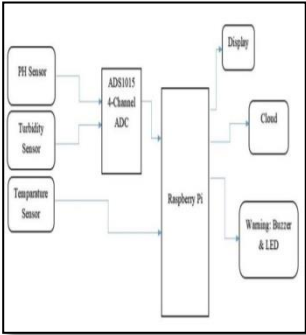# REAL TIME RIVER WATER QUALITY MONITORING AND CONTROL SYSTEM USING IoT
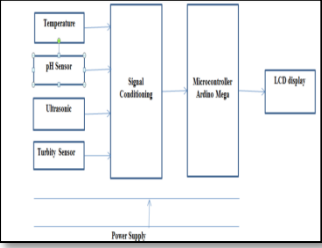
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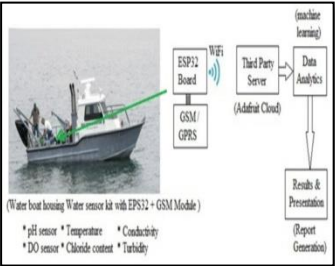SWATHI.A.P   (113219041120)

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S.NO	JOURNAL PAPER	BLOCK DIAGRAM	ALGORITHM / METHODOLOGY/ SOLUTION	FEATURES	DRAWBACKS
1.	IoT Based Real time River Water Quality Monitoring		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-timedata 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 helpof Spark streaming analysis through Spark MLlib, Deep learning neural network models, BeliefRule 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 our proposed paper is to obtain the water monitoring system with high frequency, high mobility, and low powered. The features included in this paper are PH sensor and temperature sensor. The PH sensor is used to check the PH level of water and temperature sensor gives the temperature of the water.	Due to the fast-growing urbanization supply of safe drinking water is a challenge for every city authority. Water can be polluted any time. So, the water we reserved in the water tank at our roof top or basement in our society or apartment may not be safe. Still in India most of the people use simple water purifier that is not enough to get surety of pure water. Sometimes the water has dangerous particles or chemical mixed and general-purpose water purifier cannot purify that. And it's impossible to check the quality of water manually in every time.

| 2. | Complex Real-Time Environmental Monitoring of River Water | | In this paper, a real time water quality monitoring system prototype developed for water qualitymonitoring 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. | To measure various chemical and physical properties of water like pH, temperature and particle density of water using sensors. Send the data collected to a Raspberry Pi, show the data in display and send it to a cloud-based Database using Wired/Wireless Channel. Trigger alarm when any discrepancies are found in the water quality. Data visualization and analysis using cloud-based visualization tools. | The two drawbacks of this paper are: Firstly, it is time consuming and labour intensive. Secondly, the cost for this controlled, displayed, and transferred. Compared to the conventional water quality testing techniques, sensor-based water quality testing has many advantages suchas accurate, high sensitivity, good selectivity, speed, fast response, low cost etc. |

| 3. | River Water Quality Monitoring and Simulation Based on WebGIS | | This research paper focuses on Detection on water pollution and water management using smart sensors IoT to ensure the safe supply of drinking water the quality should be monitoredin real time for that purpose new approach IOT (Internet of Things) based water quality monitoring has been proposed. This system consists some sensors. Which measure the water quality parameter such as pH, turbidity, conductivity, dissolved oxygen, temperature. Based on a study of existing water quality monitoring system and scenario of water we can say that proposed system is more suitable to monitor water quality parameters in real time. Based on astudy of existing water quality monitoring system and scenario of water we can say that proposed system is more suitable to monitor water quality parameters in real time. | An assembled Arduino microcontroller is used as the core controller of the system. Once the code is uploaded to the microcontroller, no PC system, keyboard command, monitor is requiredto operate the system. The features included in this paper are turbidity sensor , wi-fi module and LCD display. | It is difficult to collect the water samples from all the area of the water body. The cost of analysis is very high. The lab testing and analysis takes some time and hence the lab results do not reflect real time water quality measurement due to delay in measurement. The process is time consuming due to slow process of manual data collection from different locations of the water body. The method is prone to human errors of various forms. |

| 4. | An IoT Based System for Water Resources Monitoring and Management | (Water boat housing Water sensor kit with EPS32 + GSM Module) * pH sensor * Temperature * Conductivity * DO sensor * Chloride content * Turbidity | In IoT based method water boat housing ESP32 board with water sensors is used. ESP32 consists of Wi-Fi and Bluetooth functionalities. In order to avail GSM/GPRS functionality in the system, GSM/GPRS board (SIM800A) is interfaced with ESP32 using UART interface. These include pH sensor, temperature sensor, conductivity sensor, dissolved oxygen sensor and so on. The data collected by sensors from various locations of the water body such as river or lake are uploaded to cloud storage server using Wi-Fi or GSM. system can monitor the reports and resultsof water samples collected from various locations using mobile or web app developed. GPS coordinates of the collected samples are also integrated in the reports to understand level of contamination at particular locations. | Measures Temperature from -55C to +125C (-67F to +257F), (+0.5C, -0.5C) Accuracy from -10C to +85C, Programmable resolution from 9 Bits to 12 Bits and no external components required. | The system is less effective as sensors are installed very deep inside the water and their positions are fixed. The sensors are very expensive. Moreover, their maintenance cost is also very high. This leads to higher cost on the regulatory body. The sensors which work on power source may often require to be replaced in case of malfunctioning. Mounted Sensors may get damage during natural disasters and often by aquatic animals. |