REAL TIME RIVER WATER QUALITY MONITORING AND CONTROL SYSTEM USING IoT

Submitted by

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| **S. N O** | **JOURNAL PAPER** | **BLOCK DIAGRAM** | **ALGORITHM / METHODOLOGY/ SOLUTION** | **FEATURES** | **DRAWBACKS** |
| 1. | IoT Based Real time River Water |  | This paper proposes a sensor-based water | 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 |
|  | Quality Monitoring | quality monitoring | urbanization |
|  |  | system. The main | supply of safe |
|  |  | components of | drinking water |
|  |  | Wireless Sensor | is a challenge |
|  |  | Network (WSN) | for every city |
|  |  | include a | authority. |
|  |  | microcontroller for | Water can be |
|  |  | processing the | polluted any |
|  |  | system, | time. So, the |
|  |  | communication | water we |
|  |  | system for inter and | reserved in the |
|  |  | intra node | water tank at |
|  |  | communication and | our roof top or |
|  |  | several sensors. Real- | basement in |
|  |  | timedata access can | our society or |
|  |  | be done by using | apartment may |
|  |  | remote monitoring | not be safe. |
|  |  | and Internet of | Still in India |
|  |  | Things (IoT) | most of the |
|  |  | technology. Data | people use |
|  |  | collected at the apart | simple water |
|  |  | site can be displayed | purifier that is |
|  |  | in a visual format on | not enough to |
|  |  | a server PC with the | get surety of |
|  |  | helpof Spark | pure water. |
|  |  | streaming analysis | Sometimes the |
|  |  | through Spark MLlib, | water has |
|  |  | Deep learning neural | dangerous |
|  |  | network models, | particles or |
|  |  | BeliefRule Based | chemical |
|  |  | (BRB) system and is | mixed and |
|  |  | also compared with | general- |
|  |  | standard values. If | purpose water |
|  |  | the acquired value is | purifier cannot |
|  |  | above the threshold | purify that. |
|  |  | value automated | And it’s |
|  |  | warning SMS alert | impossible to |
|  |  | will be sent to the | check the |
|  |  | agent. | quality of |
|  |  |  | water manually |
|  |  |  | in every time. |

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| 2. | Complex Real- Time |  | In this paper, a real time water quality | To measure various | The two drawbacks of |
|  | Environmental | monitoring system | chemical and | this paper are: |
|  | Monitoring of | prototype | physical | Firstly, it is |
|  | River Water | developed for water | properties of | time |
|  |  | qualitymonitoring | water like pH, | consuming and |
|  |  | in Residential | temperature | labour |
|  |  | home is presented. | and particle | intensive. |
|  |  | The development | density of | Secondly, the |
|  |  | was preceded by | water using | cost for this |
|  |  | evaluation of | sensors. Send | controlled, |
|  |  | prevailing | the data | displayed, and |
|  |  | environment | collected to a | transferred. |
|  |  | including | Raspberry Pi, | Compared to |
|  |  | availability of | show the data | the |
|  |  | cellular network | in display and | conventional |
|  |  | coverage at the site | send it to a | water quality |
|  |  | of operation. The | cloud-based | testing |
|  |  | system consists of a | Database | techniques, |
|  |  | Raspberry Pi, | using | sensor-based |
|  |  | Analog to Digital | Wired/Wirele | water quality |
|  |  | Converter, Water | ss Channel. | testing has |
|  |  | quality | Trigger alarm | many |
|  |  | measurement | when any | advantages |
|  |  | sensors. It detects | discrepancies | suchas |
|  |  | water temperature, | are found in | accurate, high |
|  |  | dissolved oxygen, | the water | sensitivity, |
|  |  | pH, and electrical | quality. Data | good |
|  |  | conductivity in | visualization | selectivity, |
|  |  | real-time and | and analysis | speed, fast |
|  |  | disseminates the | using cloud- | response, low |
|  |  | information in | based | cost etc. |
|  |  | graphical and | visualization |  |
|  |  | tabular formats to | tools. |  |
|  |  | relevant |  |  |
|  |  | stakeholders |  |  |
|  |  | through a web- |  |  |
|  |  | based portal and |  |  |
|  |  | mobile phone |  |  |
|  |  | platforms. |  |  |

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

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