IOT BASED REAL TIME – RIVER QUALITY MONIOTORING SYSTEM.

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ABSTRACT

Water pollution is one among the most important fears for the green globalization. In order to ensure the safe supply of the drinking water the quality needs to be monitor in real time. In this paper we present a design and development of a coffee cost system for real time monitoring of the water quality in IOT (internet of things). The system contains several sensors is employed to measuring physical and chemical parameters of the water. The parameters like temperature, pH, turbidity, flow sensor of the water are often measured. The measured values from the sensors are often processed by the core controller. The Arduino model is core controller. Finally, the sensor data are often viewed on internet using WI-FI system.

1. INTRODUCTION

There are numerous advances in the twenty-first century, but at the same time, pollutions, heating, and other forms of pollution are forming, and as a result, there is no safe beverage for the world's pollution. Water quality monitoring in real time is becoming more difficult as a result of increasing water scarcity, population growth, and other factors .As a result, better approaches for monitoring water quality metrics in real time are required . The parameters of water quality the concentration of hydrogen ions is measured by pH. It indicates whether or not the water is acidic or alkaline. Pure water has a pH of 7, although it is acidic rather than alkaline. pH ranges from 0 to 14.It should be between 6.5 and 8.5 pH for drinking. Turbidity is a measurement of the unseen suspended particles in water. The greater the turbidity , the greater the risk of diarrhea , cholera. If the turbidity is low, the water is safe to drink The temperature sensor detects how hot or cold the water is. Flow sensor is a device that measures the flow of water. The traditional method of water quality monitoring entails manually collecting water samples from various sites. The use of wireless communication technologies is becoming more common to help people with their personal and daily.

2. METHODOLOGY

1. System Design and Development -

Hardware Design: Selection of sensors (IoT-based pH, DO, conductivity, temperature, turbidity, etc.). Data acquisition devices (Arduino, Raspberry Pi, or industrial controllers).
Communication module (GSM, , Wi-Fi, satellite).

Power source (solar panels, battery backup).
Software Development: Development of embedded systems for sensor integration.
Cloud-based or on- premise data storage solutions. Data visualization and dashboard for real-time monitoring. Alert mechanisms (SMS, email notifications).

1. **Data Collection and Transmission** -Installation of monitoring stations along the river.

Continuous data acquisition and transmission via wireless networks.
Real-time data logging in a cloud-based or centralized database.

2. **Data Processing and Analysis-** Data validation and calibration to ensure accuracy.

Machine learning models for trend prediction and anomaly detection. Geographic Information System (GIS) for spatial analysis. Integration with weather data for correlation studies.

3. **Decision Support System and Reporting-** Automated generation of reports for environmental agencies. Graphical visualization of trends and historical data.

AI-based recommendations for pollution control.

4. **Implementation and Testing-** Pilot deployment in selected locations.

Performance testing and accuracy validation. System debugging and optimization based on field data.

5. **Maintenance and Scalability**-Regular calibration of sensors and maintenance of hardware. Expansion to additional monitoring points based on findings.Integration with government and public databases for transparency.

6. **Community and Stakeholder Engagement-**Public awareness campaigns on water conservation.

Involvement of local communities in pollution control measures.Collaboration with policymakers for data-driven decision-making.

BLOCK DIAGRAM

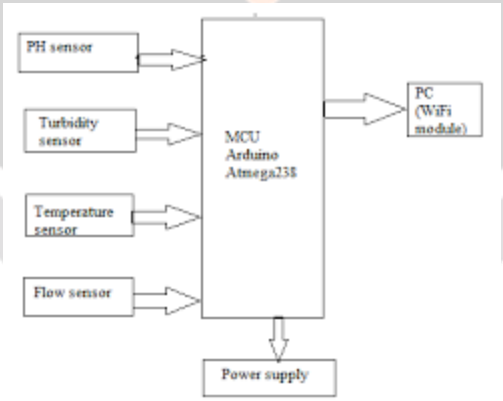

Figure1: Block Diagram Water Quality Monitoring System.

4. CONCLUSION

Water turbidity, PH, and temperature are monitored using a water detection sensor that has a unique advantage and is already connected to a GSM network. The technology can automatically monitor water quality, is low-cost, and does not require personnel to be on duty. As a result, water quality testing will most likely be more cost-effective,

convenient, and quick. The method is very adaptable. This system may be used to monitor different water quality metrics by simply replacing the matching sensors and modifying the required software packages. The procedure is straightforward. The system can be expanded to track hydrologic, air pollution, industrial, and agricultural output, among other things. It is widely used and has a large number of applications. Keeping embedded devices in the environment for monitoring allows the environment to protect

5. TOMORROW'S TIME

In future we can Improve Data Collection Speed And Reliability.

6. REFERENCES

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