

REAL-TIME RIVER WATER QUALITY MONITORING AND CONTROL SYSTEM

LITERATURE SURVEY:

The Purpose of this chapter to review the previous of Researchers on the Real-time River water quality monitoring and control system using Internet of things. This chapter will present on continuous monitoring of river water quality at remote places using wireless sensor networks.

Current water quality monitoring system is a manual system with a monotonous process and is very time-consuming. 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-time data 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 help of Spark streaming analysis through Spark MLlib, Deep learning neural network models, Belief Rule 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. Therefore, our proposed system will immensely help Bangladeshi populations to become conscious against contaminated water as well as to stop polluting the water.

To design a good quality model, we reviewed out different existing system developed by researchers. Different authors have proposed distinguished models to check water quality by analysing the parameters such as temperature, pH and conductivity, and so on. By considering all these points, we designed a smart water monitoring system which can perform all these monitoring functions. Stephen Brosnan investigated a WSN to collect real time water quality parameters (WQP). Quio Tie-Zhn, developed online water quality monitoring system based on GPRS/GSM. The information was sent by means of GPRS network, which helped to check remotely the WQP. Kamal Alameh presented web based WSN for monitoring water pollution using ZigBee and WiMAX networks. The system collected, processed measured data from sensors, and directed through ZigBee gateway to the web server by means of WiMAX network to monitor quality of water from large distances in real time. Dong, He developed WQM system based on WSN. The remote sensor was based on ZigBee network. WSN tested WQP and sent data to Internet using GPRS. With the help of Web, information was gathered at remote server. Vijayakumar et al., designed a low-cost system design for real time water quality monitoring in IoT utilizes sensors to check many important physical and chemical parameters of water. The parameters such as turbidity, temperature, pH, dissolved oxygen conductivity of water can be measured. In our project, we proposed a water quality monitoring system based on IoT.

Reference:

- [1] ChoZinMyint, Lenin Gopal and Yan Lin Aung," Reconfigurable smart water quality monitoring system in iot environment", IEEE Internatinal Conference on Information Systems (ICIS),978-1-5090-5507-4/17, May 2017.
- [2] Sona Pawara, Siddhi Nalam, Saurabh Mirajkar, Shruti GujarVaishali Nagmoti," Remote Monitoring of Waters Quality from Reservoirs", 2017 2nd International Conference for Convergence in Technology (I2CT).
- [3] Francesco A, Fliippo A, Carlo G C, Anna M L," A Smart sensor network for sea water quality monitoring, IEEE Sensors J 15(5):2514-2522, May 2015.
- [4] S. P. Gorde, M. V. Jadhav "Assessment of Water Quality Parameters: A Review", S. P. Gorde et al Int. Journal of Engineering Research and Applications, ISSN: 2248-9622, Vol. 3, Issue 6, Nov-Dec 2013, pp.2029-2035.
- [5] S. Geetha and S. Gouthami," Internet of things enabled real time water quality monitoring system", Springer open (2017) 2:1 DOI 10.1186/s40713-017-0005-y.
- [6] AainaVenkateshwaran, HarshaMendha, Prof. PritiBadar, "An IoT based system for water quality monitoring", International Journal of Innovation Research in Computer and Communication Engineering, Vol.5, Issue 4, April 2017.
- [7] VaishanviVDaigavane, Dr. M A Gaikwad," Water quality monitoring system based on IoT", Advances in wireless and mobile communications, ISSN 0973-6972 Volume 10, Number 5,2017, pp. 1107-1116.
- [8] Aravinda S. Rao, Stephen Martial, JayavardhanaGubbi, MarimuthuPalani Swami, "Design of low-cost autonomous water quality monitoring system", 2013 IEEE, pp. 14-19.
- [9] Cheng-Liang Lai, Chien-Lun Chiu "Using image processing technology for water quality monitoring system", July2011 IEEE, pp. 1856-1861.
- [10] Niel Andre Cleote, Reza Malekian and Lakshmi Nair," Design of smart sensors for real-time water quality monitoring," , vol 13, no. 9, September 2014 IEEE.
- [11] K. S. Adu-Manu, C. Tapparello, W. Heinzelman, F. A. Katsriku, and J.-D. Abdulai, "Water quality monitoring using wireless sensor networks: Current trends and future research directions," ACM Transactions on Sensor Networks (TOSN), vol. 13, p. 4, 2017.