Team id: PNT2022TMID05726

Project title: Real-Time River Water Quality Monitoring and Control System

Introduction:

Water is the most essential resource on our planet. Without it, life will cease to exist and will definitely collapse within a few days. Not only for general usage, but its application in industries also helps in the creation and refining of other resources and products that are essential for our existence and sustainable living. Pollution of water is one of the main threats in recent times as drinking water is getting contaminated and polluted. The polluted water can cause various diseases to humans and animals, which in turn affects the life cycle of the ecosystem. If water pollution is detected in an early stage, suitable measures can be taken and critical situations can be avoided. To make certain the supply of pure water, the quality of the water should be examined in real-time. Smart solutions for monitoring of water pollution are getting more and more significant these days with innovation in sensors, communication, and Internet of Things (IoT) technology.

Analysed factors:

Some variables that can be measured through remote water quality monitoring devices are:

1) Turbidity: Turbidity is the amount of individual suspended particles in water. Due to the presence of these particles, the water seems to be cloudy or hazy in appearance.

2) pH: Measuring pH or power of hydrogen tells if the water is acidic or basic in nature. The pH of pure water is 7, however, pH can vary based on the topological and geographical conditions.

3) Temperature: The temperature of the water plays a crucial role in sustaining aquatic life and their habitat. For industrial applications too, the temperature of the water is essential to be monitored for efficient operations and increased production rate.

4) Dissolved Oxygen: BOD or biological oxygen demand is a parameter that is rudimentary for the fragmentation of organic compounds present in the water by various micro-organisms.

5) Conductivity and TDS: As water is the universal solvent, it dissolves almost every available salt. The high concentration of TDS (total dissolved salts) in water increases its conductivity which affects the breeding and growth of aquatic life.

Ideas of each team member:

Shruthiga B	Soundarya A	Sree dharshini C	Tejaswinija S
• Analyse the turbidity and Ph level.	• Measuring the dissolved oxygen levels	•CDOM/FDOM monitoring	• Recording the water temprature
• Conductivity and TDS monitoring	• Using probes which can record data at a single point in time, or logged at regular intervals	• Cheapest method	• Collecting water samples for laboratory analysis
• Use of bioindicators	• Easy process	•Salinity Monitoring	• Monitoring the nitrate level
• Analyse the chemicals	• Collect data of turbidity	• Chlorophyll Fluorescence Analysis	• Progressing is efficient and quick.

Top ideas:

- Analyse the turbidity and Ph level.
- Recording the Water temprature
- Progressing is efficient and quick.

Advantages of IoT based Water Quality Monitoring System:

Following are the benefits or advantages of IoT based Water Quality Monitoring System are as follows.

➤The boat is mobile in nature and hence large number of samples are easily collected from different locations in less time.

➤It is very easy to maintain the IoT based water quality monitoring system as all the electronic boards.

➤The system is very cheap as the hardware and software does not cost much.

➤Machine learning techniques have made it very easy to plot the data collected in various formats for proper analysis.