International Journal of Advance Research in Science and Engineering
Vol. No.9, Issue No. 03, March 2020
www.ijarse.com
IJARSE
ISSN 2319 - 8354

SMART DRAINAGE SYSTEM USING IoT

Ragul.P[1] , Seenu balaji.M[2], Karthick.N[3] , Suresh.A[4]

[1]Department of ECE, Sengunthar Engineering College (Autonomous), Tiruchengode, (INDIA)

[2]Department of ECE, Sengunthar Engineering College (Autonomous), Tiruchengode, (INDIA)

[3]Department of ECE, Sengunthar Engineering College (Autonomous), Tiruchengode, (INDIA)

[4]Assistant Professor, Department of ECE, Sengunthar Engineering College (Autonomous),Tiruchengode, (INDIA)

ABSTRACT:

Drainage system is the process by which water, sewage or other liquids are drained from a place and to maintain the proper function of drainage, its condition should be monitored regularly. But manually it is very difficult to monitor all area where a human cannot reach.Different kind of work has been done to detect, maintain and manage these underground systems.

***Keywords**: embedded systemsIoT, drainage systems.*

1. INTRODUCTION:

The underground drainage system is an important component of urban infrastructure. It is considered to be city's lifeline. Mostmanagement on underground drainage is manual therefore t is not efficient to have clean and working underground system also insuch big cities, it is difficult for the government personnel to locate the exact manhole which is facing the problem. Therefore, it isessential to develop a system which can handle underground drainage without human intervention. Underground Drainage involvessewerage system, gas pipeline network, water pipeline, and manholes. This project describes various functions used for maintenanceand monitoring of underground drainage system. It provides a system which is able to monitor the water level, atmospherictemperature, water flow and toxic gasses. If drainage system gets blocked and water overflows it can be identified by the sensorsystem. And that sensor sends information via the transmitter which is located in that area to the corresponding managing station.

2. LITERATURE SURVEY:

2.1"Navin G Haswani ; Pramod J Deore;Drainage is the system or process by which water, sewage or other liquids are drained from a place and to maintain the proper function of drainage, its condition should be monitored regularly. But manually it is very difficult to monitor all area where a human cannot reach. This influences the blockage of underground pipes and overflows of water cause the health problem. To mitigate all these issues here we are developed and implemented the system using wireless sensor network. It consisting of small devices used to collect data. These sensing devices are called node. The proposed system is low cost, less maintenance, long life and web-based real time system, which update the municipal officer by text message when any manhole crosses the threshold value. This system directly impacts on the health issues of citizens and worker who cleans the underground drainage.

2.2." **Xuefeng Zhu ; Zao Feng ; Guoyong Huang;**Regarding the difficulties in detecting the partial blockage in undrground drainage pipeline and the degree of blocking , a novel method based on CEEMD and GG clustering is proposed in this paper. Firstly, the acoustical pressure signals collected from the pipeline were calculated to obtain the sound pressure level data, which were then decomposed by the complete ensemble empirical mode decomposition (CEEMD) ,the first 4 IMF components which selected by the Pearson's correlation coefficient and their energy proportion were extracted and will be used as the clustering features. Finally, the principle component analysis (PCA) was adopted to proceed the dimensionality reduction onto the feature vectors, and the GG (Gath-Geva) algorithm was applied to cluster the feature vectors into classes and to further identify the blocking conditions.

2.3 "**Franco D'Alessandro;** Effective mitigation of direct and indirect lightning discharges is an important aspect of the reliable operation of any mining operation. Whilst a systematic protection plan can be implemented relatively easily for above-ground operations, the circumstances are rather more complex for underground mines. In addition, underground coal mines present even greater challenges due to the risk of methane ignition. This paper outlines the main variables and transfer mechanisms of relevance to underground mines and then provides some examples of calculations carried out to quantify the dangers that lightning may pose in underground coal mines. The main factors that elevate the risk of lightning in underground coal mining operations are identified, options for mitigation are outlined and one practical mitigation strategy that may be implemented for gas drainage operations is described and verified.

