**LITERATURE SURVEY**

### TOPIC: Real-Time River Water Quality Monitoring And Control System

The need for effective and efficient monitoring, evaluation and control of water quality in residential area has become more demanding in this era of urbanization, pollution and population growth. Ensuring safe water supply of drinking water is big challenge for modern civilization. Traditional methods that rely on collecting water samples, testing and analyses in water laboratories are not only costly but also lack capability for real-time data capture, analyses and fast dissemination of information to relevant stakeholders for making timely and informed decisions. In this paper, a real time water quality monitoring system prototype developed for water quality monitoring 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. The experimental results show that the system has great prospect and can be used to operate in real world environment for optimum control and protection of water resources by providing key actors with relevant and timely information to facilitate quick action taking

Water Monitoring System Embedded with Internet of Things

(IoT) Device: A Review

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This paper reviews IoT usage especially in water monitoring system. It is significant to monitor water in every sources due to the rapid population and decrease of water resources based on high demand. The data provides the real-time monitoring information and consumer will be able top predict the possible action need to be taken. The data also will provide localized water quantity and quality information to the consumer at the point of use and notify the consumer of the availability and suitability of the water for consumption. Some data can be transmitted and stored in virtual datasets in centralized or cloud-distributed repositories. These datasets can be used by the water service providers to notice and repair hot spots with critical water quality problems (if any).More researches on the technologies are suggested in order to improve online, integrated and low-cost sensor that will enhance the automatic water monitoring system. It is recommended to develop the system in prototype, affordable and cheaper so that it can be used widely.

**IoT Based Real-time River Water Quality Monitoring System**

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Real-time monitoring of water quality by using IoT integrated Big Data Analytics will immensely help people to become conscious against using contaminated water as well as to stop polluting the water. The research is conducted focusing on monitoring river water quality in real-time. Therefore, IoT integrated big data analytics is appeared to be a better solution as reliability, scalability, speed, and persistence can be provided. During the project development phase an intense comparative analysis of real-time analytics technologies such as Spark streaming analysis through Spark MLlib, Deep learning neural network models, and Belief Rule Based (BRB) system will be conducted [20-27]. This research would recommend conducting systematic experimentation of the proposed technologies in diverse qualities of river water in Bangladesh. Due to the limitation of the budget, we only focus on measuring the quality of river water parameters. This project can be extended into an efficient water management system of a local area. Moreover, other parameters which wasn’t the scope of this project such as total dissolved solid, chemical oxygen demand and dissolved oxygen can also be quantified. So the additional budget is required for further improvement of the overall system

# Stream and River Monitoring

There are many hydrological and water quality parameters that can be measured in a stream or river, but the needs of one monitoring project can differ widely from another. The number of monitoring sites, their locations, and the instruments used at each will vary from project to project, but a common solution is based around at least one stream gage site and related instruments.

To be effective, measurement data should be provided in real time. The easiest and most efficient way to do this is with a stream gage station installed on a riverbank or standing structure, such as a pier or bridge support. A stream gage built around a stilling well can contain other instruments, such as multi-parameter sounds equipped with an array of sensors, as well as data loggers and telemetry systems. With multiple telemetry options to choose from, continuous real-time data are available from any computer. This ensures that the project runs smoothly, and any control measures can be implemented immediately if parameter limits are exceeded.

Fondriest Environmental, Inc. “Stream and River Monitoring.” Fundamentals of Environmental Measurements. 28 May 2015. Web. < https://www.fondriest.com/environmental-measurements/environmental-monitoring-applications/stream-and-river-monitoring/ >.