# IOT Based FLOOD MONITORING AND EARLY WARNING SYSTEM

**Abstract:**

The human are still not able to battle the natural calamities besides huge development in technologies. The fact is that the natural calamities can neither be abolished nor be prevented. But the technology has been developed gigantically in order to prevent loss of life. This project is totally based on informing the civilians about the upcoming flood so that they can evacuate the danger area before the flood hits. For detecting the rise in water level Ultrasonic Sensor and Water Level Sensor is used. For detecting the change in humidity and temperature Humidity and Temperature Sensor is used. The data from the DTH11 and HC-SR04 is read by the microcomputer and analyze the data in order to detect the level of water. If the level of water is less than the defined threshold value then the microcomputer turns the LED and buzzer on.

**Modules:**

“IOT-based-Cantralized-Remote-Sensing-for-Early-Flood-Detection” the objective of this telemetry based project is to monitor the flood situation at the earliest and send a notification in case of danger on the webpage. The notification sent can be read globally through IOT. An ultrasonic sensor is connected to the microcontroller that measures the value of water in the dams or rivers and sends that information to the microcontroller. The GPRS sends that notification through the internet on the webpage using IOT network.

 “Flood Monitoring and Early Warning System Using Ultrasonic Sensor”  it envisions a safe, prepared and less casualty community before, during and after typhoon devastation. The model also promotes the use of real-time monitoring system through the developed web-based application and SMS notification system as an easy medium in disseminating information particularly in the remote areas. By allowing the system in two-way communication, it gives more flexibility in providing important information to the community.

“SMS Based Early Flood Warning System Using Raspberry PI” [3] this project is about designing a system that can measure the speed of the rise of the water level at the potential flooded area. Raspberry Pi is used to collect the data from the water sensor and transmit the data to GSM Module to send the alert by using an SMS via a mobile phone. The analysis will be done to show how the Raspberry Pi will be integrated with the smartphone to give an alert. The system will be tested in order to ensure that all specifications needed have been met. A performance test will also be run in order to see the efficiency of the system.

**“Design of early warning flood detection systems for developing countries”**in this projecttheWarning communities of the incoming flood provides an effective solution to this by giving people sufficient time to evacuate and protect their property.

**“Flood Monitoring and Early Warning System Using Ultrasonic Sensor”** The two monitoring devices are composed of Ultrasonic sensor to measure the distance of the water level, Arduino micro-controller that process the signal from the sensor, GSM module to send the data or information from the micro-controller to the computer server and a power source using Solar Panel, Regulator and Battery. Once a sensor is triggered, an output signal will be relayed to the micro-controller which serves as a switch that triggers the connected GSM module to send an alert message or water level status to another GSM modem connected to a computer server. Then, the developed program installed in the computer server will interpret and analyze the message received then automatically send a text message to the concern agencies’ numbers stored in a database. Also, the developed program will then automatically relay the alert message or status by uploading to the developed website. Furthermore, concern agencies, local officials and the local communities could inquire about the current status by sending a message that contains keywords.

**“Early Flood Detection and Monitoring System Based on Wireless Sensor Network”**  the system involves the deployment of sensor nodes at specific flood vulnerable locations for real-time flood monitoring and detection. Flood events relating to flash flooding and run-off water or overflow are successfully monitored in real time which saves individuals plenty of time to prepare against predicted flood occurrence, saving them from the aftermath of flood disaster. The system was tested via simulation of different flood scenarios, and the outcome was efficient and accurate.

**“Flood level indicator and risk warning system for remote location monitoring using flood observatory system” [7]** FOS can be deployed in flood prone areas in afford to create a well-used standard for remote flood observation systems. The ability to receive real time information on flood level empowers both government and private organizations to react to imminent danger in an effective manner. With the real time flood information, allows public safety organizations and other emergency managers to effectively plan their resource deployment within the limited time of alert. Warning as flood rises could be used to save life’s and properties in many ways can help such organization and government to spend sufficient amount of money in restoration process.