IEEE Internet of Things Journal Special Issue on

"Connected Smart Sensors Systems for Water Quality Monitoring"

The deterioration of water quality (WQ), caused by drivers such as climatic/seasonal changes, global warming, human activities or industrial waste is a major global concern. The COVID-19 related contamination of water have added to this concern, as multiple studies in last few weeks indicate the presence of SARS-CoV-2 RNA in faecal matter of infected patients, which eventually enters the sewage system and possibly could enter water treatment facilities. Such growing challenges highlight the need for connected sensors systems for tasks ranging from early warning to predicting future possibilities.

Over the last decade, WQ observing technologies have allowed scientists to identify and mitigate poor WQ by providing them with tools that can autonomously measure essential biogeochemical variables. Commercial sensors for in situ-monitoring using buoys and boats have been deployed to broaden data coverage in space and time. Yet, despite these options becoming more readily available, there is a gap between the technology and the end-user and a disconnect between 'data quality', 'data gathering' ' and 'data analysis'. Further, the real-time monitoring of various Physical-Chemical-Biological (PCB) parameters remains a challenge. Methods that allow holistic water management are attracting greater attention and innovation. In this regard, connected/networked low-power (or near zero power) sensor systems are opening attractive avenues, along with innovative deployment strategies involving drones and marine robots and the data analysis using AI methods.

This special issue focusses on the connected smart sensing technologies for water quality monitoring, particularly looking for solutions that highlight improvements in: (a) Data Quality, with innovative sensors, and sensing materials; (b) Data Gathering, using conventional means such sensorised buoys, boats as well as robots (drones, marine robots) based sensor deployment for remote monitoring, and (c) Data Analysis using techniques widely used for IoT, artificial intelligence (AI), and machine learning. Although this SI focusses on water quality monitoring, the concept of connected sensor system-based monitoring also applies to environment monitoring and health monitoring. Thus, this special issue will be the first choice of researchers to explore the potential of connected sensing technologies, electronics/communication, robotics, and AI for data analysis and management. Topics of interest include, but are not limited to:

1. Connected Physical/Chemical/Biosensors
2. Sensors for extreme environmental applications
3. Electronics and Packaging solutions for Underwater sensors readouts.
4. Wireless Communications system for water surveillance
5. Aerial vehicles/drones for autonomous sensor deployment and spatial water quality observations
6. Innovative sensor deployment using conventional approaches such as buoys, boats.
7. Data analysis from multi-sensors using artificial intelligence
8. Interconnected network system for water quality monitoring in lakes or rivers
9. Influences of hydro-chemical properties of under water sources on sensors.
10. Models of water bodies using connected sensors
11. Eco-friendly or disposable sensors for water monitoring.

Important Dates: Submission Deadline: December 1, 2020; First Review Due: February 15, 2021; Revision Due: March 31, 2021; Sec. Reviews Due/Notification: May 1, 2021; Final Manuscript Due: May 15, 2021; Publication Date: 2021

Submission Guidelines: Authors need to follow the manuscript format and an allowable number of pages described at http://ieeeiotj.org/guidelines-for-authors/. To submit a manuscript for consideration for the special issue, please visit the journal submission website at https://mc.manuscriptcentral.com/iot.

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