Flood Detection using Arduino

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Abstract: *During rainfall, unmanaged drainage system in various geographical regions lead to floods and many lives are lost. If we have some system which can give an individual an early alert regarding flood then we can save lives of people, a system which uses latest technology to detect the increase in water level and alert people beforehand so many people can be evacuated. So here we are going to represent you a prototype which can be used tp detect water level using ultra sonic sensors, and it will give an alert using arduino on the app that we have developed for the end user.*

Keywords: Water lavel, Arduino, flood, alert, detection, disaster

I. INTRODUCTION

The most harmful natural disaster is Flood which occurs on the increase of water level. The damages caused by the flood will be more harmful and the time taken for recovery will take long period of time. The only way to reduce the damages and the real life of people is to detect the water level frequently. The water level in the systems such as dams, reservoirs etc are to be frequently tested and monitored. The water level can be predicted by the proposed system. arduino is an embedded system of hardware/software. Where hardware includes chips and sensors and software includes data storage and analyses, the communication between any systems is done through wireless sensor networks. Technology always unite the physical world to internet with the help of sensors within or connected to it. Where in this system our module is connected to some sensors to have a real time calculation. These level predictions are transmitted to the application developed with help of android to have an alert.

In country like India, Bangladesh, Japan, Usa, and so forth the flooding issue is limited altogether and don't influence much because of accessibility of crisis framework. Yet, the agricultural nations like India, Brazil and so on is enduring a ton during flood. Consistently number of passing's because of flooding continues to increment in various piece of our country. Two years prior the flood happened in Chennai, the capital of Tamilnadu came about immaterial death toll and property. At whatever point, flooding happens living region close to the riverbank and downstream territory are influenced seriously than others. They should be alarmed significantly sooner to have additional opportunity to clear right away. During Chennai flood in 2015, counterfeit word were gotten out for example, A bogus message which said two lakes had penetrated and Chennai had been cut off from rest of the areas, spread frenzy among workers, particularly those that were abandoned for quite a long time together on the blood vessel Mount Road on Monday night. To keep away from the present circumstance we need approved admonition framework. Our framework gives such data so that individuals can keep away from bogus news. Furthermore, the framework utilizes voice call as it is useful for individuals who don't have a clue how to peruse the instant message.

Flood detection system totally uses Arduino technology to detect the water level in nearest location and alert the user on android application, the sensor that has been use in this system in ultrasonic sensor, which more accurate in detecting the distance of water level than any other sensor present in the market currently, we are using wife module to connect the system to internet which will be helpful to users get the alert more rapidly on the mobile application.

In other way, Floods are a natural disaster that can cause extensive damage to homes, buildings, and infrastructure, and pose a significant threat to human life. Early warning systems that can detect and alert people to the presence of flood conditions are essential for minimizing the impact of floods.

One such system is a flood detection system that uses Arduino, an open-source electronics platform, to monitor water levels and alert users in the event of a flood. The system uses sensors to measure water levels and sends alerts via SMS, email, or other means to alert users of potential flooding in their area.

The project will involve selecting appropriate sensors for measuring water levels, designing a circuit to interface with the sensors and the Arduino board, and programming the board to detect changes in water levels and send alerts to users. The system will be tested in a controlled environment to ensure its reliability and effectiveness in detecting flood conditions. The final system will provide an affordable and reliable solution for detecting floods and alerting people to take necessary precautions. It has the potential to save lives, protect property, and improve disaster preparedness in flood-prone areas.

II. LITERATURE SURVEY

There is a growing body of literature about the use of Arduino in various fields, like wise we are your to detect flood and get an alert over the mobile application.

The literature survey:

A study paper called "Flood Detection System Based on Arduino and GSM Module" by R. Vijayakumar and S. Nirmala Devi. This paper describes a flood detection system that uses an Arduino microcontroller and a GSM module to send SMS alerts to users in the event of a flood.

A study by N. N. S. S. Harsha Vardhan and M. H. S. Pradeep Kumar discussed in paper "Design and Implementation of Flood Monitoring System Using Arduino" This article presents a flood monitoring system that uses an Arduino microcontroller and ultrasonic sensors to measure water level and trigger alarms when flood conditions are detected.

Another study "Development of a Low-Cost Flood Warning System Using Arduino" by M. J. C. Castañeda, et al. This article presents a low-cost flood warning system that uses an Arduino microcontroller and water level sensors to detect rising water levels and trigger alarms.

A study ("Design and Development of a Flood Alert System Using Arduino and GSM Module") by B. K. Sinha and P. K. Roy. This paper describes a flood alert system that uses an Arduino microcontroller and a GSM module to send SMS alerts to users in the event of a flood.

III. PROPOSED METHODOLOGY

The proposed system for flood detection system using Arduino includes following components:

- **Flood detection:** flood detection is main aim for developing this project by sending an alert to the user about high level or increase in water level in their nearest area.
- **Monitoring the water level:** we have created an android application which will have an option where user can statically check for water level, if the water level in rapidly increasing than a person can prepare for the worst.
- **Safe-zone:** safe-zone area will be integrated using Google's map facilities, where user can evacuate
- **Alert:** most import thing in the prevention of life causing threat is to have an alert before happing it all, so user will have an alert over the android app.
- **User friendly application:** android is the best option when we think about the developing an app, the user will have an android application installed in their mobile, which will help them in managing the system

