IOT Based Lake and Reservoir Management System

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Abstract
The history, culture, momentum and future budgetary status and biological practicality of India and its kinfolk are complicatedly associated with the water resources which are available from dams. These water resources open through dams are one of the standard sources available for the utilization to undertakings, creatures, water framework, etc and there is a fundamental need to ensure the prosperity of the water level at these dams against any trademark or anthropogenic threats and to develop a practical Water Level Management structure using Internet of things (IoT). During rainy season, floods are very natural to occur. But if they occur heavily then problem will arise. In this paper, we proposing a concept to build an automatic protection system for lakes and reservoirs (dam) through IoT based water monitoring technique.

Keywords: Internet of things, lake, reservoir, dam, water level.

1. INTRODUCTION
Remote sensor systems (WSN) [1] – [3] are an unmistakable precedent as they are frequently utilized for cultivating purposes. In latest years, the utilization of web and its applications has developed quickly. As everybody's work is subject to it, without web it would be troublesome. Just as No other day's remote sensor systems are broadly utilized and these are low power gadgets with a processor, stockpiling, control supply, and a handset and with at least one sensor. In this undertaking, we are going to join to these both with the end goal of to reach going to gather the information from water condition) and is shown on the site page utilizing remote systems. Internet of things (IoT) [4] – [6] is a system of gadgets with nearby knowledge (sensors, lights, gas siphons), which share get to and control instruments to push and draw status and direction data from the arranged world.
Dams are the significant wellsprings of water supply to urban areas; they additionally assume an indispensable job in flood control and can help waterway route. The greater part of the dams is worked to fill more than one need and their advantages are complex. It is important to actualize a type of correspondence between the metering frameworks and PC models to offer help in dealing with the perplexing frameworks of the hydro control plants. For the most part, the dams are checked through conventional reconnaissance systems and the water the executives with the exception of the observing of dimension of water in a portion of the dams which is mechanized. The board of water assets through dams winds up perplexing as the quantity of clients relying upon dams is tremendous and these clients may have clashing interests. This circumstance gets much intricate with the way that the accessible assets are restricted with high conceivable outcomes of dry spells and floods. This influences the thickly populated zones. Dam checking is a monotonous and long haul process which must be improved well ordered. Another framework for dam water observing and the executives ought to be built up which can give water level continuously and can enable us to arrive at snappy resolutions in regards to the security tasks of the dams. IoT can be characterized as a system of gadgets which are interconnected. It includes a lot of sensors, correspondence arrange just as programming empowered electronic gadgets that empower end clients to procure exact information occasionally through the correspondence channel and takes into consideration information trade among clients and the associated gadgets. This framework can be utilized to computerize the control of dams without human impedance. This can likewise be utilized to accumulate data on the dimension of water all through the nation and can be utilized to course water dependent on the necessities. We can get data on the water accessibility in a specific locale and course the water to that zone if there's shortage. This helps a great deal in water system. Keeping a mind the wellbeing of dam now and again is one of the significant measures to guarantee the security of dams. Utilization of Wireless sensors coordinate with programming for dam security the executives helps in improving the usefulness of dams. Every one of the sensors in the group of dam, for example, Water Level Sensor, Vibration Sensor and Pressure Sensor can be utilized to detect Water level, Vibrations on the mass of dam and Pressure applied on the mass of dam from the dam into the principle pipeline in Liters every moment separately [7].

Differential Pressure sensors are fitted at equivalent spaces along the fundamental pipeline which can detect the weight contrast in light of the breaking or spillage of the pipeline and will quickly be imparted to the eyewitness. In the event of floods the steering of rising water should be possible all the more productively thinking about the dimension of water crosswise over various dams. Reconnaissance of regions close to the dams should be possible utilizing cameras which transmit live film to the base station and will be useful in recognizing the nearness of individuals close to the dams and can help in guaranteeing security while discharging water amid blaze floods. Internet of Things innovation centers on making the biological system of sensors increasingly keener by setting up an association with the web. Gathering the information in regards to the fizzled sensors empowers us to create increasingly dependable gear which thus improves the unwavering quality of the dams. Mix of
Internet of Things with enormous information distributed computing and WSN will upgrade the activity capacity to dams to a more noteworthy degree [8]. The whole handling of information will be done on the cloud which will guarantee that the information recovery and issuing of directions can be made quicker with greater unwavering quality.

