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# An Efficient and Secure IoT Framework for Dam Monitoring and Controlling

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**ABSTRACT**: Checking Dams wellbeing and water the executives is critical considering both the circumstanceslike water shortage and abundance of water. It is of significant significance and requirements to create data framework dependent on existing framework permitting use of canny sensors organization. Fundamental thought is to depict conceivable outcomes of IoT applications in Dam Safety and water the executives. n this setup, various sensors are employed to provide continuous, round-the-clock monitoring of the entire dam and the primary pipeline These remote sensor hubs associated with one another and sends the information to a door.Basic extra room CLOUD stores and gives on line data to the onlooker. Utilizing an IoT for the said reason willhelp saving the most valuable normal asset the water. Here in this task an endeavor is made proposing an electronic circuit configuration utilizing an Internet of Things idea for the reason.

**KEYWORDS: -** : IoT, CLOUD, Sensors, Circuit configuration, Remote Sensor

## I. INTRODUCTION

Dam assumes a significant part in our life as they are utilized for purposes, for example, flood control andage of power. There are roughly 5200 significant and minor dams in India. Presently a days the dam specialists are dealing with numerous issues as the climate conditions are not steady and furthermore the checking of damsis impossible constantly by them. Manual perceptions take additional time and this can likewise cause loss of constant information and at times turned into the justification forthcoming calamity. The model investigation will help in diminishing these difficult which are looked by the dam specialists. The project aims to develop applications that will continuously monitor water levels, alert experts when necessary, and automatically open the gates when the water exceeds a predetermined level.l. The web of things is picked for checking and alarmingon continuous premise.

## II. RELATED WORKS

Enhancing the autonomous dam entryway system with the incorporation of horizontal sensors and motor control. While DC motors currently control the dam gates automatically, there is a lack of information concerning water levels. This system is designed to provide real-time updates on the dam's status and issue alerts when conditions deviate from the usual parameters.

## III. EXISTING METHOD

Historically, dams lacked automation systems, relying solely on manual control of their gates. An appointed individual was responsible for operating these gates. The water level in dams was determined using measuring scales installed at the ends of the dams. The person overseeing water level measurements would then communicate when to open or close the dam gates to the gate operator. Local residents near the dam banks were not informed about gate operations.

## IV. PROPOSED SYSTEM

This system is highly user-friendly and serves as a valuable tool for preventing floods and mitigating other potential damages resulting from sudden fluctuations in dam water levels. Consequently, the design of water level indicators represents a significant technological advancement for data transmission to be received and acted upon by the relevant authorities. In the event that water levels rise to a hazardous level, the system also issues alerts to prompt immediate actions by the authorities

## V. BLOCK DIAGRAM

In this system, a variety of sensors are integrated, including water flow, water level, vibration, and ultrasonic sensors. These sensors measure real-world physical parameters and transmit this data to a microcontroller via wireless communication. The information is displayed on an LCD screen, providing details such as vibration levels and water levels, whether they are low or high. Additionally, there is an advanced feature that allows for the automated opening of dam gates based on water levels.

To enable long-distance data transmission, the system employs IoT (Internet of Things) wireless technology. At the receiving end, IoT is used to gather and relay this data to a computer. An IoT application has been developed to update this information on an internet webpage, ensuring public access for security reasons in the nearby area. The system is also equipped to generate immediate alerts in response to abrupt water level changes.

