FLOOD DETECTION AND WATER MONITORING SYSTEM USING IOT BASED ON DISASTER MANAGEMENT SYSTEM

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Abstract : Now in recent years the natural disasters is a very important issue and this issue is occur in many more region like Kerala, Bhopal, and Malian. This issue is occur due to the global warming, Deforestation, Heavy use of unwanted chemicals. To reduce the effect of the disaster, a flood warning and monitoring are needed to give an early warning to the victims at a particular place with high prone to flood. Natural Disasters leads the vast loss of life and property damages in many countries. Hence we decided to implement one system that will help to our society from the losses. So the objectives of this project is to monitor the floods, fire, spark, landslides and send the alert in case of danger in the form of text message and call to take appropriate action. In this proposed system the detection section will consist of microcontroller and different sensors to detect the different situations like fire, floods, sparks, and landslides but firstly focuses on flood alert system. The system deal with monitoring and controlling the conditions with sensors and send the information to the peoples using Message and automated calls.

Keywords: **disaster management system, Sensors, microcontrollers, Flood.**

1. INTRODUCTION

In the recent days, Many countries are facing of several social issues in aged population, healthcare, disaster reduction/prevention, safety, security, etc. the natural disasters occur in many areas and many people loss their life progress of India towards smart cities and digitalization is noticeable. India's historic vulnerability cannot be overstated. Around 57% land is vulnerable to earthquakes. Of these, 12% is vulnerable to severe earthquakes, 68% land is vulnerable to drought, 12% land is vulnerable to floods, 8% land is vulnerable to cyclones, and many cities in India are also vulnerable to chemical, industrial and man-made disastersIn the recent years, on 30 July 2014 many people lost their lives because of Malin landslides disaster due to the heavy rain in Malin village of pune district in Maharashtra, India. Malin village receiving the heavy rain on 29th July 2014 and the date of 30th July landslide will occurred due to heavy rainfall.

This issue will observed because of deforestation and many other several reasons. There are many more disasters will occurred but the solution is to be implemented the internet of things techniques to reduce the losses and makes an early warning system. This system utilizes the Internet-of-Things (IoT) technologies to helps in social infrastructures to opens a new door for innovative solutions to prevent the losses from natural disasters like floods, forest fire, earthquake, spark etc. and the most important thing is to we save our life and also saves the animals life we firstly focuses on flood alert system .Internet based sensor networks have recently gaining the attention Sensors are connected to the Internet and the information from the sensors is gathered at a server. When Particular region is equipped with sensor devices, microcontroller, and various application become a self-protecting and self-monitoring that environment is the smart environment. Sensors sensor information transmission and monitor the data which will

be collected from various sensors and give alert message to people using SMS and using Calls.

2. RELATED WORK

Albert Joshy Varghese, Abin Thomas Jolly, Astile Peter, Bhavana P Rajeev [1] developed IoT based Disaster Monitoring and Management System for Dams. . These are send to the cloud server via WiFi module ESP8266 for monitoring and control. The proposed system will be helpful to solve all the water related problems.

Kalpesh R. Deshpute, Nilesh S. bawa, Vishal B. Gaikwad, Sagar S. Sawkar [2] designed a Flood detection system using IOT. They developed system , the flood occur, the ultrasonic sensor will sent signal to the microprocessor circuit and the sense water level will be display in the user interface and it will automatically send a Short Message Service (SMS) to those recognized residents.

Syed attique shah, zafer sekedursun r, sufian hameed, dirk draheim, [3] The Rising Role of Big Data Analytics and IoT in Disaster Management: Recent Advances, axonomy and Prospects. In this paper The fusion of BDA and IoT promises a new and more effective approach for carrying out the core operations of disaster management processes With state-of-the-art big data analytical tools and well-managed IoT Mohamad Syafiq Mohd Sabre ,

Mohamad Syafiq Mohd Sabre, Shah Abdullah , Amrul Faruq [4] proposed a Flood warning and monitoring system utilizing internet of things technology. This study based on the development of a smart flood monitoring system using ultrasonic sensors with NodeMCU and Blynk application. The results offer flexibility, efficiency and low cost. Wireless sensor node based on Blynk platform is an ideal platform to monitor flash floods.

