Flood Monitoring and Air Quality Monitoring Using IOT

K Ramesh[1], Muskan S[2], Kankanala Prashanth Reddy [3], Reddy Reddy Siri[4]
[1]*Assisatant Professor, Dept of ECE, Teegala Krishna Reddy engineering college*
[2,3,4]*Student Dept of ECE, Teegala Krishna Reddy engineering college*

***Abstract*: The primary goal of this venture is to lay out a flood detection and avoidance device to be able to stumble on and ship the records about the flood routinely to the close-by Government Unit and to defend the harm as a result of the flood and to citizens with the use of an Arduino. While the method removes the effects of flood, the device makes use of numerous elements to stumble on the flood. We place a sensor to degree a water stage in rivers, lakes, and streams primarily based totally on IoT. The motive of flood warning is to stumble on and forecast threatening flood activities 5so that the public may be alerted in advance. Flood warnings are relatively adaptive in which safety thru huge scale, difficult defenses, isn't desirable. Sensors, GSM, and wireless modules are used to provide records about the flood. The sensors interact with microcontroller which processes this data and transmits it over internet. This allows authorities to monitor air pollution in different areas and take action against it. Also, authorities can keep a watch on the noise pollution near schools, hospitals and no honking areas, and if system detects air quality and noise issues it alerts authorities so they can take measures to control the issue. In this proposed layout, the alerting device will screen close to with the aid of using dams concerning the reputation of the floods with sensors and the records may be dispatched the use of GSM module.**

Index Terms: IOT, Flood monitoring, Air quality, IR Sensor, GSM, GPS.

I. INTRODUCTION

The most common factor that cause major damage to life, property and country's economy is the flood. Flooding is brought on by an increased quantity of water in lake or river when it is overflowing. When a dam fractures and abruptly releasing a massive quantity of water not only houses and property are damaged, sewage overflow and chemical spillage also leads to a variety of diseases afterwards. To manage this kind of situations and alert people understanding of increased water level and speed of water flow are valuable for discovering potential seriousness of the flood. This project presents the details of how the data - like flood level and rain intensity are collected from sensors and made available on cloud and sending alert messages by using Arduino uno, Thing speak-an IOT platform and a Global System for Mobile communication (GSM) and short message service (SMS) to relay data from sensors to computers or directly alert the People of that area through their mobile phone. This project will update the water level at the web server and the system will issue an alert signal to citizens for evacuation so that fast necessary actions can be taken. Air pollution is the biggest problem of every nation, whether it is developed or developing. Harmful effects of pollution include mild allergic reactions such as irritation of the throat, eyes and nose as well as some serious problems like bronchitis, heart diseases, pneumonia, lung and aggravated asthma. IOT Based Air Pollution Monitoring System monitors the Air quality over a web server using Internet and will trigger an alarm when the air quality goes down beyond a certain threshold level, means when there are sufficient number of harmful gases present in the air like CO2, smoke, alcohol, benzene, NH3, LPG and NOx. It will show the air quality in PPM on the LCD and as well as on webpage so that it can monitor it very easily.

II. LITERATURE SURVEY

Garima Singh, proposed represents the development strategies of Internet of Things based flood monitoring and alerting system with weather forecasting through open weather API. This project is based on the open-source electronic platform i.e., Arduino.

N. V. S. Sunny Varma, Proposed Flooding is the major turn-up disasters that occur in different parts of the world. As these causes a huge amount of loss in the human environment. To reduce and make the system from alert, detecting these conditions is very crucial.

Monika Singh Et al. in August 2019 proposed an Air Pollution Monitoring System. This system uses an Arduino microcontroller connected with MQ135 and MQ6 gas sensor which senses the different types of gases present in the environment. It was then connected to the Wi-Fi module which connects to the internet and LCD is used to display the output to the user and buzzer alerts when the ppm cross certain limit.

III. PROPOSED SYSTEM

In this module, we are making a device which will sense the possibility of flood, firstly by analyzing values from the IOT device and then checking the weather forecast. The work will not end here, it will keep on reading the values at each and every second and updating if it is higher than threshold. So, by installing it know you can easily save your life as well as your society.

This system will monitor the Air Quality over an application using internet and will trigger a notification when the air quality goes down beyond a certain level, means when there are sufficient number of harmful gases are present in the air like CO2 (carbon dioxide), smoke, alcohol, benzene and NH3, LPG. It will show the air quality in parts per million (PPM) on the LCD and as well as on mobile application that can be monitored very easily. LPG sensor is added in this system which is used mostly in houses. The system will show temperature and humidity, they are displayed on LCD.

