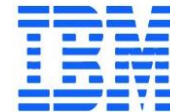




**KONGUNADU COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)**

Tholurpatti (P.O), Thottiam –T.K, Trichy – 621 215.

Department of Electronics and Communication Engineering



**HX8001 - PROFESSIONAL READINESS FOR INNOVATION,
EMPLOYABILITY AND ENTREPRENEURSHIP**
**REAL-TIME RIVER WATER QUALITY MONITORING AND
CONTROL SYSTEM**

Domain of the Project : Internet of Things
Batch ID : B12-6A2E
Team ID : PNT2022TMID13544
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Team Members:

NIVETHA.M(621319106063)
SAJITHA.R(621319106078)
SORNAMALYA.B(621319106091)
VAISHNAVI.K(621319106097)

Mentor:

Dr.T.Yuvaraja

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Objectives

- The main aim is to develop a system for continuous monitoring of river water quality at remote places using wireless sensor networks with low power consumption, low-cost and high detection accuracy pH, conductivity, humidity level, etc.

Abstract

- Water is a vital resource for life. however, although most of the planet is covered with water, only a small percentage corresponds to fresh water. Also, a low percentage of fresh water corresponds to drinking water, that is, water useful for human consumption.
- This paper presents a systematic literature review on the various modern mechanisms to monitor water quality, through the use of technology to take measurements of dust particulates and PH value.

Introduction

- Water is a vital resource for human health. Although around 71% of the world is covered with water, only 2.5% corresponds to fresh water. In developing countries, 80% of the population has no access to fresh water.
- To ensure that the water quality complies with the required characteristics it is necessary to have systems that monitor the corresponding parameters like PH value , Temperature and validate that they are within the acceptable ranges.

Literature Survey

TITLE	AUTHOR & YEAR	JOURNAL NAME	REMARKS
Disabled people using DTMF technology	Krishna Kumar & 2016		This project doesn't approaches the work effectively in the problem addressed, where the remote has to be touched by many people. Nowadays, the web need to wound up a typical interface that countless contraptions use to set up will improve the regular daily existence of various people..

Literature Survey

TITLE	AUTHOR & YEAR	JOURNAL NAME	REMARKS
Water Quality Monitoring for Rural Areas-A Sensor Cloud Based Economical Project.”	Nikhil Kedia & 2020		Published in International Conference on Next Generation Computing Technologies Dehradun, India. This paper highlights the entire water quality monitoring methods, sensors, embedded design, and information dissipation procedure, role of government, network operator and villagers in ensuring proper information dissipation. It also explores the Sensor Cloud domain. While automatically improving the water quality is not feasible at this point, efficient use of technology and economic practices can help improve water quality and awareness among people

Literature Survey

TITLE	AUTHOR & YEAR	JOURNAL NAME	REMARKS
An IoT Based Smart Water Quality Monitoring System using Cloud	Ajith Jerom B & 2020	International Conference on Emerging Trends in Information Technology and Engineering (ic-ETITE)	<p>The Internet of Things (IoT) is the network of physical devices, vehicles, home appliances, and other items embedded with electronics, software, sensors, actuators and connectivity which enables these things to connect and exchange data. Hence, the design and development of a low-cost system for real-time monitoring of water quality using the Internet of Things (IoT) is essential. Monitoring water quality in water bodies using Internet of Things (IoT) helps in combating environmental issues and improving the health and living standards of all living things</p>

Literature Survey

TITLE	AUTHOR & YEAR	JOURNAL NAME	REMARKS
Development of Chemical Oxygen on Demand (COD) Soft Sensor Using Edge Intelligence	Arunima Sambhuta Pattanayak & 2020	IEEE Sensors Journal (Volume: 20, Issue: 24, 15 December 2020)	The Internet of Things (IoT) based water quality monitoring system, mostly uses cost-effective sensors with a faster response time. Few water quality parameters such as Chemical Oxygen Demand (COD), Biological Oxygen Demand (BOD), Chlorine (Cl), and Total Phosphorous, hard to be measured online, soft sensing techniques are used as an alternate solution to this. This paper studies different Machine Learning (ML) models to prefer a suitable one that can identify the non-linearity of the dependency. The selected models are deployed in the proposed IoT architecture to predict the COD in real-time

Literature Survey

TITLE	AUTHOR & YEAR	JOURNAL NAME	REMARKS
“Real Time Water Quality Monitoring System”	Jayti Bhatt,Jignesh Patoliya & 2021		<p>This paper describes to ensure the safe supply of drinking water the quality should be monitored in real time for that purpose new approach IOT (Internet of Things) based water quality monitoring has been proposed. In this paper, we present the design of IOT based water quality monitoring system that monitor the quality of water in real time. This system consists some sensors which measure the water quality parameter such as pH, turbidity, conductivity, dissolved oxygen, temperature. The measured values from the sensors are processed by microcontroller and this processed values are transmitted remotely to the core controller that is raspberry pi using Zigbee protocol. Finally, sensors data can view on internet browser application using cloud computing.</p>

Literature Survey

TITLE	AUTHOR & YEAR	JOURNAL NAME	REMARKS
River Water Quality Robot Embedded with Real-Time Monitoring System: Design and Implementation	Mohd Amirul Aizad M. Shahrani & 2021	IEEE 12th Control and System Graduate Research Colloquium (ICSGRC)	This paper proposed an autonomous robot occupied with real-time multisensory (pH, temperature, voltage and garbage level) for better water quality. The data were recorded using sensors and transmitted via Wi-Fi to a designed MIT inventor mobile application and stored in the cloud to monitor the water quality. The river water robot is also attached to a self-power generator using a solar cell and wind turbines. Based on the obtained results, it was found that the pH of the tested river water in the range of 2-4.6, which considered to be highly acidic. In conclusion, the designed robot has shown significant functionality in the real-time receiving and transmitted data with no human interfering required.

