**IBM NAANMUDHALVAN**

# **INTERNET OF THINGS-PHASE 1**

**FLOOD MONITORING SYSTEM**

**ABSTRACT:**

The objective of this project is to create an Internet of Things (IoT) powered flood monitoring system near water bodies and flood-prone zones. This system will primarily concentrate on tracking water levels and issuing early flood warnings through a publicly accessible platform. The main goal is to enhance flood preparedness and response by guaranteeing that timely alerts are provided to both the general public and emergency response teams.

**DESIGN THINKING:**

1. **Project Objectives:**

* A flood monitoring system for IoT (Internet of Things) devices is a critical application that can help detect and respond to flooding events in real-time.
* Such a system typically involves a network of IoT sensors and devices that collect data related to water levels, weather conditions, and other relevant parameters.
* IoT devices collect data continuously from the sensors that includes water level measurements and weather data.
* Data transmission is through wireless communication protocols like WIFI and processing the collected data in real-time to detect potential flooding events.
* Real Monitoring System trigger alerts to relevant stakeholders that can help mitigate the impact of flooding events, improve response times, and save lives and property.

1. **IoT Sensor Network Design:**

* The deployment of IoT sensor Network includes the use ultrasonic sensors, pressure sensors, or float sensors to measure the water levels in rivers, lakes, or flood-prone areas.
* Incorporating weather sensors to monitor rainfall, temperature, humidity, wind speed, and direction, as these factors can contribute to flooding.
* - Besides the selection of sensors, it also includes that to ensure that IoT devices have backup power sources (e.g., batteries) to operate during power outages.

1. **Early Warning Platform:**

* Processing and analyzation the collected data is done in real-time to detect potential flooding events and implementation of algorithms and thresholds to trigger alerts when critical conditions are met.
* When a flood event is detected, the system triggers alert to relevant stakeholders that can be sent via SMS, email, push notifications, or automated phone calls.
* Finally, a user-friendly dashboard or interface for monitoring and visualization of data in real-time is developed and is used for the generation of reports and historical data for analysis and decision-making.

1. **Integration Approach:**

* The sensors monitor, collect and transmit data to the microcontroller Esp8266 through Wifi communication module.
* The Esp8266 can be configured and programmed in Arduino IDE through embedded C.
* Deep Learning techniques and Data Analytics are used to improve flood prediction accuracy.
* The data can be stored and accessed in Cloud and it also includes Collaborating with local emergency services to ensure they receive flood alerts in real-time.
* Additionally, we can also incorporate the capability to remotely control certain actions such as opening or closing floodgates, activating pumps, or diverting traffic when necessary.

**THANK YOU**