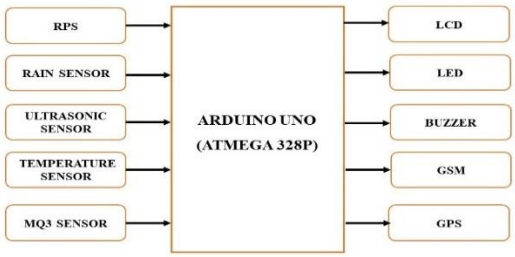


Fig 1.1 Block Diagram

IV. HARDWARE&SOFTWARE TOOLS

A. Hardware Tools

Arduino Uno
LCD Display
GSM
GPS
Rain sensor
Buzzer
Ultrasonic Sensor
Temperature senor
Mq3 sensor
Power supply

B. Software Tools

EAGLE used to create schematic diagram.
Arduino IDE software.

V.METHODOLOGY

A. Schematic Diagram

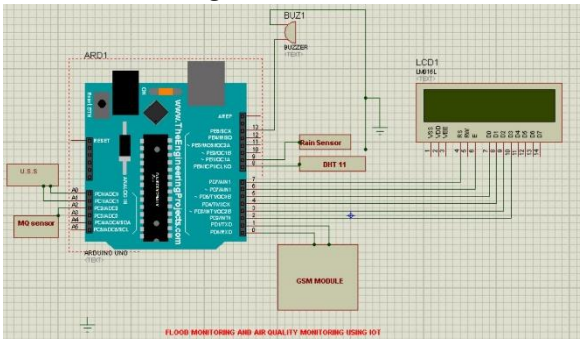


Fig 1.1 Schematic Diagram

B.Flowchart

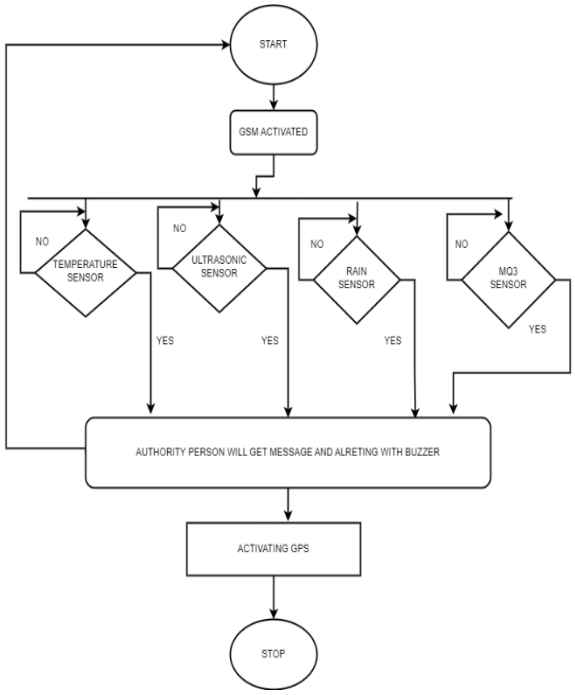


Fig 1.2 Flow Chart

VI. APPLICATIONS

- Implementation of this system in a frequently flood occurring area reduces the level of fear in people.
- This system can be used to determine the overflow of water in water tank
- Roadside pollution Monitoring.
- Industrial Perimeter Monitoring
- Site selection for reference monitoring stations.
- Indoor Air Quality Monitoring.

V1I. ADVANTAGES

- Authority will get information in flood occurring time.
- To easily identify Water level emergency indication.
- Detecting a wide range of gases, including NH3, NOx, alcohol, benzene, smoke and CO2.Co etc.
- Quality of air can be checked indoor as well as outdoor.

