Flooding is considered one of the most destructive natural disasters in the world. In countries like India with climatic conditions occurrence of heavy rain fall and subsequent discharge of water leads to Flood. Flooding creates major damages to life, their habitats and the economy By installing of flood alerting systems near major waterways vital information can be provide so that lives and property can be protected. Normal Weather monitoring and alerting systems are not quick and accurate enough to predict floods in time to prevent personal or environmental damages. The government has to spend tons of money in flood mitigation plans to help the victims and also to reduce the number in the long run damages that can occur after flooding. Since Most of the flood alerting systems involves high cost they are deployed on select locations based on priority. In this project we make use of a cost effective system using raspberry pi board and sensors, to measure rise of water level in rivers and water bodies and alert government authorities and people instantly by transmitting information using IOT. In the present work we have used thingspeak-IOT platform and GSM module. The data can be accessed from android smart phones using things View mobile application at anytime from anywhere in the world where GSM module is used to send the alert message to the people.

The extreme climatic changes due to the effect from various human activities such as pollutions, cutting of innumerable trees and too much of gas emission are the some of the main reason for natural disasters that occur in worldwide . The most common factor that cause major damage to life, property and country's economy is the flood .Flooding is brought on by an increased quantity of water in lake or river when it is overflowing. When a dam fractures and abruptly releasing a massive quantity of water not only houses and property are damaged , sewage overflow and chemical spillage also leads to a variety of diseases afterwards. To manage these kind of situations and alert people understanding of increased water level and speed of water flow are valuable for discovering potential seriousness of the flood. This project presents the details of how the data - like flood level and rain intensity are collected from sensors and made available on cloud and sending alert messages by using Raspberry pi , Thingspeak-an IOT platform and a Global System for Mobile communication (GSM) and short message service (SMS) to relay data from sensors to computers or directly alert the People of that area through their mobile phone. The data from the IOT cloud can be accessed by android smart phones at anytime from anywhere in the world using the mobile app things view.

The proposed flood alerting system to check the flood level basically consists of a Raspberry pi which detects the water level and rain intensity using an Ultrasonic Distance Sensor (HC-SR04) and rain sensor respectively. The ultrasonic distance sensor –which is used to measures the time of travel by echo signal gives the water level of flood in river. The Rain Sensor is used to show the Rain status that it's raining or not, and its rain intensity Value.

 The Pi board is also programmed to send the data to a cloud are using an external web server named as Thingspeak so as to alert the general public.

By applying an Internet of Thing can help people to monitor the flood water level and rain intensity via thingsview app in smartphone together with the alerting system for incoming flood. A wireless sensor node connected with Raspberry pi is used which consist of

ultrasonic sensors and rain sensor to collect data and sent them via cloud to be viewed in Thingsview application. GSM Module is used to send alert SMS to the People When the water level reaches a certain level of hazards, the device will generate an alarm system with three different colours of LEDs indicating three levels of detection for flood level and send Alert notification to the people on incoming flood in that area.

Raspberry Pi3 Model B+

Raspberry pi acts as the Processing Unit of this system. Raspberry pi detects the water level and rain intensity using an Ultrasonic Distance Sensor (HC-SR04) and rain sensor respectively. It has 4 USB ports and the ports have been aligned with the Ethernet connector to make more streamlined design. The Raspberry Pi 3 range, boasting a 64-bit quad core processor running at 1.4GHz, dual-band 2.4GHz and 5GHz wireless LAN, Bluetooth 4.2/BLE, faster Ethernet, and PoE capability via a separate PoE HAT

The Rain Sensor is used to detect the rainfall or water drops. It works as a switch. Normally the switch is open condition. This sensor is consisting of mainly two parts, one is Sensing Pad and another one is the Sensor Module. When rainfall or water drops fall on the Sensing Pad surface, then the switch will be closed. The Sensor Module reads data from the sensor pad and processes the data and converts it into a digital/analog output. So, the sensor can provide both types of output Digital output (DO) and Analog output (AO).

16x2 I2C LCD Display

The PCF8574 device is an 8-bit I/O expander for the two-line bidirectional bus (I2C) is designed for 2.5-V to 5.5-V VCC operation. A typical I2C LCD display consists of a Hitachi's HD44780 based character LCD display and an I2C LCD adapter.

A regular LCD requires a lot of wires (parallel interface) to be connected with a Microcontroller. The Serial LCD backpack built on PCF8574 IC uses the I2C bus to convert the parallel interface to a serial one. This needs only 2 wires SDA & SCL. The I2C backpack can be soldered on to the LCD. The I2C device has a HEX address by which a microcontroller can communicate with it. This is set by the 3 bits A0, A1, A2.

The device will generate an alarm system with three different colors of LEDs indicating three levels of detection for flood level and send Alert notification to the people on incoming flood in that area.