Gowthamy J, Chinta Rohith Reddy, Pijush Meher, Saransh Shrivastava, Guddu Kumar [5] In this paper, a prototype water monitoring system using IoT is presented. .For this some sensors are used. The collected data from the all the sensors are used for analysis purpose for better solution of water problems. The data is sends to the cloud server via Wi-Fi module ESP8266. So this application will be the best challenger in real time monitoring & control system and use to solve all the water related problems.
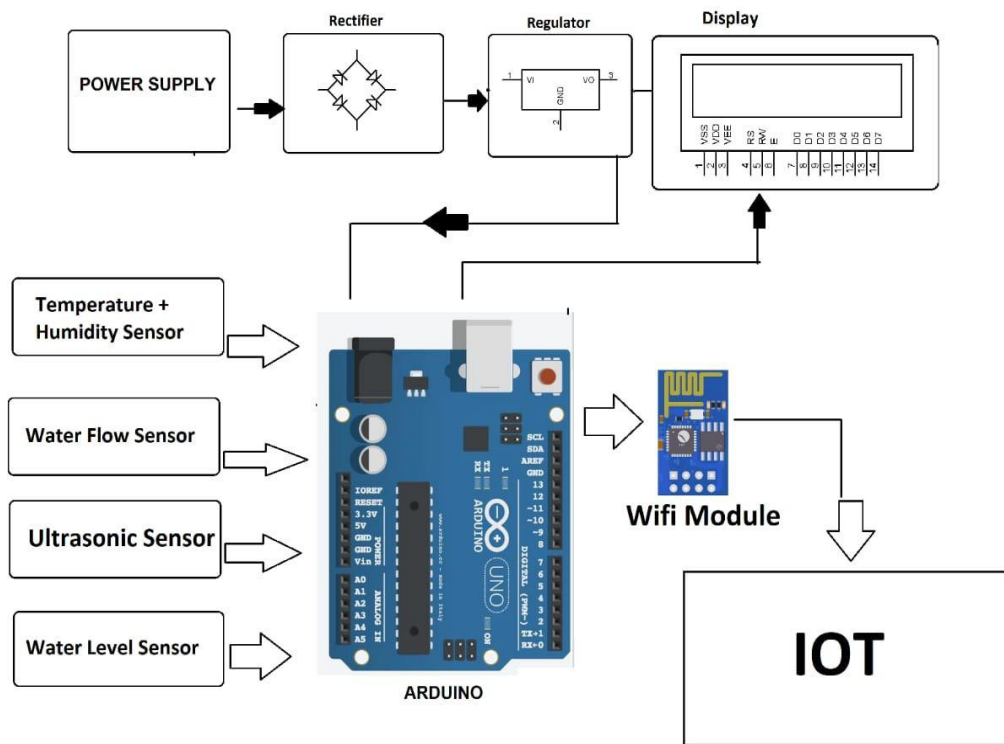
3 .PROPOSED SYSTEM

The proposed system for Flood detection system using IOT based on disaster management system. In this system this alert system with GSM module is the system which is Arduino based and deals with the possibility of flood. The circuit of this system consists Arduino, GSM module, ultrasonic sensors, LCD display and rectifier. The system activates as soon as the water rises from normal level to danger level. The ultrasonic sensor sends the signal at the speed of 10ms at first to sense the water level and sends the signal to Arduino. Arduino is connected with all other parameters. The Arduino reads the signal and sends the signal to LCD display and GSM module if the water level is in abnormal condition. The GSM module is a communicative device and used as a method of communication for this project.