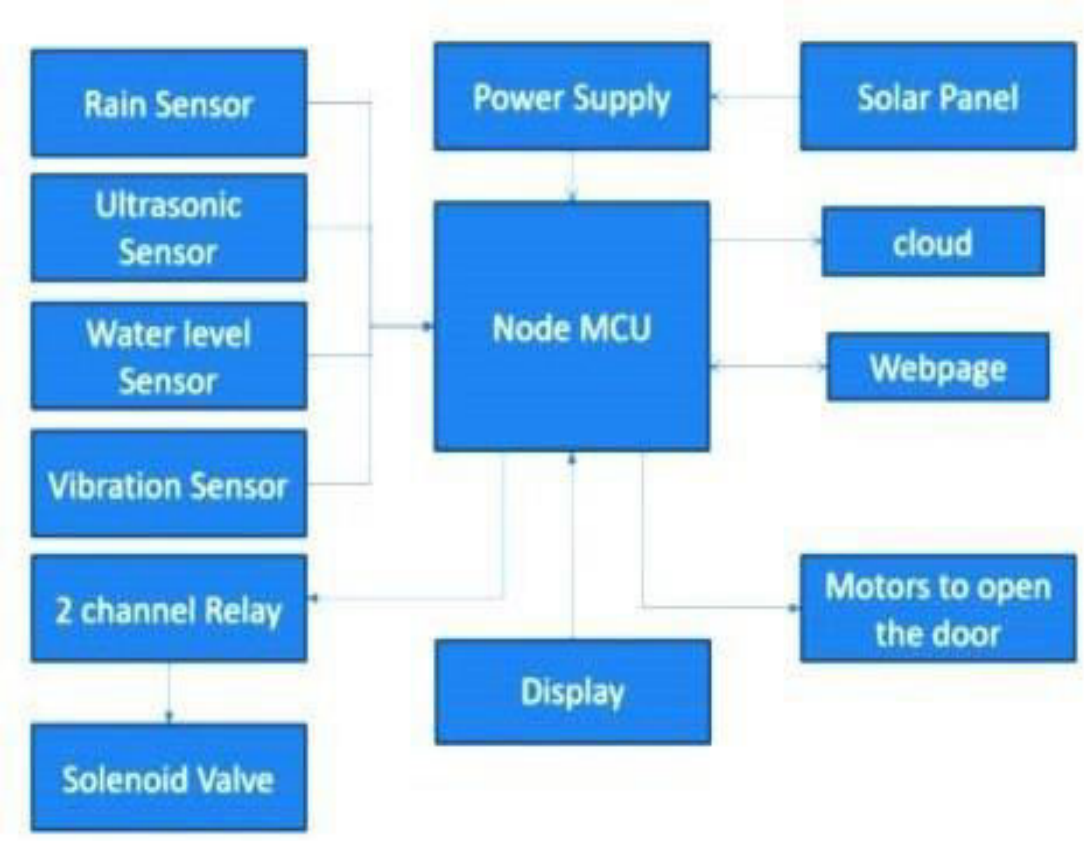



**Fig -1**: Architecture

## VI. CIRCUIT SETUP

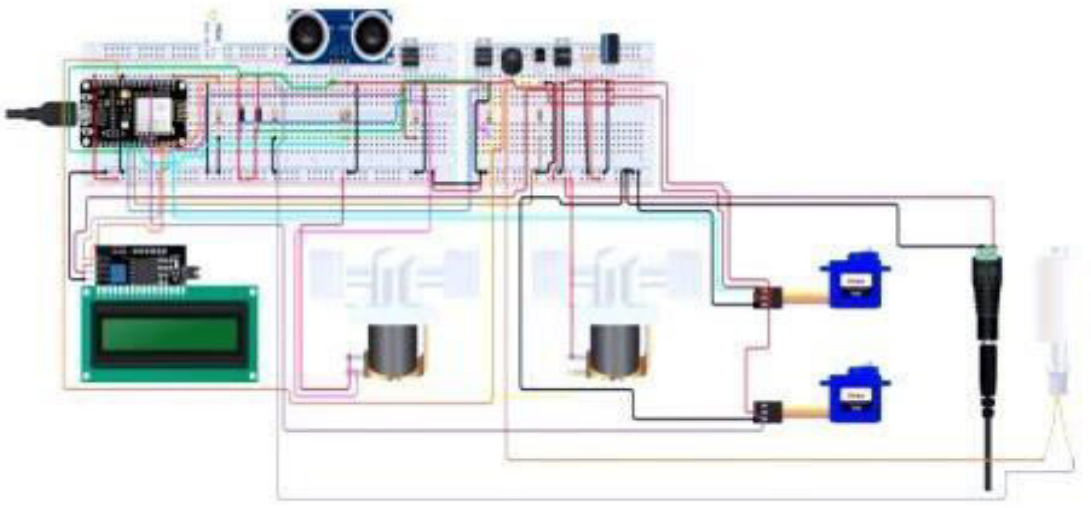


**Fig -2**: Circuital Arrangement

## VII. WORKING

Our model framework offers continuous monitoring of water levels, with this data being continuously displayed to specialists. This is an automated process where dam gates are opened automatically, and specialists can control them through a dedicated application. The system also features LED indicators and a bell system, whichnot only displays rising water levels but also provides early warnings to specialists. This enables them to relocatepeople to safer areas before the dam gates are opened, thereby reducing the impact of floods to a significant extent. By implementing this concept, we can reduce the need for manual labor at each dam. As it's a fully automated project, human involvement is minimized, consequently lowering the likelihood of issues. During times of natural disasters like floods, this method is highly advantageous, as it eliminates the need for human presence near the dam site. Alerts sent to specific specialists allow them to take necessary actions and provide instructions to the public.

