

IDEATION PHASE

Literature Survey On The Selected Project & Information Gathering

Date	16-10-2022
Team ID	PNT2022TMID34532
Project Name	Real-Time River Water Quality Monitoring and Control System
Marks	

INTRODUCTION

The environment consists of five key elements e.g., soil, water, climate, natural vegetation, and landforms. Among these water is the major need of human life. It is also vital for the persistence of other living habitats. Whether it is used for drinking, domestic use, and food production or recreational purposes, safe and readily available water is the need for public health. So it is highly imperative for us to maintain water quality balance. Otherwise, it would severely damage the health of the humans and at the same time affect the ecological balance among other species.

Internet of things (IoT) is an innovative technological phenomenon. It is shaping today's world and is used in different fields for collecting, monitoring and analysis of data from remote locations. IoT integrated network is everywhere starting from smart cities, smart power grids, and smart supply chain to smart wearable. Though IoT is still under applied in the field of environment it has huge potential.

REAL-TIME RIVER WATER QUALITY MONITORING AND CONTROL SYSTEM

Current water quality monitoring system is a manual system with a monotonous process and is very time-consuming. It is 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 this paper is to obtain the water monitoring system with high frequency, high mobility, and low powered. References: Mohammad Salah Uddin Chowdurya, Talha Bin Emranb, Subhasish Ghosha, Abhijit Pathaka, Mohd. Manjur Alama, Nurul Absara, Karl Anderssonc, Mohammad Shahadat Hossaind.

REPORTS BASED ON REAL-TIME RIVER WATER QUALITY MONITORING AND CONTROL SYSTEM

- 1) **Nikhitha Kashya** Paper Id : IJRASET44314 "Real-Time River Water Quality Monitoring and Control System"

Wireless communication developments are creating new sensor capabilities. The current developments in the field of sensor networks are critical for environmental applications. Internet of Things (IoT) allows connections among various devices with the ability to exchange and gather data.

IoT also extends its capability to environmental issues in addition to automation industry by using industry 4.0. Around 40% of deaths are caused due to contaminated water in the world. Hence, there is a necessity to ensure supply of purified drinking water for the people both in cities and villages. Water Quality Monitoring (WQM) is a cost-effective and efficient system designed to monitor drinking water quality which makes use of Internet of Things (IoT) technology.

2) **Muhammad Farhan-** “Real-Time River Water Quality Monitoring and Control System”

Water quality monitoring (WQM) system is widely being explored as it is needed to prevent the problem of water contamination worldwide. This paper presents the development and implementation of Water Quality Assessment and Monitoring (WQAM) system. The system development used WiFi 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 WiFi module which is ESP8266. The IoT cloud used to utilize the data frame is ThingSpeak. This system was implemented on Bandar Perda Lake and Derhaka 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. The readings are accessible via ThingSpeak GUI. In conclusion, this system would benefit the authorities to take advantage of using the WQAM system with the aid of the IoT that is less time consuming, less cost and more reliable in real time.

3) **Md. Jainal Abedin** “IoT Based Real-time River Water Quality Monitoring System”

Our main aim is to develop a system for continuous monitoring of river water quality at remote places using wireless sensor networks with low power consumption, low-cost and high detection accuracy. pH, conductivity, turbidity level, etc. are the limits that are analyzed to improve the water quality. Following are the aims of idea implementation: a. To measure water parameters such as pH, dissolved oxygen, turbidity, conductivity, temperature etc. using available sensors at remote place. b. To collect data from various sensor nodes and send it to base station by wireless channel. c. To simulate and analyze quality parameters for quality control. d. To send SMS to an authorized person automatically when water quality detected does not match the preset standards, so that, necessary actions can be taken.

CONCLUSION

The above listed are proposed solutions and reports of various researchers expressed about the real-time river water quality monitoring and control system.

Reference link : <https://www.diva-portal.org/smash/get/diva2:1351342/FULLTEXT01.pdf>