A.S. Khalid Waleed, Purba Daru Kusuma and Casi Setianingsih Published on “Monitoring and Classification System of River Water Pollution Conditions with Fuzzy Logic” , As the rapid development of technology and the need for a significant increase in demand, as well as pollution, the water sector, especially the river has experienced a decline in water quality even to the occurrence of pollution, resulting in water can no longer be consumed either by human body also for other needs. This is done because water is a necessity that cannot be tolerated, so this research is done to help fulfil or even provide a calm warning of water quality. With the development of Internet of Things (IoT) the monitoring system will develop, because with the existence of technology such as low-power wide-area network (LPWAN) as specific as possible, short data can be sent using lower power. It was proven that the author could make a monitoring system and classification of river water pollution. By using an artificial intelligence, using the fuzzy logic method. The results show that the average accuracy of the monitoring system results is 99.7% and the results of the appropriate classification values are based on the results of system testing.

Rahayu Dwi Lestari, Angga Rusdinar, Muhammad Ary Murti, Gilang Tawaqal and Dongho Lee Published on “Design of IoT-Based River Water Monitoring Robot Data Transmission Model Using Low Power Wide Area Network (LPWAN) Communication Technology” , As River water monitoring system is one of the efforts as a contribution to control the pollution and/or damage of the watershed. Monitoring of River water quality is essential because it is to know its condition. Despite that, regular monitoring requires water samples to be taken to the laboratory to be tested. Therefore it is not real-time and wasteful of energy. In this paper, a design of IoT-based river water quality monitoring-system using LPWAN communication technology will be proposed so that monitoring points on the watershed can be monitored in real-time and the results of monitoring data will be stored in the server for data logging. A test about communication range is performed with four nodes and one gateway with LoRa transceiver paired with Arduino boards, as LPWAN communication method, to be able to exchange information in terms of hardware and implement network mesh topologies to widen monitoring points in terms of software. It is shown from the test result that the communication range for the transmission between node to node or node to gateway reaches a maximum of 500 m close on the surface of the water.

Qiuchan BAI, Jiahao Wu, Chunxia JIN Published on “The Water Quality Online Monitoring System Based on Wireless Sensor Network”, Due to the poor real-time performance of water quality monitoring, secondary pollution, high cost and other issues, this paper proposes to use wireless sensor network technology to design a water quality monitoring system. The system has strong real-time, online monitoring functions, and acquires multiple parameter data that affect water quality, timely and accurately monitor water quality information, prevent water environmental pollution, reduce the impact of water pollution, and meet the requirements of efficient and intelligent water quality. With the rapid development of sensor network technology, wireless sensor network has been applied to all aspects of human life. Wireless sensor network based on ZigBee technology has low cost, low power consumption, good ad hoc network characteristics and network management function, which is widely used Based on the above reasons, this paper proposes a water quality monitoring and monitoring system based on wireless sensor network.

Lalit Kumar Baghel , Sukriti Gautam , Vikas Kumar Malav , and Suman Kuma Published on “TEMPSENSE: LoRa Enabled Integrated Sensing and Localization Solution for Water Quality Monitoring”, Though existing solutions facilitate various features [e.g., the potential of hydrogen (pH), dissolved oxygen (DO), temperature, and electrical conductivity (EC)], they possess numerous limitations: 1) most of the existing systems rely on regional wireless systems, e.g., global system for mobile communication (GSM) and a global positioning system (GPS); hence, their performance varies with local connectivity and 2) usually, the setup is deployed at remote locations, including river site, so the solutions need to be power-optimized and should be able to support self-localization ability, which lacks the existing solutions. In this context, we have developed a cost-effective functionality integration that brings different sensors, processing units, and Long Range (LoRa) transmission to a single platform, providing a compact, powerefficient, and low-cost Total dissolved solids (TDS), Ec, teMperature, pH monitoring SystEm with integrated localizatioN Solution (TEMPSENSE). The proposed TEMPSENSE hardware is equipped with interactive sensing and localization algorithms that address the abovementioned concerns and facilitate the real-time location along with the required water quality parameters. Furthermore, it is shown that the proposed hardware is several times cheaper than the available industrial solutions. Moreover, a number of experiments on different types of solutions have been performed for validation of the proposed design. Furthermore, extensive experiments have been performed for localization in low- and high-density scenarios and are found that the proposed algorithm is potentially able to estimate the real-time location of the TEMPSENSE.

Harish H. Kenchannavar, Prasad M. Pujar , Raviraj M. Kulkarni, and Umakant P. Kulkarni Published on “Evaluation and Analysis of Goodness of Fit for Water Quality Parameters Using Linear Regression Through the Internet-of-Things-Based Water Quality Monitoring System”, As the Freshwater is the planet’s most important natural resource and is prone to pollution, making it necessary for real-time monitoring. The Internet-of-Things (IoT)-enabled water quality monitoring (WQM) system enables real-time monitoring of freshwater resources. The WQM uses physicochemical parameters, such as temperature, pH, dissolved oxygen, electrical conductivity, biochemical oxygen demand, nitrate, and total dissolved solids to control the water quality. The advent of IoT has proven its effectiveness in capturing, studying, and continuously transmitting environmental data in real time. Mineral-rich watersheds experience the exploitation of available resources in and around rivers, leading to urgent real-time monitoring of river water. The operation pollutes the water by mixing different types of toxic waste, namely, urban, industrial, and agricultural, making it unusable for human activities. Water samples are taken from the river via the WQM system from identified sampling points and subjected to linear regression analysis to estimate the relationships and goodness of fit between the parameters. Once the parameter relationship is known, a one-way ANOVA is applied to the water samples and the water quality is analyzed using the ANOVA hypothesis. Additionally, the river data set can be used to train the WQM system.

Ajith Jerom B, Manimegalai R and d Ilayaraja V Published on “An IoT Based Smart Water Quality Monitoring System using Cloud” as , An IoT Based Smart Water Quality Monitoring System using Cloud and Deep Learningis proposedto 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 timeconsuming 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. The proposed system monitors the quality of water relentlessly with the help of IoT devices, such as, NodeMCU. The in-built Wi-Fi module is attached in NodeMCU which enables internet connectivity transfers the measured data from sensors to the Cloud. The prototype is designed in such a way that it can monitor the number of pollutants in the water. Multiple sensors are used to measure various parameters to assess the quality of water from water bodies. The results are stored in the Cloud, deep learning techniques are used to predict whether the water suitable or not.

Suzi Seroja Sarnin, Athirah Bt. Hussein, Danial B. Zahidi, Nani Fadzlina Naim, Ros Shilawani Bt. S. Abdul Kadir, Mohd Nor Md Tan Published on “Development of Water Quality System to Monitor Turbidity and Temperature of Water Using GSM Module”, . The increased use of chemicals in industrial sectors and fertilizers in the farm has contributed extremely to the overall reduction of water quality. This is where the realtime water quality monitoring system comes in. This system is aimed to check the temperature of the water and to monitor the turbidity level in the water. Today, Remote Sensing (RS) techniques are used for monitoring, collecting and analyzing data in different areas of research. Hence, this low-cost water quality monitoring system’s prototype used electrochemical sensors to manage water quality parameters and notify the users Global System for Mobile Communication (GSM) technology. With the presence of Smart Monitoring System of Turbidity and Temperature of Water, the ease to monitor the environment is expected to be achieved to improve water quality. The outbreaks of water-borne diseases can be prevented, the life of the aquatics is well preserved, and the overall quality of life is enhanced with the availability of the good quality of water.