Following is the flowchart for our proposed system:
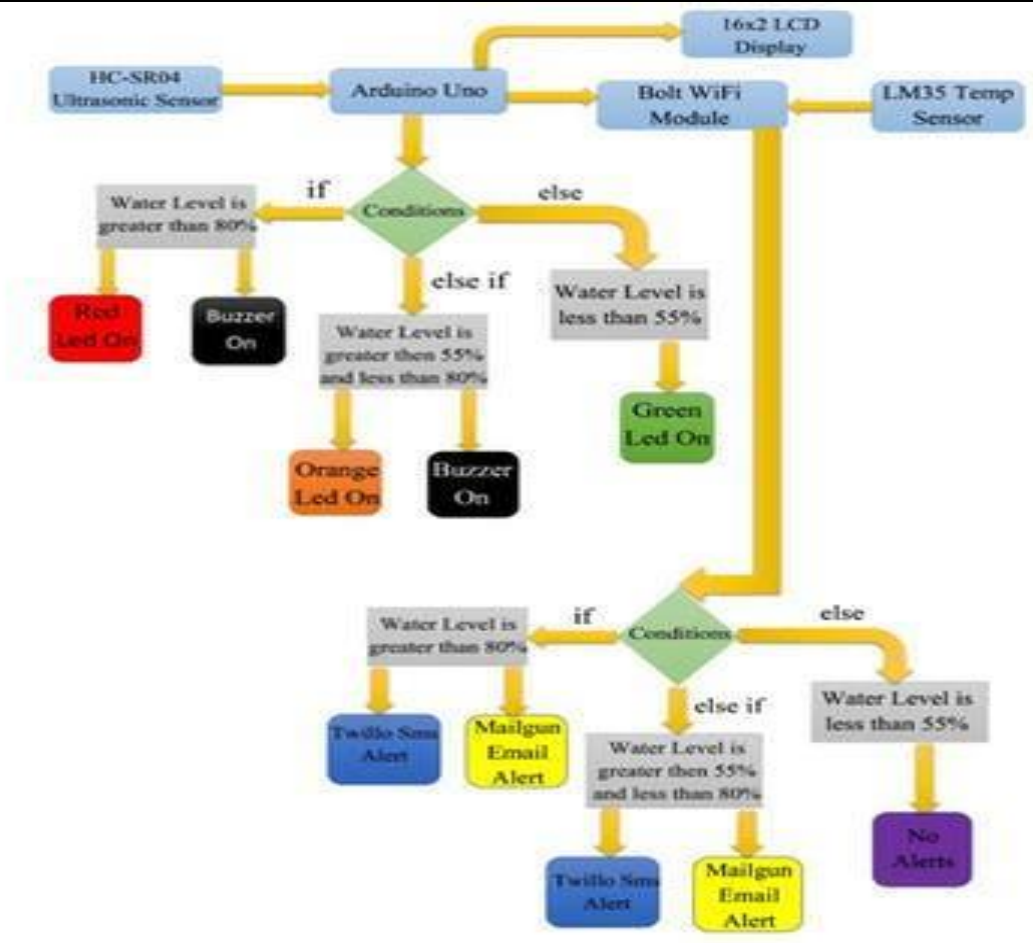
Figure 3.1 : Flowchart for proposed system

In our Flood Disaster management system, we are going use different sensors like LDR sensor, Flood detector and multifunction Detection feature. The entire system detect the changes in particular area or region and this sensor will detect the different changes and record them Through this sensor continuously counting the water level and admin will store and monitor those record of increasing and decreasing the water level, if the water level is low and normal then no any action will be taken. If the water level is high then that means the flash flood is occurred and there will be action is taken. Admin will collect the contact from database and Send SMS and call to people for taking early precautions from losses. And alarming system will inform to rescue team. And also flood detection application will be created to monitor the level of water and detect if there flood is occur or not. GSM as well as Connection will be established to transfer collected to end user to store on cloud for future use.

