Predicting And Alerting System By Message For Natural Disaster

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Abstract- *The IoT-based natural disaster monitoring and alert system is an innovative solution to provide early warnings and alert messages in the event of natural disasters such as earthquakes, forest fires, tornados, and floods. The system uses various sensors such as GSM, ESP8266, ultrasonic sensor, airflow sensor, vibration sensor, DHT11, and LCD to detect changes in environmental conditions and send real-time alerts to authorities and individuals. The system is designed to be cost-effective, efficient, and easy to deploy in any location. The collected data is processed and analyzed in a cloud-based platform, and alerts are generated in real-time to help authorities take necessary actions to mitigate the effects of natural disasters. Overall, this IoT-based natural disaster monitoring and alert system is a crucial step toward creating a safer and more resilient environment for people living in disaster-prone areas.*

Keywords- Internet of things,Alert notification, Arduino, and GSM.

I. INTRODUCTION

An internet connection is a wonderful thing, it gives us all sorts of benefits that just weren't possible before. If you're old enough, think of your cell phone it was a smartphone. You could call and you could text, sure, but now you can read any book, watch any movie, or listen to any song all in the palm of your hand.

The point is that connecting things to the internet yields many amazing benefits. We've all seen these benefits with our smartphones, laptops, and tablets, but this is true for everything else too. And yes, we do mean everything.

The Internet of Things is a pretty simple concept, which means taking all the physical places and things in the world and connecting them to it the Internet. Convolutional Neural Networks.

II. RELATEDSTUDIES

In this research work, a natural disaster alerting system is built which attempts to satisfy the automation of detecting the natural disaster and predicting before the safest stage. The main principle involved is using various parameters at maximum levels. More importantly, it can send alert signals which are the range fixed by the system along with the real range.

Security and manageability of sensor information transmission and deployment ability of sensors connecting to the Internet wirelessly are the major issues though low cost and high scalability are expected. This research work aims at developing a system that facilitates and aids in the collection of data with the help of interconnected modules consisting of multiple sensors useful for smart city monitoring as well as disaster management. This technique would consist of multiple Wi-Fi-enabled modules that together share distributed and heterogeneous resources and data as well as capabilities provided by physical objects such as sensors and actuators [1]. Furthermore, the availability of different types of data, collected by a pervasive urban IOT, may also be exploited to increase transparency and promote the actions of the local government toward the citizens, enhance the awareness of people about the status of their city, stimulate the active participation of the citizens in the management of public administration, and also stimulate the creation of new services upon those provided by the IOT.In recent days, the progress of India towards smart cities and digitalization is noticeable. India's historic vulnerability cannot be overstated. Around 57% of the land is vulnerable to earthquakes. Of these, 12% is vulnerable to severe earthquakes, 68% of the land is vulnerable to drought, 12% of the land is vulnerable to floods, 8% of the land is vulnerable to cyclones, and many cities in India are also vulnerable to chemical, industrial and man-made disasters. Disaster management is the process of addressing an event that has the potential to seriously disrupt the social fabric of the community. Through disaster management, we cannot completely counteract the damage but it is possible to minimize the risk through early warning. The types of disasters are natural and artificial disasters. Natural disasters include earthquakes, landslides, floods, river erosion, cyclones, tsunamis, forest fire, etc. Artificial disasters include

nuclear, chemical, mine, and biological disasters. The Internet of Things (IoT) is a recent communication paradigm that envisions anear future, in which the objects of everyday life will be equipped with microcontrollers, transceivers for digital communication, and suitable protocol stacks that will make them able to communicate with one another and with the users, becoming an integral part of the Internet. The IOT concept, hence, aims at making the Internet even more immersive and pervasive. To properly manage catastrophic events, information needs to be collaborated, for example by sharing resources and/or data and coordinating actions, decisions, and activities. Furthermore, during an emergency, such resources and data have to be merged to accomplish complex tasks, such as evacuating a geographical area and performing operations using actuators. The lack of integrated platforms and infrastructures which assist in data acquisition results in bad management of the emergency. The main concept of the Internet of Things is machine-to-machine communication. Internet-based sensor networks Internet-based sensor networks have recently been gaining attention. Sensors are connected to the Internet and the information from the sensors is gathered at a server through the Internet. Security and manageability of sensor information transmission and deployment ability of sensors connecting to the Internet wirelessly are the major issues though low cost and high scalability are expected. This research work aims at developing a system that facilitates and aids in the collection of data with the help of interconnected modules consisting of multiple sensors useful for smart city monitoring as well as disaster management. This technique would consist of multiple Wi-Fi-enabled modules that together share distributed and heterogeneous resources and data as well as capabilities provided by physical objects such as sensors and actuators [1]. Furthermore, the availability of different types of data, collected by a pervasive urban IOT, may also be exploited to increase transparency and promote the actions of the local government toward the citizens, enhance the awareness of people about the status of their city, stimulate the active participation of the citizens in the management of public administration, and also stimulate the creation of new services upon those provided by the IOT.

