IOT Based Flood Detection System

BY:

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INTRODUCTION

- Flood : a natural disaster
- Types of flood
  1. Flash Floods
  2. River Floods
  3. Coastal Floods
- Why Flood detection is necessary?

Motivation

An analysis by the DTE-CSE showed that in the last 65 years (1952-2018):

There was not a single year when flood didn't impact the country with significant losses to lives and property.

Floods killed 109,412 people in the span

Over 258 million hecta of crops were damage and

81,187,187 houses were raged.

The total economic losses due to crop, house and other property damages came to Rs 4.69 trillion.

India suffered a loss of Rs 95,736 crore in 2018 floods. This was 2.6 times more than the financial loss due to floods in 2017.

OBJECTIVE

IoT Based Flood Detection system

LITERATURE SURVEY

Sr. No.	Journal Name and Publication Name	Title	Technology
1	[IEEE][2020]	Flash Flood Detection From CYGNSS Data Using the RUSBoost Algorithm	RUSBoost Algorithm
2	International Conference on Systems, Signals and Image Processing, IWSSIP[IEEE][2015]	Advance Flood Detection and Notification System based on Sensor Technology and Machine Learning Algorithm	Sensor Technology and Machine Learning Algorithm
3	Proceedings of the International Conference on Intelligent Computing and Control Systems (ICICCS 2019)[IEEE][2019]	IoT Based Flood Detection and Notification System using Decision Tree Algorithm	Decision Tree Algorithm

Sr. No.	Journal Name and Publication Name	Title	Technology
4	IEEE Sensors Journal [IEEE][2016]	Flash Flood Detection in Urban Cities Using Ultrasonic and Infrared Sensors	Artificial Neural Network and Wireless Sensor
5	International Conference on Sustainable Information Engineering and Technology (SIET)[IEEE][2019]	Flooding Level Classification by Gait Analysis of Smartphone Sensor Data	Gait characteristics of smartphones
6	IEEE 4th Global Conference on Consumer Electronics (GCCE) [IEEE][2015]	Internet of Things (IoT) Enabled Water Monitoring System	IOT based flood detection using Arduino

Methodology

The above mentioned papers reveal about the concepts of flood detection in different methodologies.

