Article preview

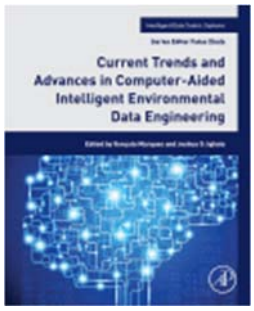
- Abstract

ACADEMIC PRESS

Current Trends and Advances in Computer-Aided Intelligent Environmental Data Engineering

Intelligent Data-Centric Systems

2022, Pages 129-160



Chapter 7 - Data-centric intelligent systems for water quality monitoring, assessment, and control

Author links open overlay panelSamuel Eshorame Sanni [1], Emmanuel Emeka Okoro [2], Emmanuel Rotimi Sadiku [3], Babalola Aisosa Oni [1]

Show more

Add to Mendeley

Share

Cite

https://doi.org/10.1016/B978-0-323-85597-6.00001-XGet rights and content

Abstract

During the 21st century, the use of artificial intelligence (AI) has accelerated data-driven innovations that are adaptable and undoubtedly efficient in today's digital world. This technology complements human intelligence by creating an enabling environment that delivers the ability to handle environmental issues related to water pollution. Polluted water can cause life-threatening diseases such as cholera, dysentery, and diarrhea, hence the need to harness data from water sources for use in developing useful algorithms that can accurately track and predict the influx of pollutants in waters. The recent application of high-performance data-centric systems/AI in water pollution control has resulted in apt human–machine-based expedient solutions that help to harness the potentials offered by these technologies in tackling issues that compromise water standards, and thus improve the quality of

aquatic and human life. In oceanography, machine learning is being exploited as a method of monitoring marine litter via feedback-enabled algorithms. Considering the prospects underlying life sciences (robotics, machine learning, drones, and the Internet of Things), these tools can help to monitor and understand the origin, physical chemistry, and nature of water pollutants/stressors. In this chapter, topics covered include deep and machine learning applications in water quality management, modeling and prediction of surface/groundwater contamination, rainwater quality prediction using data-centric and intelligent systems, deep learning and machine learning strategies in contaminant hydrology, deep/machine learning methods in emerging contaminants and micro pollutants research, and a review of recent advances and applications of data-centric systems in water pollution monitoring, assessment, and control.

References (0)

Cited by (0)

View full text

Recommended articles

- Artificial intelligence systems for rainy areas detection and convective cells' delineation for the south shore of Mediterranean Sea during day and nighttime using MSG satellite images

Atmospheric Research, Volumes 178–179, 2016, pp. 380-392

Mohsene Abdelfettah Tebbi, Boualem Haddad

- A tropical Atlantic dynamics analysis by combining machine learning and satellite data

Advances in Space Research, Volume 68, Issue 2, 2021, pp. 467-486

Sabine Arnault, …, François Kaly

- An early forecasting method for the drift path of green tides: A case study in the Yellow Sea, China

International Journal of Applied Earth Observation and Geoinformation, Volume 71, 2018, pp. 121-131

Po Hu, …, Yuqi Yin

Show 3 more articles

Article Metrics

Captures

- Readers:8

View details