IOT BASED REAL-TIME FLASH FLOOD MONITORING AND ALERT SYSTEM

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Objectives :

• Our main objective of implementing this project is to detect the life threatening events that occur due to flash floods in advance.
• Another main objective is to reduce exposure to coastal flooding.
• This enables the public to be warned in mass so that actions can be taken to reduce the adverse effects of the event.
• Even by having information about the disaster before it happens, the government can save the fund that they spend on taking corrective actions to recreate the environment as before, as instead they could take precautionary measures which may require the lesser cost comparatively.

Introduction :

• The most important thing immediately formerly, throughout and after a disaster occurs is the broadcasting of information, deployment of devices enabled by IoT (Internet of Things) could bring benefits in terms of giving information to the publics, providentially for making decisions in face of this disaster.
• In this project, we propose a sensor to measure water level in rivers, lakes, lagoons and streams.
• The information from water level sensors is transmitted to IoT cloud via Wi-Fi to a laptop, and then this information is also seen in smart phones, where users can see the water level in water bodies.

Methodology :

• Arduino Mega Microcontroller is used because it provides more pins for interface.
• Ultrasonic sensors are type of acoustic sensors. Here ultrasonic sensors are placed under the bridge to measure the distance between bridge and the water level.
• Rainfall sensors are used to measure the rainfall in centimeters, used to obtain information before the flood if the rate of rainfall varies greatly.
DHT-11 is a digital humidity and temperature sensor which generates calibrated digital output. It uses capacitive humidity sensor and a thermistor to measure the surrounding air, and splits out a digital signal on the data pin.

The distance between the bridge and the water level is recorded, for reference we are using three LEDs green, yellow and red. Green for low water level, yellow for medium water level and red if the water level is more and is about to overflow.

If the water level is more and red LED is on, Buzzer is on to indicate alert message for surrounding people.

GPS is used to indicate the location of occurrence of flood. The information about the location is sent to the microcontroller.

The alert message is sent to the users through SMS or E-mail of that particular area by using IoT.

**Expected Outcome of the project:**
1. This project enables the public to be warned in mass so that actions to be taken to reduce the adverse effects of the event.
2. Reduce exposure to coastal flooding.
3. Provides information for dam monitoring and control. Estimate the precise area of occurrence of flood.

**Application of the project:**
1. Hydrological applications (dam monitoring and control).
2. The proposed prototype can be installed in low lying areas some major cities for example Chennai, to make sure that people get information about the weather condition, so that they can migrate to some other place if there are any indication of flood occurrence.