Figure 3.2:- Block diagram of FDMS

4. EXPERIMENTAL RESULTS

The Fig 4.1, An Flood disaster management system has been proposed adapt new techniques successfully, could reduce the chances of losses of human lives as well as damage. This section shows some test results gathered during the experiments, stands in support of the claims made in the earlier sections. Figure shows a real-time time domain plot from the load balancer. The plot is of the average utilization data from 4 different cloud instances taking requests from rescue.
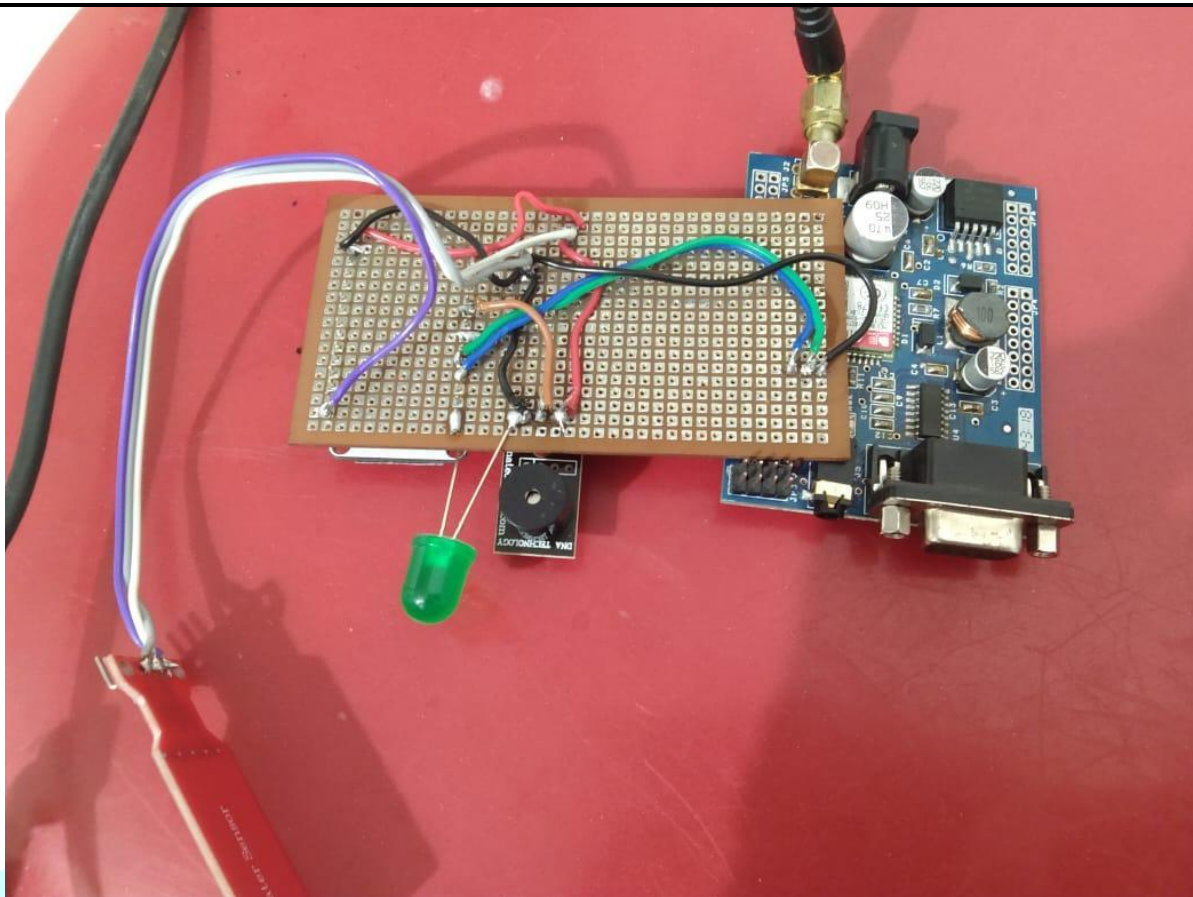
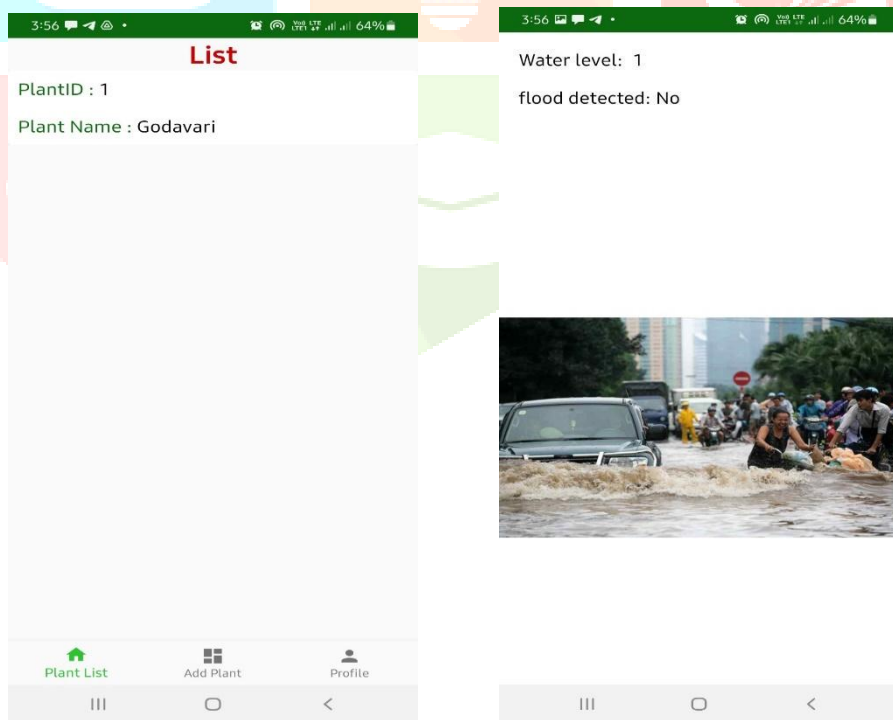**Figure 4.1: Project Implementation**