III. METHODOLOGY

- The method would be able to monitor a range of natural disasters and send alerts to people in affected areas in real time, allowing them to take appropriate action to stay safe. By using a combination of sensors and IoT technology, the system could provide more accurate and timely information than traditional natural disaster monitoring systems.
- The ultrasonic sensor would be used to monitor water levels in rivers and streams. This would help to detect potential flooding.
- The airflow sensor would be used to monitor wind speed and direction. This would help to detect potential hurricane or tornado activity.

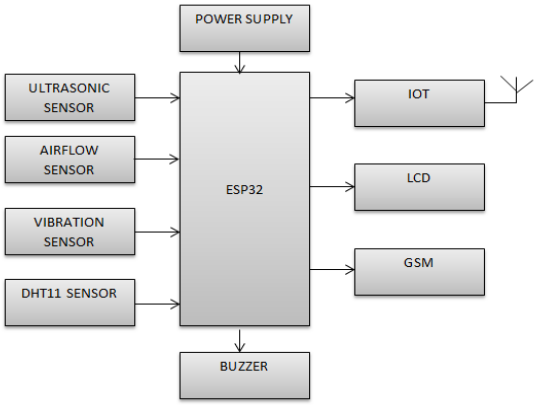
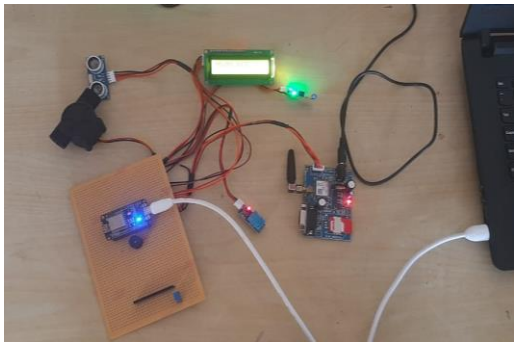


Fig 1: Block diagram

- The DHT11 sensor would be used to monitor temperature and humidity. This would help to detect potential wildfires.
- The vibration sensor would be used to detect seismic activity. This would help to detect potential earthquakes.
- The Arduino board would be used to collect data from the various sensors and send it to a central server for processing.
- The GSM module would be used to send alerts to people in affected areas in the event of a natural disaster.
- The Mobile Network Operator shall promote the use of the requirements contained within this document. The Mobile Network Operator should make commercially reasonable efforts to reference this document in the connectivity contracts they agree with their IoT Service Providers.
- The IoT Service Provider shall ensure that their IoT Services and their IoT Device makers conform to the requirements stated within this document. The IoT Service Provider should reference this document in the supply contracts they place with their IoT Device makers



.Fig 2: Hardware setup

Fig 3: LCD monitor

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IV. EXPERIMENTAL RESULT

The various methods to detect natural disaster by given parameters using both hardware and software methods has to be implemented to give good results. Most of the discussed methods also provide the turnoff method of the buzzer which there is no disaster occurs. So we can be avoided false notifications or alerts.

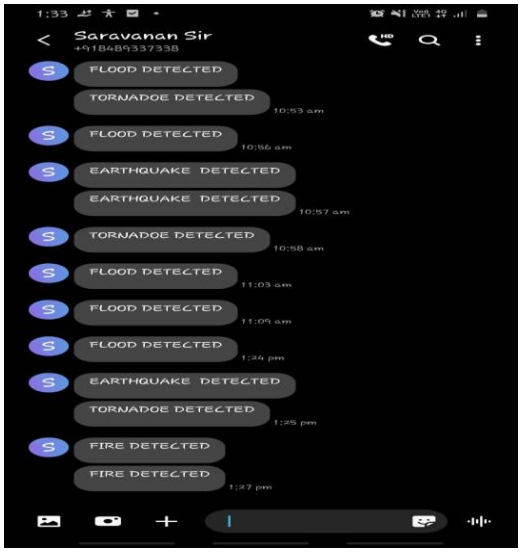

Fig 4:Messagealert notification

V. CONCLUSION

In conclusion, an IoT-based natural disaster monitoring system using GSM, ultrasonic sensor, air flow sensor, DHT11, vibration sensor, and Arduino can be an effective solution to help prevent and mitigate the effects of natural disasters. By using a combination of sensors and IoT technology, the system can monitor various natural disasters in real time and send alerts to people in affected areas, allowing them to take appropriate action to stay safe.

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