

A survey of machine learning methods applied to anomaly detection on drinking-water quality data.

Eustace M. Dogo, Nnamdi I. Nwulu, Bhekisipho Twala, Clinton Aigbavboa

Traditional machine learning (ML) techniques such as support vector machine, logistic regression, and artificial neural network have been applied most frequently in water quality anomaly detection tasks. This paper presents a review of progress and advances made in detecting anomalies in water quality data using ML techniques. The review encompasses both traditional ML and deep learning (DL) approaches. Our findings indicate that: 1) Generally, DL approaches outperform traditional ML techniques in terms of feature learning accuracy and fewer false positive rates. However, it is difficult to make a fair comparison between studies because of different datasets, models and parameters employed. 2) We notice that despite advances made and the advantages of the extreme learning machine (ELM), its application is sparsely exploited in this domain. This study also proposes a hybrid DL-ELM framework as a possible solution that could be investigated further and used to detect anomalies in water quality data.

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