ABSTRACT:

Nowadays natural calamities like flooding turn up drastically, and it severely affects standard of living. In this paper the development of flood monitoring system using IOT to keep track of the conditions nearby the reservoir with the help of Arduino, the prototyping platform and the compactible sensors such as a level, temperature, humidity and flow distinctly presented. Firstly the hardware unit is placed in the flood prone areas, the Wi-Fi module (ESP8266) act as the transmitting unit and the sensors associated with the system measures the corresponding parameters.

INTRODUCTION:

Natural calamities happens everywhere in the world, and which affects the human life and economy of the country. Economy and growth of any country depends upon the agriculture, hence the proper alert makes the farmers vigilant to protect the crop from flooding.

The proposed model is very much utilized for monitoring of the water level, flow variations, humidity and temperature variation in the river and the same can be used at dam or reservoirs. The measured values are regularly updated on the web server which is very much useful to send flood alerts to authority and people for faster action.

The entire system consist of five different Arduino compactible sensors which are temperature, humidity, water level, flow and ultrasonic sensors. Also it consist of an Arduino controller, a Wi-Fi module, an LCD display an alarm and an IOT remote server based platform.

In this advanced system the initial stage indicates the level of water and the other parameters like flow rate temperature and humidity. Then these information is passed to the web server or the IOT via a Wi-Fi module, here the ESP8266 is used as Wi-Fi module. Which transmit and DHT11 is the temperature and humidity sensor, it is a basic low cost digital temperature and humidity sensor. And HC-SR04 ultrasonic sensor used as the water level sensor, which works on the SONAR principle. In this paper the main objective are implement a system which cover.

METHODOLOGY:

Various natural factors, which includes humidity, temperature, water level and flow level are observed by system to detect flood. Our system consists of different sensors which helps to collect data for individual parameters.

1. For detecting changes in humidity and temperature the system has a DHT11 Digital Temperature Humidity Sensor. It is a sensor which detects humidity and temperature.

2. The water level is always under observation by an Ultrasonic sensor, which works by constantly monitoring as water levels rise and fall. Once the water level increases beyond threshold, a trigger is generated which sends an Email Alert indicating the rise of Water and possibility of Flood.

3. The Flow sensor on the system keeps eye on the flow of water. The speed changes when water falls on rotor which makes it to rotate.

After the successful completion of hardware setup, we move towards software setup and using Arduino IDE and Visual Studio Code. We created a Project Email for sending Email Alerts.

ARM Mbed:

Arm Mbed IoT device platform offers the operating system, and many cloud services. based Internet of Things (IoT) solutions. Mbed LPC1768 and application board was used as the microcontroller in the Smart IoT Flood Monitoring System. It is the LPC176x family of microcontrollers. It also drag and drop programming, with the board represented as a USB drive and easy to use online tools.

Hardware Design Implementation:

The circuit diagram and each component connect each other. The ultrasonic sensor, stepper motor, Wi-Fi module, LED, LCD, buzzer is connected to the ARM microcontroller. Ultrasonic sensor and stepper motor need at minimum 5V. to generate data meanwhile Wi-Fi module requires 3.3v only. The stepper motor interface with ARM microcontroller through driver module that connected to PWM pin. Other than that, the ESP8266 Wi-Fi module interface with SPI RX and TX pin interface.

POSSED SYSTEM:
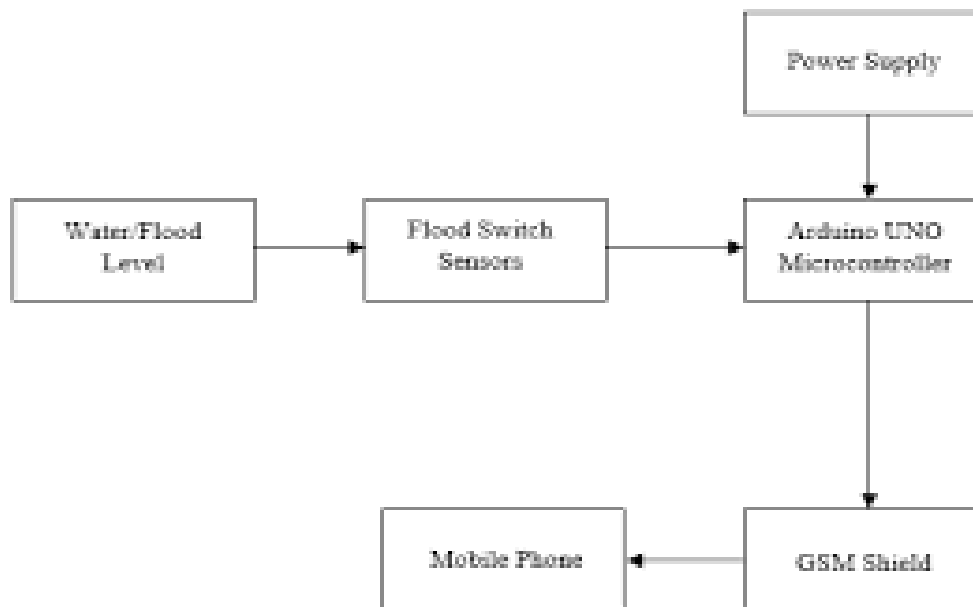
CONCLUSION:

In this paper, a real-time-based Flood Monitoring and Alerting System has been developed in Arduino UNOenabled environments using rigorous mathematical models. Internet of Things (IoT) is an emerging platform and broadly used worldwide, this system will display the data of the water level measured on an LCD display. This device can save lives and properties and reduce hazards to a great extent. 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. It is cost- effective and flexible making it easier to implement.