2. RELATED WORK

One of the least demanding approaches to quantify water level is utilizing submersible weight transducers (wet sensors) which are anything but difficult to introduce and require next to no upkeep. For the very reason, they are frequently utilized for brief establishments and establishments in remote areas. They should be introduced in a fixed position and ought to remain completely submerged consistently. It chips away at the idea of utilization of hydrostatic weight to a strain check, which changes over mechanical development into an electrical flag which is thus estimated by the station information lumberjack and changed over into weight, level and release.

Another observing framework was produced for estimation of water levels, and it is made out of ultrasonic sensor, PIC small scale controller, and GSM module. The ultrasonic sensor estimates the separation from the sensor to the fluid surface. This framework proposes the advancement of water level observing framework by incorporating the GSM module to alarm the individual in-control through Short Message Service (SMS) when the water has achieved the basic dimension and it will naturally kill the siphon. It is conceivable to screen the dimension of water at whatever point required [9].

In China, registering systems are conveyed to control wastage of water and create better monetary profits. It additionally guarantees the protection of condition and water cycle with the goal that we can pass on the water assets to our who and what is to come. They utilized frameworks comprising Arduino for the computerization of siphoning of water into the tanks with the assistance of sensors which can detect the dimension of water in the tank. The siphon framework will work consequently dependent on the dimension of water and a LED screen is utilized to keep the client educated with respect to the status. This framework can likewise be reached out to mechanize the extraction of water from sump tank. A similar technique for estimating the dimension of water utilizing sensors in the sump can be utilized nut here if the framework detects that the water level is low it keeps the engine from rushing to guarantee wellbeing from dry running. An alarm sound can be started all things considered to caution the client with respect to the issue [10].

The present dam control innovation is manual wherein the handler works the door on order. This gives space for sporadic water sharing between two properties, human blunder which can result in floods or pointless wastage of water. Our proposed framework evacuates these conceivable outcomes consolidating computerized dam control framework. The whole framework is likewise incompletely self-fueled. The structure includes vitality gathering consequently making the framework self-continued.
3. PROPOSED SYSTEM

The proposed system is given in the figure 1.

1. Arduino Uno: The digital and analog input/output pins prepared in this board can be interfaced to different extension sheets(boards) and different circuits. Sequential (serial) correspondence interface is an element in this board, including USB which will be utilized to stack the programs from PC.

2. Wi-Fi Module: ESP8266 Wi-Fi module is commonly used to build up the remote correspondence between the gadgets. Be that as it may, this module isn't fit for 5-3V logic moving and will require an outside logic level converter.

3. Moisture Sensor: The moisture sensor is a sensor designed to measure the moisture content present in the soil.

4. Water Pump: Generally a water pump pumps water from one place to other place using centrifugal force.

5. Solar Panel: The gadget which changes over the solar energy into electric energy is called Solar Panel.

6. Motor Driver: Generally the Arduino board isn't equipped for giving required measure of flow to running the motors. So we utilize a gadget called Motor Driver which will give adequate ebb and flow to driving the engines.

3.1 Project Implementation:

1. Interface the 4 Moisture sensors and Servo motors with the Arduino.

2. Power the components and Upload the code.
3. Once the water level reaches the 95%, you can see the dam gates will be automatically opened.

4. An email and as SMS will be sent to respective authorities through mobile app.

5. The gates will be opened till the water level is reduced below 85%.

6. All the data regarding Present Gate status, Water level can be update in the remote server for further analysis.

4. CONCLUSION

Water is one of the essential assets for human survival. Be that as it may, tragically a mammoth measure of water is being wasted by uncontrolled use. There are sure computerized water level checking frameworks by and by yet they are utilized for different applications and have some shortness by and by. We attempted to propose approaches to handle this issue and execute an effective water level checking and the board framework. The principle proverb of this examination work is to set up an adaptable, conservative and simple configurable framework which can tackle our water dispersion issue between two districts and protect the low lying territories from floods and so forth among numerous different issues.

REFERENCES


