

Real-Time River Water Quality Monitoring and Control System

Introduction

Water is the utmost crucial element for 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. The records show that more than 14,000 people die daily worldwide due to water pollution. In many developing countries, dirty or contaminated water is being used for drinking without any proper prior treatment. In 2019, due to an illegal dumping in a river near Pasir Gudang, Johor, 111 schools in the Pasir Gudang district after almost 1,000 people, including school children, fell victim to gas poisoning. Johor chief minister Osman Sapian quote "This was unexpected and regrettable". Ongoing river observation was carried out using the traditional method, which required on-site sampling to be sent to a laboratory for extensive analysis. The drawback is it consumes too much time to travel back and forth to the lab, thus non real time data was taken and if such a new type of contamination occurs, it would be too late to act on it. Other existing solutions are suitable for stagnant water bodies such as lakes. Our solution is designed not just to be suitable for river but also to take advantage of the environment.

Literature survey

Here, we will take a look at all the previous solutions, attempts and implementations to the River-water quality monitoring system or anything that is at least vaguely related to it.

Existing Solutions

| S.No | Paper Title | Author(s) | Month /Year | Method/Implementation technique(s) | Resource Link |
|------|---|--|-------------|--|---|
| 1 | 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 | 2019 | uses different sensors to measure water parameters such as pH, dissolved oxygen, turbidity, conductivity and etc. assembles data from these sensor nodes and send it to the base station by the wireless channel | IoT Based Real-time River Water Quality Monitoring |
| 2 | Development and Implementation of Water Quality Assessment Monitoring (WQAM) System using the Internet of Things (IoT) in Water Environment | Muhammad Farhan Johan, Samihah Abdullah , Nor Shahanim Mohamad Hadis, Saodah Omar, Asmalia Zanal | 2021 | A cloud storage-based system that uses two devices to monitor water at the center of the lake and by the bank of the lake. It also uses sensors to measure pH level, turbidity, conductivity. Uses ThinkSpeak platform | Development and Implementation of Water Quality Assessment Monitoring (WQAM) System using the Internet of Things (IoT) in Water Environment |

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| 3 | IoT-Enabled Water Quality Monitoring System | G. Kanagaraj, T. Primya, K. Sashi Rekha, C. Vinothini & P. Anitha | 2020 | controller with inbuilt Internet connectivity module to monitor parameters such as temperature and turbidity using low cost and less complex smart water quality monitoring system. The system contains an appropriate webpage for enhancing the user convenience on the deviation of water quality parameters. | Io T-Enabled Water Quality Monitoring System |
| 4 | Real-Time Water Quality Monitoring System | Yashwanth Gowda K.N 8th semester, CSE student, Vishali C, Sumalatha S.J and Spoorth G.B 8th semester, CSE student, Guide: N Ganeshan, Asst. prof. ViswesvarayaTechnological University, Belagavi, Karnataka, India | 2020 | Essential water parameters which are temperature, pH level and turbidity can be measured by this proposed system. Sensors' circuits are connected to the microcontroller and the probes of the turbidity, pH, and temperature sensors placed inside the water. | Real-Time Water Quality Monitoring System |

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| 5 | Real Time Internet of Things (IoT) Based Water Quality Management System | Saif Allah H.AIMetwally ^a Mohamed K.Hassan ^b Mohamed H.Mourad ^c | 2020 | <p>The proposed hypothesis is to connect the model on water inlet and gather the (pH, Temperature and the Water Level) readings and monitor the flow of water. Hence, the first turbidity sensor sends the value to the controller to compare the value with the second turbidity sensor, at this stage, the control logic will take the decision either to open or close the valve so that the water flow to the filters or not.</p> | Real Time Internet of Things (IoT) Based Water Quality Management System |
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