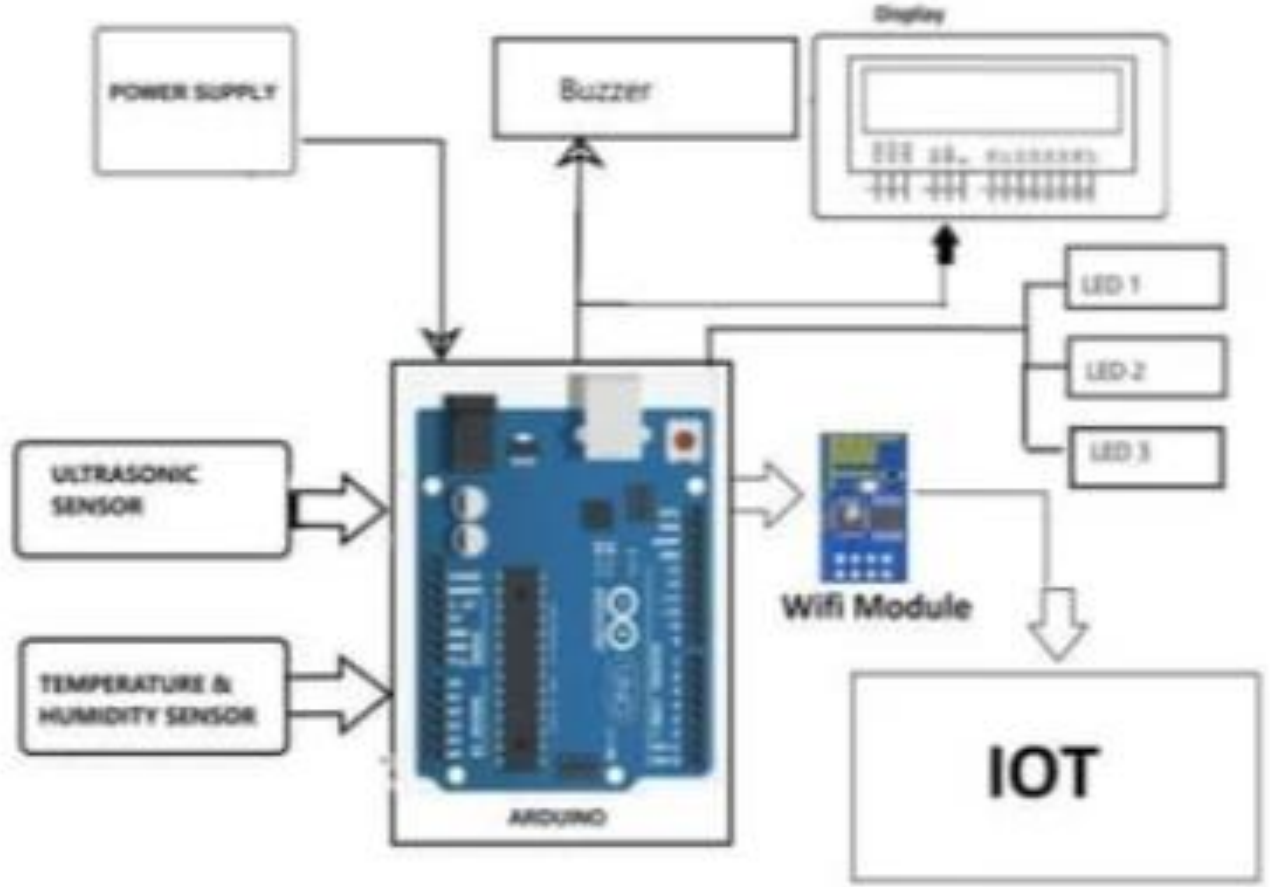
This project proposes the design and development of flood detection and notification system that will detect the flood automatically using sensors.

To detect the current level of the flood where the system sensor will be divided into different levels at very stage.

The collected values are transmitted to cloud through Wi-Fi module from Arduino UNO for data interpretation.

The project consists of several sensors which are temperature, humidity, water level ultrasonic sensors. The project also consists of an Arduino controller, a Wi-Fi module, three LED's, an 20x4 LCD screen, a buzzer, and an IOT server-based platform.

