGINEERING APPLIED SCIENCE  
AND TECHNOLOGY

✉ [editor@ijeast.com](mailto:editor@ijeast.com)

🌐 [www.ijeast.com](http://www.ijeast.com)

📍 India



2455-2143