3.1 Flow Chart
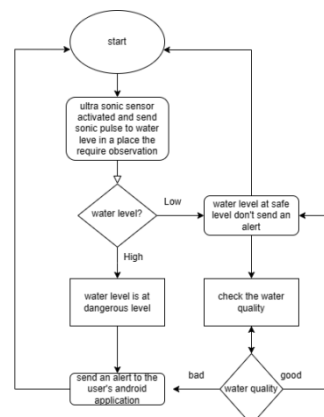
IV. RESULTS
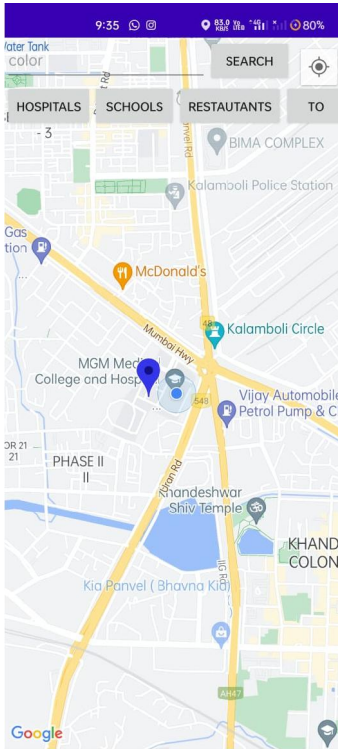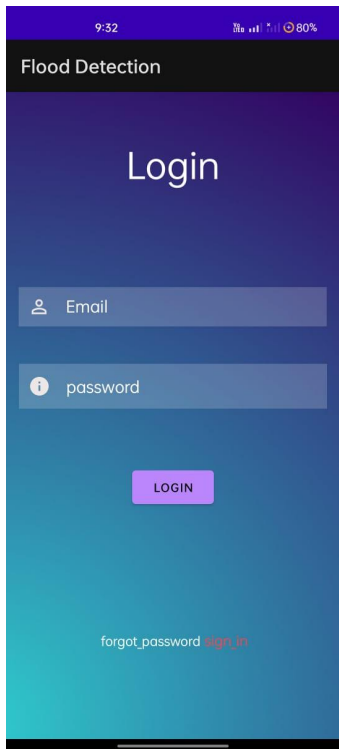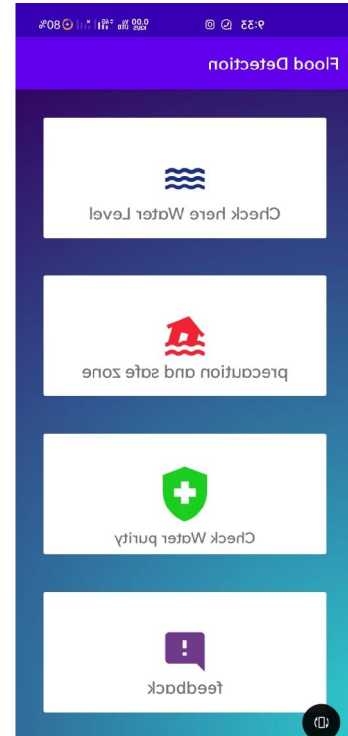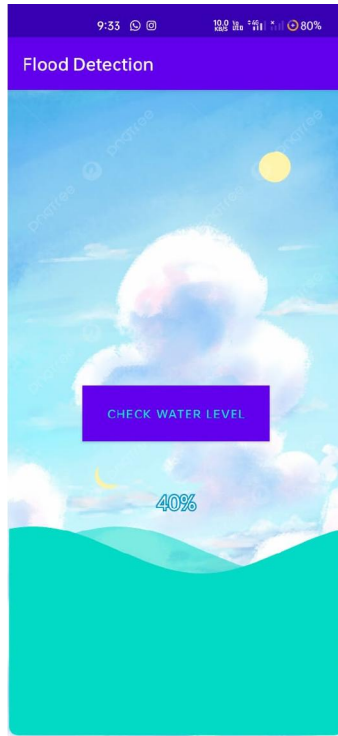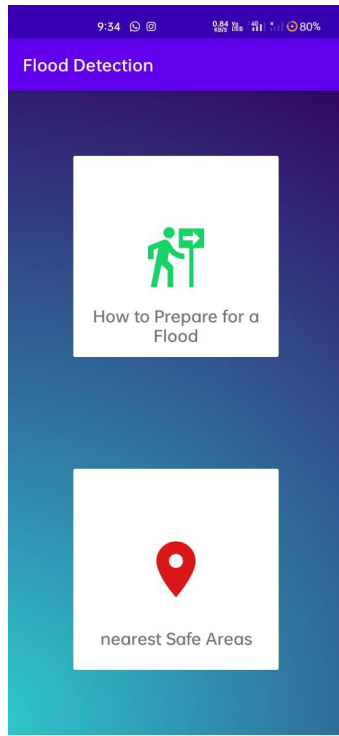
V. CONCLUSION

In conclusion, a flood detection system using Arduino is an affordable and reliable solution for detecting flood conditions and alerting people in flood-prone areas. By using sensors to measure water levels and an Arduino

microcontroller board to process the data, the system can provide early warning of potential flood conditions and allow people to take necessary precautions.

In this project, we discussed the main steps involved in designing and implementing a flood detection system using Arduino, including identifying sensors, designing a circuit, programming the Arduino board, setting up alerts, testing the system, deploying it in a flood-prone area, and monitoring and maintaining it for optimal performance.

The system has the potential to save lives, protect property, and improve disaster preparedness in flood-prone areas. It is a valuable tool for communities that are at risk of flooding and can help minimize the impact of this natural disaster.

Overall, the flood detection system using Arduino is a promising technology that can help communities become more resilient to floods and other natural disasters. With further development and refinement, it has the potential to become an essential tool for disaster preparedness and response.

VI. ACKNOWLEDGMENT