

## LITERATURE SURVEY

### 1. Smart Water Quality Monitoring System

Written by Mr. Kumar K

One of the main substances that significantly affects ecosystems is water. However, because to rapid industrialization, human waste, and haphazard use of pesticides and chemical fertilisers in agriculture, it is now widely utilised, which contaminates the water. In order to monitor the water quality across a wide area, such as a lake, river, or aquaculture, it is therefore required to install a water monitoring system. According to the state of the world today, Internet of Things (IoT) and remote sensing techniques are utilised in a variety of study fields to monitor, collect, and analyse data from distant locations. In this research, a real-time, low-cost water quality monitoring system in an IoT environment is suggested. This system includes a wide variety of sensors for measuring physical and chemical parameters. These sensors can be used to measure pH, turbidity, conductivity, and dissolved oxygen in water. This method allows for the analysis of data that has been posted online and the real-time assessment of water body quality.

### 2. Management and Real-Time Monitoring of Water Quality

Written by Deepika Gupta

Save water is the cry of the day as we enter this new era of water scarcity. Every life on Earth is encroaching on water sources. To determine the quality of the water being saved, a methodical monitoring methodology is required. The ease with which real-time data may be gathered, processed, and analysed to further expedite actions done is marked by the availability of Internet of Things (IoT) and remote sensing techniques. Real-time monitoring and management of water quality triggers an immediate warning, ensuring rapid action in the event of water contamination for the purpose of preserving and protecting aquatic habitat, enhancing agricultural productivity by managing the quality of irrigated water, etc. The water quality criteria that must be taken into careful account in order to monitor water quality in real time along with the available remote sensors are upended in this study. It also summarises the review of the previously covered parameters. Additionally, it suggests an approach based on the difficulties with the current management system and IoT for identifying real-time water contaminations.

### 3. Monitoring Water Quality in an Internet of Things Environment

Written by Anuadha T

Real-time quality monitoring is required to guarantee the supply of drinking water is secure. In this study, a low cost system for IOT real-time water quality monitoring is designed and developed. Multiple sensors make up the system, which measures the water's physical and chemical characteristics. You can monitor the water's conductivity, turbidity, pH, temperature, and other characteristics. The core controller is capable of processing the measured values from the sensors. One option for a core controller is the Raspberry Pi model. Finally, cloud computing can be used to view the sensor data online.

Keywords:

Internet of Things (IoT) technology, a Raspberry Pi processor, pH sensors, turbidity sensors, and temperature sensors

### 4. River Water Quality Monitoring System Based on IoT

Written by Elsevier B.V.

The current approach for monitoring water quality is manual, has a tedious process, and takes a lot of time. This research suggests a sensor-based system for monitoring water quality. A microprocessor for system processing, a communication system for inter- and intra-node communication, and a number of sensors are the core elements of a wireless sensor network (WSN). Remote monitoring and Internet of Things (IoT) technology can be used to access real-time data. With the aid of Spark streaming analysis via Spark MLlib, Deep Learning Neural Network Models, Belief Rule Based (BRB) system, and comparison to standard values, data collected at the separate site may be shown visually on a server PC. The agent will receive an automated warning SMS alert if the acquired value is higher than the threshold value. Our suggested study is unusual in that it seeks to provide a water monitoring system with high frequency, high mobility, and low powered. Therefore, the Bangladeshi community will benefit greatly from our suggested method by becoming aware of contaminated water and ceasing to pollute the water.

### 5. SMARTPOD WATER MONITORING

Author: David Okoli Chinedu

One of the essential components of life and the wellbeing of the environment is water. One of the major issues facing the world is water pollution, which is brought on by sewage discharge, industrial discharge, run-off from agricultural areas, and urban run-off, which results in death due to contaminated water. The supply of safe drinking water and water that can be used for other reasons, like agriculture, needs to be protected and certified. The design of a low-cost system for real-time monitoring of a portable smart water monitoring system is described and analysed in this study. The system alerts water users through SMS or an Android application as to the status and condition of the water being delivered to them. These parameters provide information to either

inform or prepare data for further analysis. The proposed system has several sensors that are used to measure the physical properties of the water, such as monitoring the Turbidity (TU), Oxidation Reduction Potential (ORP), Electrical Conductivity (EC), and pH. The controller has the ability to process the measured values from the sensors. The TI CC3200 is a controller with an integrated Wi-Fi module and an ARM MCU specifically designed for wireless communication. Using WiFi and Zigbee for network communication, the data that the sensor transmits to the controller is forwarded to the cloud. The application also outlines the security factors and data analytics programmes that will be included.