VIII. RESULT

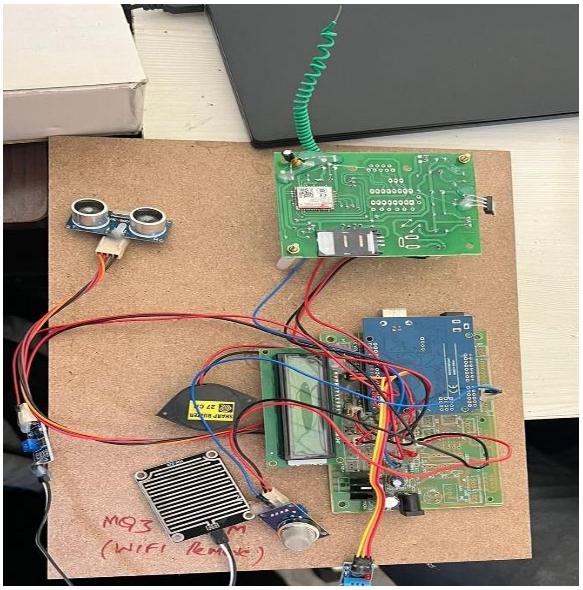
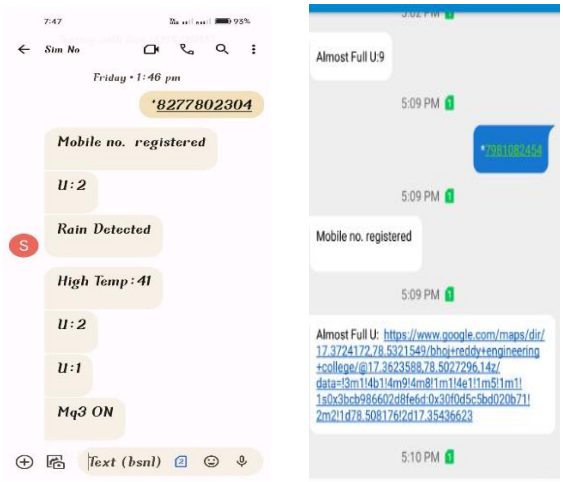


Fig 1.4 Hardware Kit

Figure shows the hardware kit of our flood monitoring and air quality monitoring system. The MQ3 sensor is an Air quality measuring sensor that can be interfaced with Arduino to create a breathalyzer. The temperature sensor can be used to measure the temperature of the environment. The ultrasonic sensor can be used to measure distance. The rain sensor can be used to detect rain and can be used in weather monitoring systems. The LED and buzzer can be used to provide visual and audio feedback. The LCD can be used to display information. The GSM GPS module can be used for location tracking and communication. The RPS can be used to provide power to the system.



Above figure shows the Mobile number registration time and Water level indication. And Output Results with GPS location also. Whenever the ultrasonic value is less than 50 level then it is indicated. and mq3 sensor and temperature are on when there value is 1. temperature sensor is indicated to high temperature and location is indicated.

IX. CONCLUSION

Flood monitoring and alerting system project highlights the possibility to provide an alert system that will overcome the risk of flood. It can also contribute to multiple government agencies or authority that cam ultimately help the society and mankind about the flood like hazardous natural disaster. The model proposed has been already tested and it is working as presented in this project. It will monitor each and every aspect that can lead to flood. If the water level rises along with the speed, it will send an alert immediately. Air quality was designed to help a person to detect and predict the air quality in a particular area. Air Pollution is the major affecting factor to our environment. Not only affecting the environment and affects the human health. The web-based application is developed to predict the air quality. The gas sensors were used for identifying the gases and GPS for getting the location of the area.

X. FUTURE SCOPE

The future scope of our Flood monitoring and air quality monitoring system includes it may be enhanced to monitor multiple locations at the same time and the web page must be able to display the information based on the selection done by authority. In future the project can be upgraded in more ways than one Interface a greater number of sensors to know detail content of all gases present in air. Design Webpage and upload data on webpage with date and time. Interface SD Card to store data. Interface GPS module to monitor the pollution at exact location and upload on the webpage for the netizens.

REFERENCE

1. Sebin Sabu1 and Nora Elizabeth, "Kerela floods-A model of rescue and rehabilitation using information technology and social media-based crowdsourcing", IEEE India info. Vol. 13 No. 3 Jul-Sep 2018.
2. 2. H.A. Rahman, "Global climate change and its effects on natural habitat and environment in Malaysia," Malaysian J. Environ. Manag., vol. 10, no. 2, pp.17-32,2009.
3. Chakradhar Reddy and Nagarjuna Reddy K, "The Prediction of Quality of the Air Using Supervised Learning", IEEE 2021
4. Madhuri VM, Samyama Gunja GH, Savitha Kamalapurkar, "Air Pollution Prediction Using Machine Learning Supervised Learning Approach", International Journal of Scientific & Technology Research Volume 9, Issue 04, April 2020
5. Akshatha S and Jayaram M N, "Air Quality and Dust Level Monitoring using IoT", International Research Journal of Engineering and Technology 2019