Figure 4.3: Alerting output of project
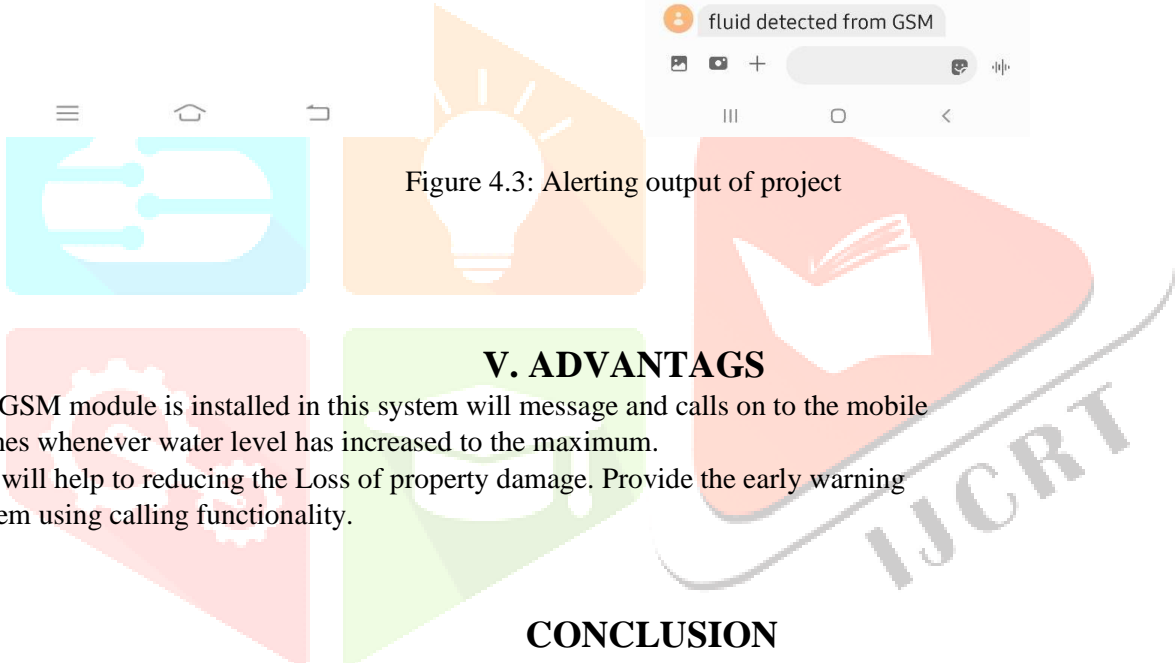
Water level: 292

flood detected: Yes

Figure 4.3: Alerting output of project

V. ADVANTAGS

- The GSM module is installed in this system will message and calls on to the mobile Phones whenever water level has increased to the maximum.
- IOT will help to reducing the Loss of property damage. Provide the early warning System using calling functionality.

CONCLUSION

An IOT based Flood disaster management system has been proposed adapt new techniques, could reduce the chances of losses of human lives as well as damage to large-scale infrastructures due to both natural and human-made disasters. According to this project we can implement inexpensive wireless sensor network components to detect floods, spark, forest fire, landslides and send alert to the people residing across the coastal line of a country. In summary, the aim of this study is to supply fundamentals about IoT-based disaster management systems that help us to know past research contributions and future research direction to solve different challenges disaster management systems.

Acknowledgements

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