Ideation Phase

Literature Survey

Date	17 September 2022
Team ID	PNT2022TMID41673
Project Name	Real – Time River Water Quality Monitoring and Control System

- **IoT Based Real-time River Water Quality Monitoring System. (Mohammad Salah Uddin Chowdurya, Talha Bin Emranb, Subhasish Ghosha, Abhijit Pathaka, Mohd. Manjur Alama, Nurul Absara, Karl Anderssonc, Mohammad Shahadat Hossaind)**

  Publication: The 16th International Conference on Mobile Systems and Pervasive Computing.

  Year: 2019

  Current water quality monitoring systems are manual systems with tedious processes and are very time consuming. This paper proposes a sensor-based water quality monitoring system. Key components of a wireless sensor network (WSN) include a microcontroller for system processing, a communication system for node-to-node and node-to-node communication, and multiple sensors. Real-time data can be accessed through remote monitoring and Internet of Things (IoT) technologies. Data collected on individual pages can be visually displayed on a server PC using Spark streaming analysis via Spark MLlib, Deep Learning Neuron Network Models, Belief Rule Based (BRB) system and compared with standard values. You can also. If the retrieved value exceeds the threshold, an automatic warning SMS notification will be sent to the agent. The uniqueness of our proposed item is to obtain a high-frequency, high-mobility, low-power water monitoring system. Therefore, our proposed system will be very helpful for Bangladeshi people to become aware of polluted water and stop water pollution.

- **An Efficient Wireless Sensor Network-based Water Quality Monitoring System. (Nidal Nasser, Asmaa Ali, Lutful Karim, Samir Belhaouari)**

  Publication: Al Faisal University, Saudi Arabia

  Year: 2013

  Wireless sensor networks (WSNs) have achieved wide applicability in water quality monitoring. However, existing WSN-based monitoring systems are not suitable for monitoring pond and lake water, municipal water distribution, and reservoirs. Furthermore, these frameworks use static and application-specific sensor nodes and do not dynamically adapt to changing requirements, so they cannot be reused in other monitoring applications. Therefore, we present a reusable and self-configurable energy-efficient WSN-based water quality monitoring system that integrates a web-based information portal and a sensor node sleep planning mechanism. Testbed and simulation results show that the framework can monitor real-time water quality, and the sleep scheduling mechanism extends the life of the network.

- **Water Quality Monitoring with Notifications System (Delight Sekhwela, Pius Adewale Owolawi, Temitope Mapayi & Kehinde Odeyemi)**

  Publication: 2nd International Multidisciplinary Information Technology and Engineering Conference

  Year:2020

  Water is a vital natural resource for human and animal health, and more than 88% of South African households have access to water. South Africa has one of the cleanest water systems in the world, but there are still many factors that contribute to water pollution. Industry produces large amounts of waste that can affect the pH of water. The reservoir may be exposed to dust. In the agricultural sector, soil erosion occurs due to physical soil stimulation. Or it's not getting enough attention from the department authorities. In urban areas, efforts are being made by local governments to purify and monitor the water used for consumption, but existing mechanisms are unautomated, unreliable and, worse, in rural areas. Inadequate attention in the area. No actual mechanism is used. This document introduces a water quality notification system with notifications to improve people's lives by providing a simple and easy mechanism to know the water quality stored in reservoirs. It contains various sensors to get water quality parameters, namely PH sensor, nitrate sensor, turbidity sensor and water level detection sensor. The system obtains water parameters from sensors via a Raspberry Pi.

This is a portable system and does not require 24/7 monitoring privileges at the water source. Also, mobile and his wearable system connected to an Android smartphone.

- **Realtime water quality monitoring through Internet of Things and ANOVAbased analysis: a case study on river Krishna (Prasad M. Pujar, Harish H. Kenchannavar, Raviraj M. Kulkarni, Umakant P. Kulkarni5)**

  Publication: Central Water Commission Ministry of Water Resources India

  YEAR:2014

  This paper attempted to develop an Internet of Things (IoT)-based statistical model to analyse the water quality of the Krishna River. Dissolved Solids and Conductivity. These parameters are very important for assessing the water quality of rivers. Water quality data were collected from his six stations on the Krishna River in Karnataka. The Krishna River is India's fourth largest river with a length of about 1400 km and flows from its source at towards the Bay of Bengal. In our study, we considered only the section of the Krishna River flowing through Karnataka length about 483 km. In recent years, mineral-rich river basins have undergone rapid industrialization, and river basins have been polluted. River water is inevitably polluted by various pollutants such as municipal sewage, agricultural waste, and industrial waste, making it unusable for human activities. The traditional manual method used by the is very time consuming. Staff are required to collect water samples on site and bring them to the laboratory to perform analysis of various water parameters, an expensive and time-consuming process. Therefore, people in river basins do not have timely information on water quality. This creates an excellent opportunity to quickly perform water quality checks in real time by analysing water samples taken from the Krishna River. IoT is one of the ways that real-time monitoring of river Krishna water quality can be done in a short time. This paper focused on IoT-based water quality monitoring by applying statistical analysis to data collected from the Krishna River.

- **Real-Time Water Quality Monitoring System (Jyotirmaya Ijaradar, Subhasish Chatterjee)**

  Publication: International Research Journal of Engineering and Technology (IRJET)

  Year: **2018**

  In an era of urbanization, pollution and population growth, the need for effective and efficient monitoring, evaluation and management of water quality in residential areas is becoming more and more stringent. Securing a supply of potable and safe water is a major challenge for his modern civilization. Traditional methods relying on water sample collection, laboratory testing and analysis are not only costly, but also provide real-time data collection, analysis, and rapid dissemination of information to relevant stakeholders. and lacks features to ensure timely and appropriate status. Ability to make informed decisions. This document presents a prototype real-time water quality monitoring system designed for residential water quality monitoring. Prior to development, a general environment evaluation was conducted, including the availability of cellular coverage at the site. The system consists of a Raspberry Pi, an A/D converter, and a water quality sensor. It detects water temperature, dissolved oxygen, pH and electrical conductivity in real time and disseminates the information graphically and tabularly to relevant stakeholders through web-based portals and mobile phone platforms. Experimental results show that the system has great potential to improve water resources by providing relevant and timely information to key stakeholders so that they can facilitate prompt action. It shows that the system can be deployed to operate in real-world environments for optimal control and protection.