- The dam prototype serves as a practical demonstration of how IoT technology can effectively managewater resources and mitigate the risk of floods.
- Various sensors and nodes are deployed to precisely gauge the water level and flow rate within thedam, transmitting this crucial data to a cloud server.
- The collected data serves a dual purpose: it facilitates the automated control of the dam's spillway andenables continuous monitoring of the dam's operational performance and safety.

## VIII. EXPERIMENTAL RESULTS

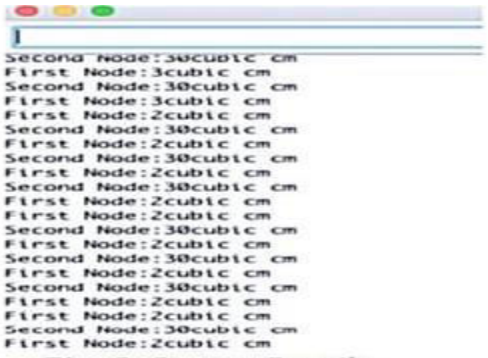
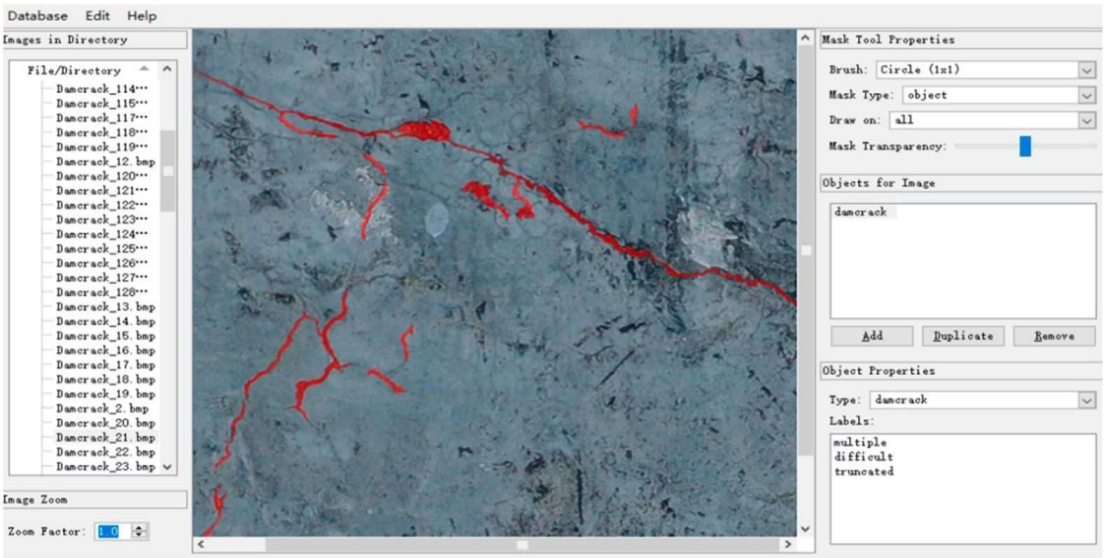



Fig -3: Sensor Details

Fig 4: Prototype of the Dam




## IX. CONCLUSION

This framework will help dam position to know the dam boundaries without checking physically by the mean of Display and Web entry. It depends on IoT Hence the speed of information transmission is high and likelihood of losing ongoing will be less. This framework is dependable and less expensive to introduce in each dam and a web-based interface can give nitty gritty boundaries of all dams in India.

## REFERENCES

[1]. Dhandre, N. Jadhav (2018), “Dam Data Collection and Monitoring System”, International Journal of Science and Research (IJSR). M. Young, The TechnicalWriter’s Handbook. Mill Valley, CA: University Science, 2010.

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[2]. Niteen Mohod, "Usability of Internet of Things [IoT] For Dam Safety and Water Management", International Journal of Research in Advent Technology, vol. 5, no.1, Jan 2019.
[3]. S.M. Khaled Reza, Shah Ahsanuzzaman and S.M. Mohsin Reza, "Microcontroller Based Automated Water Level Sensing and Controlling: Design and Implementation Issue", WCECS 2020, pp. 220-224, October 20-22, 2020.
[4]. George Suciu, Adela Vintea, Stefan Ciprian Arseni and Victor Cristina Burca, "Challenges and Solutions for Advanced Sensing of Water Infrastructures in Urban Environments", 2021 IEEE SIITME, pp. 349-352, 22-25 Oct 2021.

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