3. EXISTING SYSTEM:

- Traditional methods of drainage monitoring system monitored by manual

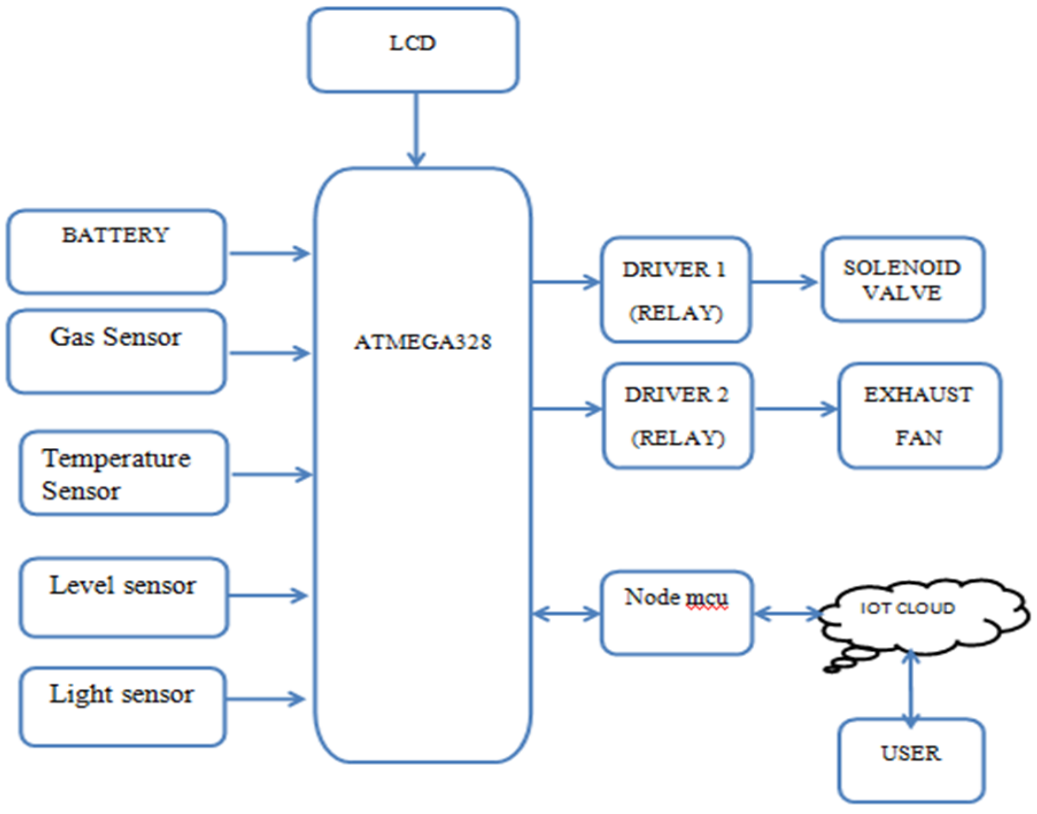
International Journal of Advance Research in Science and Engineering
Vol. No.9, Issue No. 03, March 2020
www.ijarse.com
IJARSE
ISSN 2319 - 8354

- It is labour intensive and high cost (labour, operation; and equipment)
- The lack of real time information to enable critical decisions for drainage workers. Therefore, there is a need for continuous online monitoring.

4.PROPOSED SYSTEM:

- By focusing on the above issues we have developed a low cost system for real time monitoring system in IOT environment.
- The design system applies a specialized IOT module for accessing sensor data (simulated) from core controller to the cloud.
- The sensor data can be viewed on the cloud using a special IP address.

5.BLOCK DIAGRAM:



6. CONCLUSION AND FUTURE ENHANCEMENT:

In the current work a rule-based control system was presented to monitor a given UDS, determining when and howto operate a set of barriers to attenuate as much as possible the effects of intense rainfall events.The developed control system monitors a given UDSremotely, by using rainfall, flow and water level sensors and actuator networks to collectinformation in strategic locations,process it, identify critical regions in the UDS where it must actuate, and compute control actions to be executed with the goal of avoiding overload scenarios, as much as possible. The obtained results suggest that the proposed approach can play a significant role in the accommodation of increasingly intensive rainfall and flood events, verified as a result of climate changes and urban expansion phenomena.Very few studies were found focusing on sewer storage using barriers with real-time control, which highlights the novelty in this work.

7. REFERENCES:

[1]Siemens S7-200 System Manual.

[2]W Peng , Z D Xu, D N Wei,. Study on the Automatic Control System of Mine's Main Drainage Pump [J]; Coal Engineering, 2009 (6)

[3] J. Z. HANG, Z. X.WANG, The Development of Electric Control System of Mine Hoist, Engineering technology and Application, 2010, 47-50

[4]S. Z. WU, H. LIN , The Application of Emerson CT SP Series Frequency Converter in Mine Hoist System, Electric Transmission, 2010, 66-68

[5]S. Q. WANG, Application and Development of the Frequency Conversion Technique for the Mine Hois t. Mineing&Processing Equipment , 36(23), 71-74

[6]Y. F. JI, L.XU, Y. WANG, Research on Speed Regulation Control System of Mine AC HOIST on PLC , Metal Mine, 4, 2010, 123~125