## Project title:

Flood Monitoring System

## Project Definition:

The goal of this project is to ensure a proper flood monitoring system by deploying IoT sensors near water bodies and flood prone areas to monitor water levels and provide early flood warnings. The primary objective is to ensure flood preparedness and response to both the public and emergency response team.

## Design Thinking

Project objectives:

- The project seeks to enable reliable IoT sensor network to monitor water levels in flood-prone areas.
- Design a web/app-based platform that displays real-time water level data collected from IoT sensors.
- Implement a system that can issue timely flood warnings to the public and relevant authorities based on the sensor data.
- Ensure that the platform is user-friendly and offers clear guidance for individuals and communities to respond effectively during flood events.
- Enable seamless communication and data sharing among emergency responders through the early warning platform.

IOT Sensor Network design:

- Identify key flood-prone areas for sensor deployment based on historical flood data and risk assessments.
- Determine the placement of IoT sensors to ensure easy coverage and accurate water monitoring.
- Ensure that the selected sensors (such as ultrasonic or pressure sensors) are capable of providing real-time data and are resistant to damage from floodwaters.
- Establish a communication network for the sensors which includes cellular, Wi-Fi to transmit data.
- Implement power solutions, such as solar panels or battery backups, to ensure continuous operation of the sensors, even in the event of power outages.

Early Warning Platform

- Implement a notification system that can send alerts to users through various channels (e.g., SMS) in real time.
- Create a user-friendly web/app-based platform that displays real-time water level data collected from the IoT sensors.
- Include maps, and graphs to make the data easily understandable for the public and emergency responders.

Integration Approach:

- Ensure secure data transmission and implement encryption to protect the integrity of the data.

- Immediate transmission protocol should be facilitated to ensure quick communication between IoT sensors and the early warning platform.
- Implement quality control measures should be done to filter out irrelevant data.