**A Novel Approach for a Smart Early Flood Detection and Awareness System using IoT**

**Alternative Title:**

[IoT based Water Flood Detection and Early Warning System](https://www.isroset.org/pdf_paper_view.php?paper_id=2103&8-IJSRCSE-04516.pdf)

**Aim:**

Our aim is to develop a model which can be fixed to a dam or on the riverbanks for real-time monitoring of various parameters like Water level, Temperature, Rain, and Humidity for flood management.

**Introduction:**

Floods can cause extensive demolition, resulting in loss of human and animal’s life and damages to railway tracks, road transport, personal property and critical open health infrastructure. In between 1998-2021, surges influenced more than 3 billion individuals around the world. Individuals who live in floodplains or non-resistant buildings, or need caution systems and awareness of flooding risks, are most helpless to floods.

Early detection and alert systems can offer assistance, save a lot of lives, and can be valuable for governmental organizations for issuing flood alerts. With the development of the Internet of Things in recent years, it can  
offer assistance in conveying information quicker and in turn help us save more lives amid such natural calamities

Flood cannot stop by human but can be minimized by proper management measures. Till demands for measurement of planning efficiency, implementation and policy making decisions and utilization of modern scientific and communication tools for smooth functioning of the system. Floods are of critical concern in agribusiness, civil engineering, and Health. Human changes to the environment regularly increment the concentration and recurrence of flooding, for illustration to utilize changes such as deforestation and evacuation of wetlands, changes in conduit course such as with levees, and bigger natural catastrophes  
such as climate change and sea-level rise.

Frequent immersion of agrarian property and social settlement has disturbing results on the individual human economy, national economy and society. Floods not only destroy crops per each year, they also harm physical infrastructures such as roads, railway tracks, bridges, and human settlements. Millions of individuals are extracted homeless and are also laved down alongside their cattle within the floods increases. Floods make some positive impacts. Each year floods deposit fertile silt over agrarian areas, this is very beneficial for the crops. Floods can have devastating impacts worldwide. They are responsible for 0.1% of the annual deaths caused worldwide. The number of deaths worldwide in recent years need continuous monitoring system in place and better data and methods to help in real time analysis to predict flood earlier on.

**Existing System:**

In the existing system, the water level is detected using different sensors. Each model uses a different way to detect water level and each model has a different proposed method of usage of the model. Where the ultrasonic sensor will send a signal to the microprocessor circuit and the sense water level will be shown within the user interface and it will automatically send an SMS to those recognized residents and it will continue to update until the water level identified returns to normal. Based on the level of the water present in the pipe, the pressure rises. When the pressure reaches a threshold level, an alert SMS is sent. Alert SMS would be sent to numbers stored within the phonebook of the sim which would contain numbers of individuals and contact of important authorities’ disaster management committee. Only the Pressure is taken into consideration and severe conditions, due to immense pressure, the pipe may choke or even break

**Proposed System:**

In our proposed system, we use several sensors that are used to detect several parameters that may cause floods. The Arduino MEGA microcontroller which we are using is the brain of the entire system to operate the modules which are connected with the controller.

The rain sensor is used for rain detection. It gives output as 0 if there is no rain and 1 when there are raindrops detected. The ultrasonic sensor is used to measure the level of water in the river. The DHT11 sensor is used to measure the surrounding temperature and humidity. The GPS is used to detect the location where floods happen.The location is shared by IOT All the data is updated to the cloud, so that the system can be monitored by IoT. This is done using the NodeMCU.. This working module is to be fixed on a dam or along any riverbanks. If implemented accurately, the model can also be fixed atop a drone.

**Block Diagram:**

GPS

IoT cloud

Power supply

ESP 8266

Rain sensor

DHT 11 sensor

Ultrasonic sensor

Arduino Mega

LCD display 16\*2

**Requirements:**

**Hardware Requirements:**

* **Arduino mega**
* **ESP8266**
* **Ultrasonic sensor**
* **Adapters**
* **Rain sensor**
* **Temperature sensor**
* **Lcd 16\*2**
* **Power supply board**

**Software Requirements:**

* **Language: c, c++**
* **Compiler: arduino IDE**