Block Diagram



Components Used

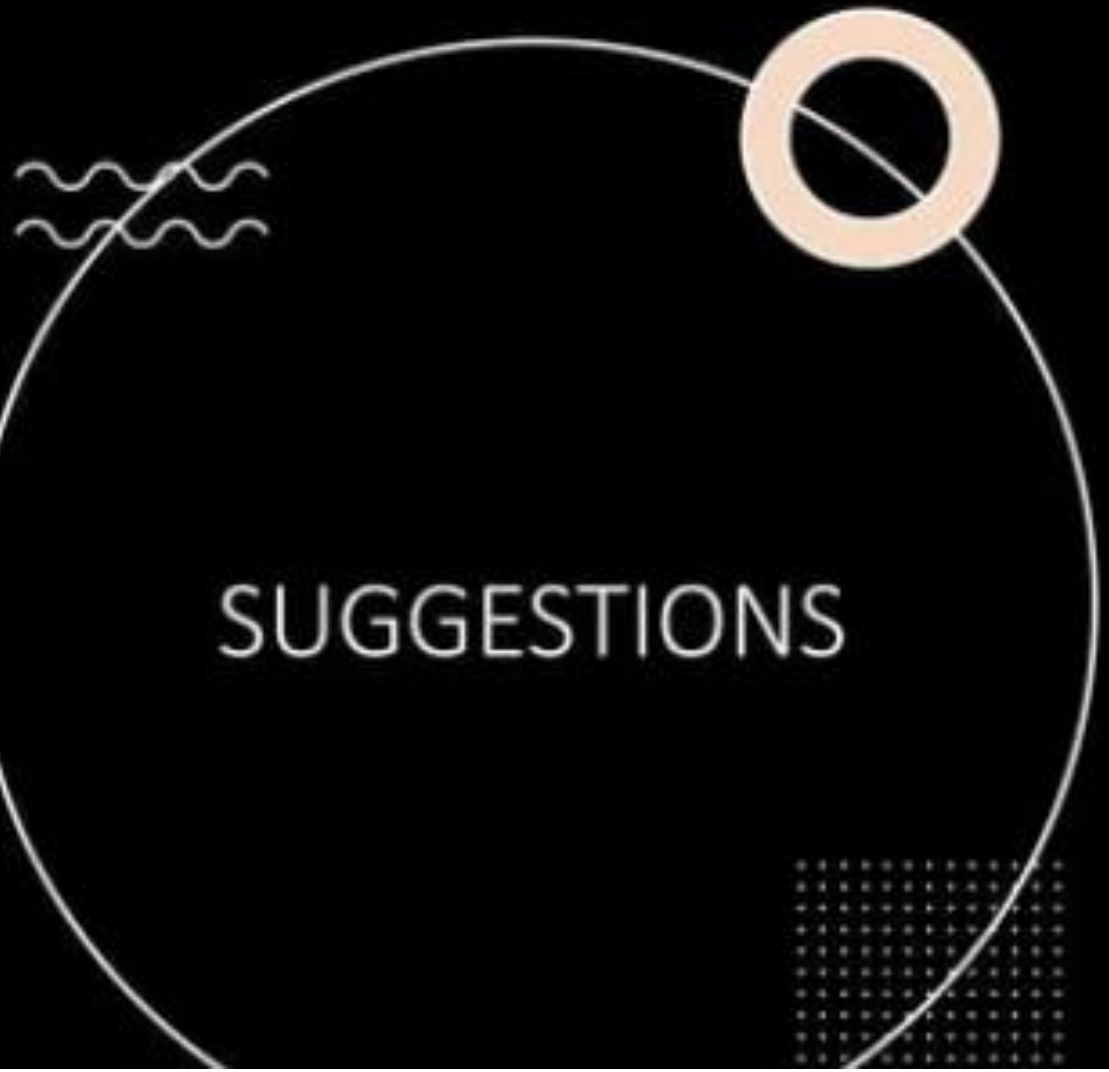
- Arduino UNO
- Ultrasonic sensor
- DHT11 Temperature and Humidit
- Wi-fi Module
- Proteus Software
- Arduino IDE
- Blynk application

Parwati (Also Parbati) River – KOTA (RAJASTHAN)

- In August 2021, Due to heavy Rainfall River Parbati at Khatoli in Kota district of Rajasthan continues to flow in Extreme Flood Situation.
- The situation in the district of Kota is particularly severe after the Parwati river jumped to 207.85 metres on 04 August, beating the previous record high if 207.55 metres set in 1996 and well above the danger mark of 202.0 metres.

Levels of the Parwati river at Kiratoli in Kota district of Rajasthan. Inset reached record levels on 04 August 2024. Image: CWC

SUGGESTIONS



- We can Placed an IoT based Flood detection system on parwati dam .
- Authorities always look to store the maximum amount of water in dams during monsoon season , which is then used for irrigation and generation of electricity during summer season.
- It is an internationally accepted practice that water level of a dam should be kept below a certain level before onset of the monsoon season.
- Using this pratice we can prevent flood.
- If there is overflow of water in a dam so there should be a route through which water can dischare without directly going into the villages

CONCLUSION

- So, We have built a prototype; the sensors utilized were fundamental in obtaining the required data necessary for monitoring and detecting flood events, and a live feed has also been actualized for end users. The proposed system can later be used to provide solutions to real-life challenges, thereby bringing relief

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Thank You