## 6. Intelligent System for Water Quality Monitoring and Detection

Written by Jamal Mabrouki

Water quality testing is important for environmental management. Anytime the water quality is poor, it can have an impact on the surrounding ecosystem and aquatic life. Given the significance of certain criteria in demonstrating the quality of water, we have created an intelligent system that can take distant measurements.

five water characteristics. The database, which is connected to the platform, receives the captured values. The platform has the ability to process received values. To monitor the observed parameters, the user can establish an Internet Protocol connection to the application. The findings prove this with

A reliable observation framework can be created by fitting alignment. As a result, catchment managers will be able to continuously observe the character of the water at greater spatial goals than was previously possible and maintain this reconnaissance over an extensive time period. Additionally, it uses information analysis to understand how marine life behaves in reutilizing information investigation. of numerous sensors for assessing the physical and chemical parameter. The factors of water that can be assessed using these sensors are pH, turbidity, conductivity, dissolved oxygen. Using this system the real time quality of water bodies can be determined and the data uploaded over the Internet are aAdditionally, it uses information analysis to understand how marine life behaves in reutilizing information investigation. of numerous sensors for assessing the physical and chemical parameter. The factors of water that can be assessed using these sensors are pH, turbidity, conductivity, dissolved oxygen. Using this system the real time quality of water bodies can be determined and the data uploaded over the Internet are

## 2. Real Time Water Quality Monitoring and Management

Author: Deepika gupta

With the advent of this new era of water crisis, save water is the cry all over. Water sources are encroached from every existence on Earth. Saving water needs a systematic monitoring approach to determine its quality. Availability of Internet of Things (IoT) and remote sensing techniques mark the ease of congregating, analyzing and handling of real time data to further accelerate measures taken upon. Real-time water quality monitoring and management initiates prompt alarm ensuring timely response to water contamination in protecting and conserving the aquatic habitat, improving crop production by controlling quality of irrigated water, etc. This paper upheavals the water quality parameters required due consideration for monitoring real time water quality along with the available remote sensors. Also it briefs the review of parameters covered so far. Further it proposes the methodology suitable to the needs of detecting real time water contaminations based on the challenges of existing management system and IoT.

## 3. The Monitoring of Water Quality in IoT Environment

Author: Anuadha T

In order to ensure the safe supply of the drinking water the quality needs to be monitored in real time. In this paper, a design and development of a low cost system for real time monitoring of the water quality in IOT. The system consists of several sensors are used to measure physical and chemical parameters of the water. The parameters such as temperature, pH, turbidity, conductivity of the water can be measured. The measured values from the sensors can be processed by the core controller. The Raspberry Pi model can be used as a core controller. Finally, the sensor data can be viewed on internet using cloud computing.

Keywords:

Raspberry Pi processor, pH sensor, Turbidity sensor, Temperature sensor, Internet of Things(IoT) technology

#### 4.IoT Based Real-time River Water Quality Monitoring System

Author: Elsevier B.V.

Current water quality monitoring system is a manual system with a monotonous process and is very time-consuming. This paper proposes a sensor-based water quality monitoring system. The main components of Wireless Sensor Network (WSN) include a microcontroller for processing the system, communication system for inter and intra node communication and several sensors. Real-time data access can be done by using remote monitoring and Internet of Things (IoT) technology. Data collected at the apart site can be displayed in a visual format on a server PC with the help of Spark streaming analysis through Spark MLlib, Deep learning neural network models, Belief Rule Based (BRB) system and is also compared with standard values. If the acquired value is above the threshold value automated warning SMS alert will be sent to the agent. The uniqueness of our proposed paper is to obtain the water monitoring system with high frequency, high mobility, and low powered. Therefore, our proposed system will immensely help Bangladeshi populations to become conscious against contaminated water as well as to stop polluting the water.

#### 5.SMART PORTABLE WATER MONITORING

Author: Okoli Chinedu David

Water is one of the critical parts of life and the health of the environment. Water pollution is one of the big problems to the world as a result of sewage discharge, discharge from industries, run-off from agricultural fields and urban run-off causing, thereby causing death as a result of polluted water. In order to safeguard and certify the safe supply of the drinking and useful water for different purposes like agricultural, the water should be monitored. This report describes and analyse the design of a low-cost system for real time monitoring of a smart portable water monitoring system in IOT (internet of things) that alert water user by SMS or android application the state and condition of the water being supplied to them. The proposed system has several sensors which is used to measuring physical of the water such as monitoring the Turbidity (TU), Oxidation Reduction Potential (ORP), Electrical Conductivity (EC) and pH. These parameters provide facts and figures to either inform or prepare data for further analysis. The measured values from the sensors can be processed by the controller. TI CC3200 is a controller with built in Wi-Fi module and dedicated ARM MCU for wireless communication purpose. The data being sent to the controller through the sensor are sent to the cloud through WI-FI and Zigbee as means of network communication. The application also describes the data analytics solutions to be integrated, and the security consideration.

## 6.Intelligent System for Monitoringand Detecting Water Quality

Author: Jamal Mabrouki

Testing water quality has a significant role in environment control-ling. Whenever, the water quality is bad it can affect the aquatic life and sur-rounding environment. Due to the importance of some parameters to show thequality of water, we have designed an intelligent system that can measuresremotely

five parameters of water. The captured values are sent to the databasewhich is connected to the platform. The platform can process the receivedvalues. The user can connect to the application via Internet Protocol for mon-itoring the measured parameters. The outcomes demonstrate that with

fittingalignment, a dependable observing framework can be built up. This will enablecatchment administrators to consistently observing the nature of the water at higher spatial goals than has recently been doable, and to keep up this recon-naissance over an all-inclusive timeframe. Moreover, it comprehends the con-duct of sea-going creatures in respect to water contamination utilizinginformation investigation.