Literature Survey

TITLE	AUTHOR & YEAR	JOURNAL NAME	REMARKS
IoT Based Real-Time Water Quality Monitoring	Wondimagegn T Beshah & 2021	OCEANS 2021: San Diego – Porto	SeaTrac Systems Inc.'s SP- 4S ASV is an autonomous boat designed to provide a platform to collect water quality data on a long term (i.e., months) basis. Solar panels provide continuous power supply to the vessel and the instruments within. Autonomous steering and path tracking capability of the ASV allows users to predetermine a data collection path using Geographic Positioning System (GPS) waypoints. SP-48 is designed to collect water quality parameters that include Chlorophyll a (Chl-a), Phycocyanin (PC), Phycoerythrin (PE), Colored Dissolved Organic Matter (CDOM), Dissolved Oxygen, Temperature, Turbidity, Salinity, pH, Partial Pressure of Carbon Dioxide (pCO ₂).

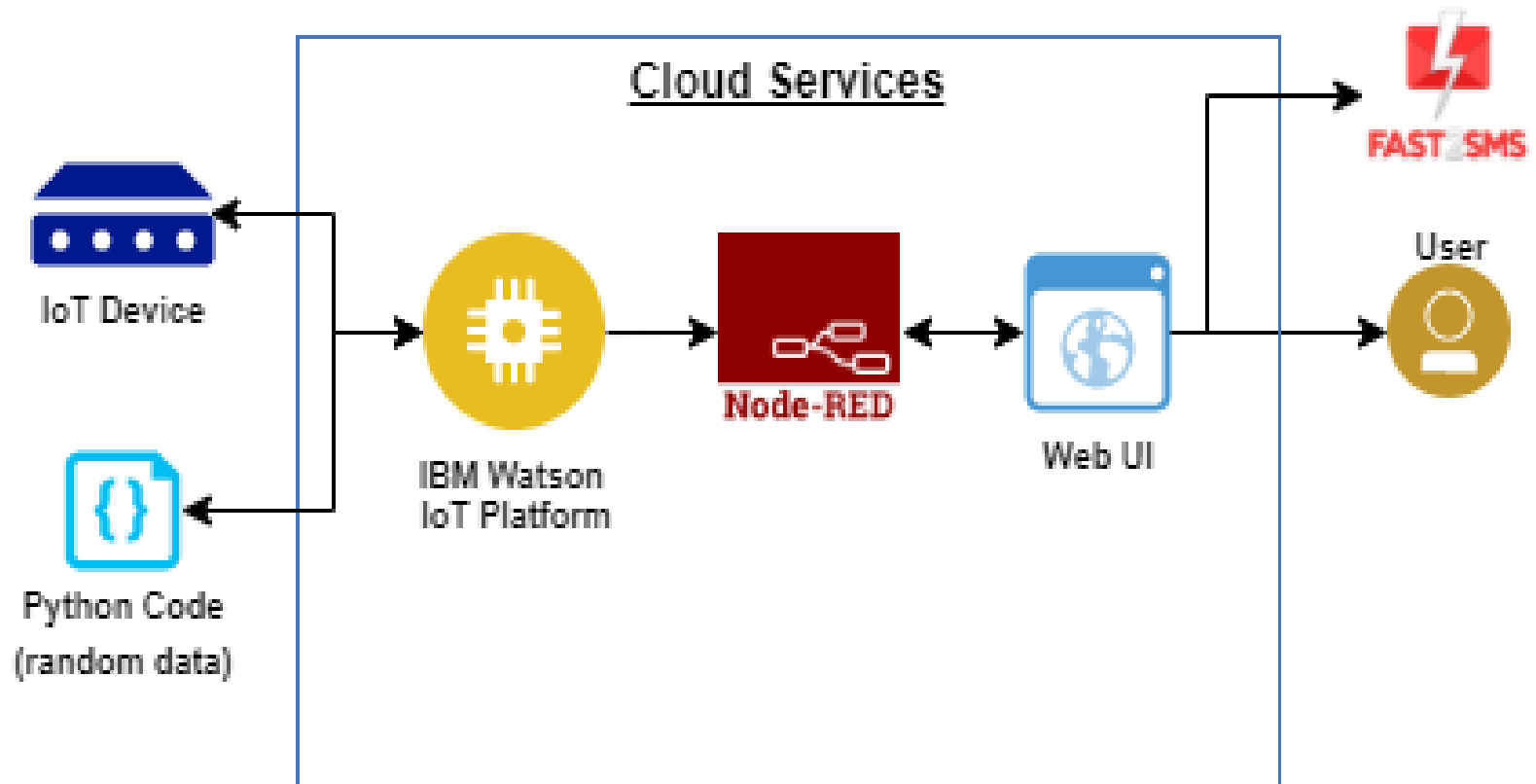
Literature Survey

TITLE	AUTHOR & YEAR	JOURNAL NAME	REMARKS
Development of an IoT-Based Low-Cost Multi- Sensor Buoy for Real-Time Monitoring of Dhaka Canal Water Condition	Malobika Mukherjee & 2022	IEEE International IOT, Electronics and Mechatronics Conference (IEMTRONICS)	The prototype has been deployed and validated with its operations towards the purpose. The system which consists of multiple sensors, is used to measure the water's physical and chemical parameters including the Temperature, pH, turbidity, and the TDS (total dissolved solids) of the water. The core controller will process and calculate values received from the sensors. Arduino is used as a central controller. Finally, the sensors data are sent to respective parties via short messages (SMS) and also viewed on internet using WI-FI system.

Problem Identification

- 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 analyzing 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.

Block Diagram



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Questions & Discussion

THANK YOU