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IOT BASED FLOOD DETECTION

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Abstract: Since we are currently residing in Computing Technology, it is essential for everyone and everything to be connected to the internet. IOT is a technology that brings us more and more close to this goal. Our project comprises of smart water monitoring system which is a small prototype for flood detection and avoidance system. This paper explains the working and the workflow of all the components present inside this project. The sensors sense the environment and sends real-time data to the cloud (firebase cloud) and users can view and access this data via their mobile platform. The model gives a warning after the water level rises to a particular height. Since it is a small scaled prototype for flood detection and avoidance system, the working of this model is good. The data are uploaded and changed in the cloud in precision to the sensor and a real-time change in the mobile application is achieved. This model can be used to greatly reduce the casualties in a devastating event of flood.

Keywords: sensors, level

1. INTRODUCTION

Internet of Things is interconnecting the devices such as sensors, actuators or embedded Items such as software/hardware. Here the network connectivity is necessary. According to the Gartner, 50 billion objects would be connected by the end of 2020. Internet of Things senses the readings from the sensor and control and monitors the data with the help of network. Floods are the natural disasters with creates the severe damage to the urban/rural sectors.

In India, the agriculture sector has the highest impact due to the floods. Every year, 400 million hectares of Indian land is affected due to the floods. As majority of the people are in the cities, due to the floods they don't get the water information easily and quickly [1][2]. These mostly cause the property loss, Citizen Work loss or human loss. In this proposed design, alerting the system by monitoring near the dams regarding the status of the floods with sensors is the main objective.

2. OBJECTIVES

1. The flood affected people unable to detect the water level and increase in speed of water level.
2. The flood affected people unable to intimate or inform the rescue team about flood location.
3. Depends on MSEB energy system so it's very hard to detect the trapped people in the flood.

3. PROPOSED SYSTEM

There are many earlier works provided by the researchers in the field of IOT but most of them either lack precision or they are highly expensive. Thus, they are inaccessible to the user. 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 now you can easily save your life as well as your society.

The implementation of the system includes all the wiring that is to be installed on the breadboard along with Esp32 controller and other sensors. The coding of the Esp32 controller will be in Arduino IDE language which comprises of C/C++ functions that are needed to be called in the code.

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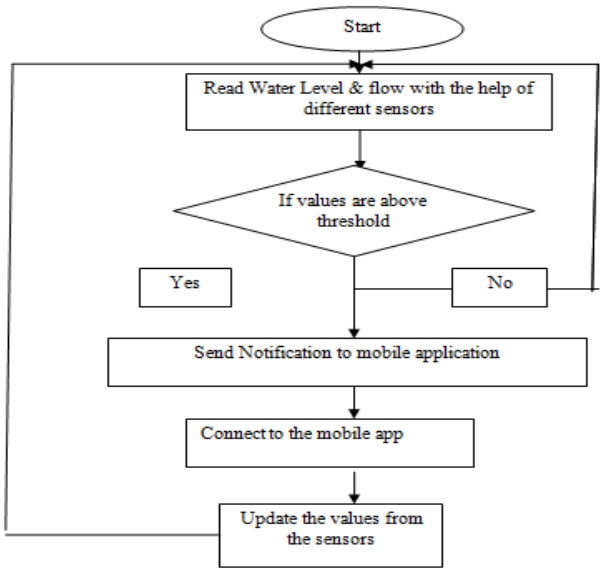

Fig 3.1 Flowchart of proposed system

4. WORKING

The android app is developed by using Async task, extracting JSON response and getting response from API. Adding internet permission is a must as we require internet connectivity in the android application. The layout will be designed using Drawable Resource file. Again, crosschecking every one of the associations and then furnish capacity to the ESP32 CONTROLLER with battery. It will work as we decided earlier and early warning will be sent to user.

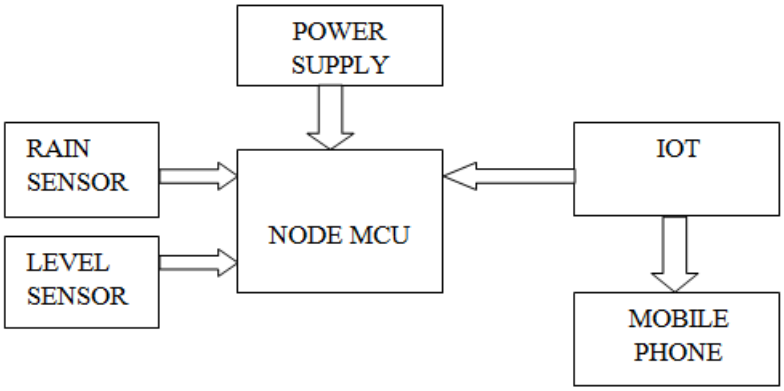

Fig 4.1 Block Diagram

4.1 Testing tools and environment

For testing of the project we require some tools, like to test Arduino program we require a software called Arduino IDE. Using this we can check the program whether program is working properly or not. For hardware checking, we require power supply and proper range of measurements and a meter tape. The Node MCU should connect to the Blynk app and the app should show the output. For this, the Node MCU must connect first to the wifi hotspot.

4.2 Test cases

In this section we discuss about the inputs, expected output, testing procedure.

4.2.1 Inputs: This project requires three inputs:

1. Power supply: Power supply is the basic need of any electronic circuit. Here we use 5v dc battery to give power Arduino and sometimes we can give power directly from the computer

2. We can also power these circuits via two 9v batteries using a circuit divider. Distance, the distance will be the input of the Arduino circuit and will be gotten from the sensor.

4.2.2 Expected output

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The expected output of this project should be a text message showing the distance to full. Also,. The output should also be seen on the serial monitor of the Arduino IDE. Also, the output should also be seen on the serial monitor and also on the Blynk app.

4.2.3 Testing procedure:

For testing, first connect the circuit to the power supply which is given to the Arduino using computer and it can be done by using battery. In this way the whole testing circuit is built.

Summary of testing procedure:-

1) Connect the circuit according to the diagram
2) Give power to the system.
3) Vary flood level for the level sensor to give output
4) Send message via the wifi.

5. CONCLUSION:

The IoT based flood monitoring and detection system is done to save the lives on the people by reducing the human quick out at the emergency conditions. Here the maximum conditions are observed, and the risk alert is provided to the management.

5.1 Future Scope-

The future scope of the proposed design is to predict the risk analysis of the effect over the low-lying areas and adverse effect analysis over that condition

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