

LITERATURE SURVEY

Real-Time River Water Quality Monitoring and Control System

1) IoT-based System for Real-time Water Pollution Monitoring of Rivers

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IEEE September 2021

The research proposes a system to remotely monitor the water quality of a river so that the authorities can gather better insights about the condition of that particular river and predict the critical future phenomena. Consequently, they will be able to take auspicious steps in order to protect the rivers and save the environment. The proposed framework can observe the real-time value of pH, conductivity, turbidity, temperature and flow of the water by utilizing various sensors. Furthermore, through our device, effective predictions about imminent floods can be made. Thus, authorities can commence early warning for floods and ensure prompt evacuation. Thus, our technique can significantly minimize the casualties caused by this disaster. In this context, real-time feeds are obtained through Internet of Things (IoT). For wireless data transmission Message Queuing Telemetry Transport (MQTT) is used.

2) Design and Implementation of Real Time Approach for The Monitoring of Water Quality Parameters

Siti Aishah Binti Makhtar; Norhafizah Binti Burham; Anees Bt Abdul Aziz

IEEE - June 2022

Access to safe drinking water is essential to nurturing human life on earth. Polluted air and unsanitary water can cause health problems. Unhygienic water can cause stomach and health-related problems. A specific range of water quality parameters, mainly temperature, pH, total dissolved solids (TDS) and turbidity, can degrade the growth of this bacteria. This presented paperwork is to develop a smart water quality monitoring system using four sensors and an IoT platform to help determine water quality. It is to analyse the parameters of water samples such as tap water, co way water, river water, pond water, and lake water whether these water samples are in the threshold range for drinking or not. The device is initially used to measure pH, turbidity, total dissolved solids (TDS) and temperature, and then sent the information to the microcontroller Arduino Uno.

3) An IoT Based Smart Water Quality Monitoring System using Cloud

Ajith Jerom B.; R. Manimegalai; R. Manimegalai

IEEE – April 2020

Other sources of pollution include agricultural runoff and unregulated small scale industry that results in polluting, most of the rivers, lakes and surface water in India. In this paper, An IoT Based Smart Water Quality Monitoring System using Cloud and Deep Learning is proposed to monitor the quality of the water in water-bodies. In conventional systems, the monitoring process involves the manual collection of sample water from various regions, followed by laboratory testing and analysis. This process is ineffective, as this process is arduous and time-consuming and it does not provide real-time results. The quality of water should be monitored continuously, to ensure the safe supply of water from any water bodies and water resources. Hence, the design and development of a low-cost system for real-time monitoring of water quality using the Internet of Things (IoT) is essential. Monitoring water quality in water bodies using Internet of Things (IoT) helps in combating environmental issues and improving the health and living standards of all living things.

4) IoT Based Real-time River Water Quality Monitoring System

Mohammad Salah Uddin Chowdury, Talha Bin Emran

Science Direct – 2018

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.

5) A Development and Implementation of Water Quality Assessment Monitoring (WQAM) System using the Internet of Things (IoT) in Water Environment

Muhammad Farhan Johan, S. Abdullah, A. Zanal Saurabh S. Soman, Hamidreza Zareipour, Om Malik

JEVA - 23 November 2021

This paper presents the development and implementation of Water Quality Assessment and Monitoring (WQAM) system. The system development used Wi-Fi enabled microcontroller to connect with the IoT environment and store the data in the IoT cloud server. The microcontroller used is Arduino UNO that interacts with three types of sensor

probes which are pH, turbidity and temperature probe. All the data measurements is transferred using a Wi-Fi module which is ESP8266. The IoT cloud used to utilize the data frame is Thing Speak. This system was implemented on Bandar Pereda Lake and Deraa River in Pulau Pinang with two systems implemented at each location. The sensors were placed on the water surface for more accurate measurements. This system continuously measures the readings of pH, turbidity dan temperature on the lake/river for every 1 hour. Twenty readings were taken for every 1 hour within the first 20 minutes with 1 minute interval and the readings were stored in the IoT cloud server.

6) Real-Time Water Quality Monitoring System

Jyotirmaya Ijaradar, Subhasish Chatterjee

The need for effective and efficient monitoring, evaluation and control of water quality in residential area has become more demanding in this era of urbanization, pollution and population growth. Ensuring safe water supply of drinking water is big challenge for modern civilization. Traditional methods that rely on collecting water samples, testing and analyses in water laboratories are not only costly but also lack capability for real-time data capture, analyses and fast dissemination of information to relevant stakeholders for making timely and informed decisions. In this paper, a real time water quality monitoring system prototype developed for water quality monitoring in Residential home is presented. The development was preceded by evaluation of prevailing environment including availability of cellular network coverage at the site of operation. The system consists of a Raspberry Pi, Analog to Digital Converter, Water quality measurement sensors. It detects water temperature, dissolved oxygen, pH, and electrical conductivity in real-time and disseminates the information in graphical and tabular formats to relevant stakeholders through a web-based portal and mobile phone platforms. The experimental results show that the system has great prospect and can be used to operate in real world environment for optimum control and protection of water resources by providing key actors with relevant and timely information to facilitate quick action taking.

7) River Water Quality Robot Embedded with Real-Time Monitoring System: Design and Implementation

Mohd Amirul Aizad M. Shahrani; Safaa Najah Saud Al-Humairi; Nurul Shahira Mohammad Puad; Muhammad Asyraf Zulkipli

New sensor capabilities and implementations are being developed by wireless communication. For environmental applications, recent developments in sensor networking are essential. The Things Internet (IoT) allows links between different devices to share and collect data. In addition to automation, IoT expands its capabilities by using Industry 4.0 to resolve environmental concerns. Since water is one of the fundamental requirements of human survival and life underwater, some mechanism is necessary to occasionally control water

quality. This paper proposed an autonomous robot occupied with real-time multisensory (pH, temperature, voltage and garbage level) for better water quality. The data were recorded using sensors and transmitted via Wi-Fi to a designed MIT inventor mobile application and stored in the cloud to monitor the water quality. The river water robot is also attached to a self- power generator using a solar cell and wind turbines. Based on the obtained results, it was found that the pH of the tested river water in the range of 2-4.6, which considered to be highly acidic. In conclusion, the designed robot has shown significant functionality in the real-time receiving and transmitted data with no human interfering required