TECHNOLOGY: Internet of Things (IOT)
PROJECT   **:** Real-Time River Water Quality Monitoring And Control System
TEAM ID   **:** PNT2022TMID12777

LITERATURE SURVEY

[1] Kartik Maheshwari and Adrija Chakraborty, **"Water Quality Monitoring System Implemented With IoT"**, International Journal of Emerging Trends in Engineering Research (IJETER) , Volume 9. No. 7, July 2021

Proposed Work: This paper discusses on the Internet of Things which provides a robust and cost-effective solution for real-time monitoring of various parameters of water. This paper aims to implement an intelligent water quality monitoring system with the aid of IoT. They proposed a system which was successfully implemented to determine the turbidity, TDS, flow rate and the level of water for a given sample. The data obtained from the sensors are uploaded to the ThingSpeak dashboard for online monitoring purpose. Besides, an SMS alert is sent to the user through IFTTT and also, whenever the turbidity and TDS values have crossed the threshold limit defined for good quality water.

[2] Bhoomika R, Netra Jalagar, Pooja F B, Sangeetha Sontera and Shanthveeresh N, **"IOT Based Real-Time River Water Quality Monitoring System"**, International Journal ofResearch in Engineering and Science (IJRES) Volume 9 Issue 7 ‖ 2021.

Proposed Work: This Paper is mainly based on the montoring of the quality of river water so as to reduce the pollution. The system consists of various sensors connected with a microcontroller thereby making a WSN system. The Proposed system is cost effective becuase it does not involve any man made analysis of testing the quality of water and also it is very convenient to set up and configure the system and provided that it is highly adaptable to the environment.

[3] Yashwanth Gowda K.N, Vishali C, Sumalatha S.J and Spoorth G.B, **"Real-Time Water Quality Monitoring System"**, International Journal of Engineering Research & Technology (IJERT), Special Issue - 2020.

Proposed Work: In this paper they proposed a design and implemented the same to have a prototype with remote, automatic, portable, real time and low cost water quality monitoring system. The proposed system consists of Sensors(three in no.) and microcontroller and is found to be considerably low of cost when compared to other man made techniques to collect and analyse the parameters.

[4] Mohammad Salah Uddin Chowdurya, Talha Bin Emranb , Subhasish Ghosha , Abhijit Pathaka , Mohd. Manjur Alama , Nurul Absara , Karl Anderssonc and Mohammad Shahadat Hossaind, **"IoT Based Real-time River Water Quality Monitoring System"**, The 16th International Conference on Mobile Systems and Pervasive Computing (MobiSPC)August 19-21, 2019, Halifax, Canada.

Proposed Work: This paper proposed a sensor-based water quality monitoring system using a WSN system that includes a microcontroller for processing the system, communication system for inter and intra node communication and several sensors. They used Remote access and Internet of Things(IOT) to collect data. With the help of Spark streaming analysis through Spark MLlib we can visulaize the data collected, Deep learning neural network models and Belief Rule Based (BRB) system are used for computation and is also compared with standard values. SMS alerts are also provided if there is any discrepanices in the values. The system is proposed with high frequency, high mobility, and low powered.

[5] Prasad M. Pujar, Harish H. Kenchannavar, Raviraj M. Kulkarni and Umakant P. Kulkarni, **"Real-time water quality monitoring through Internet of Things and ANOVA-based analysis: a case study on river Krishna"**, Springer, Received: 15 June 2018 / Accepted: 22 November 2019

Proposed Work: This paper is attempted to develop a statistical model based on Internet of Things (IOT) for water quality anlysis on River Krishna by analysing different parameters like pH, conductivity, dissolved oxygen, temperature, biochemical oxygen demand, total dissolved solids and conductivity. But the timely information about water quality is thus unavailable to the people in the river basin area. This creates a perfect opportunity for swift real-time water quality check through analysis of water. Further they have emphasized on IoT based water quality monitoring by applying the statistical

analysis for the data collected from the river Krishna. One-way analysis of variance (ANOVA) and two-way ANOVA were applied for the data collected, and found that one-way ANOVA was more efective in carrying out water quality analysis. The hypotheses that are drawn using ANOVA were used for water quality analysis.

[6] Nihil R, Riya Rajan and Rangit Varghese, **"IoT Based Real Time Water Quality System"**, International Journal of Engineering Development and Research (IJEDR) 2019 |Volume 7, Issue 4.

Proposed Work: This paper proposes the concept of using the Internt of Things as an effective measure to monitor the quality of water by simply making use of Sensors and and a microcontroller there by making a WSN system. They introduced the GSM for communication purposes. They proposed that the system can be configured to have different sensors in order to measure other parameters as well as they can be implemented much easily and without much man power thus by reducing the overall man power and cost.

[7] Prasanna Kumar S.C, Ashwini Kotrappa, Indraja N, K. Jyothi and Soumya B.L, **"Real- Time Water Quality Monitoring system for Vrishabhavathi River of Bengaluru"**, IJARIIE, Vol-5 Issue-3 2019.

Proposed Work: This paper aims to design real time water quality monitoring system in IoT environment for Vrishabhavathi River of Bengaluru. Five parameters are being monitored i.e. Temperature, pH, Turbidity, Flow and Conductivity using sensors. All the sensors are interconnected to form a sensor node. The data from the sensor node is conditioned and transmitted to Arduino microcontroller. Thus, forming wireless sensor network (WSN). The real time water quality monitoring system proposed by this paper for real time applications is efficient and is of low cost.

[8] Jyotirmaya Ijaradar and Subhasish Chatterjee, **"Real-Time Water Quality Monitoring System"**, International Research Journal of Engineering and Technology (IRJET) Volume: 05 Issue: 03 | Mar-2018

Proposed Work: This paper proposes the idea of using WSN system such that the data collected is sent to the cloud and timely usage of data for comparing with standard

values. The proposed method is found to be cost efficient by reducing the usage of man power to collect samples and computation of data, as well as providing warning signals in case of any discrepancies in values. The main limitation is that they used household water instead of using lake or river water.