Abstract

Lakes and reservoirs are important water resources.

Reservoirs are vital water resources to support all living organism. They provide clean water and habitat for a complex variety of aquatic life. Water from such resources can be used for diverse purposes such as, industry usage, agriculture and supplies for drinking water and recreation and aesthetic value.

Apart from this, reservoirs also helpful to get hydro-electric power, flood control and scenic beauty. Water collected in such resources can be utilized in drought situation also. Unfortunately, these important resources are being polluted and the quality of water is being influenced by numerous factors. The quality of water is deteriorated by anthropogenic activities, indiscriminate disposal of sewage, human activities and also industry waste. Water quality monitoring of reservoirs is essential in exploitation of aquatic resources conservation. The quality of water helps in regulating the biotic diversity and biomass, energy and rate of
succession. Moreover, contaminated water can lead to some waterborne diseases and also influences child mortality. In order to reduce effect of contaminated water, it is essential to assess different aspects of water quality. Predicting water quality parameters a few steps ahead can be beneficial to achieve this. The main objective of this study is to provide fairly accurate predictions for variable data. The research was carried out by using the secondary data collected from a third party for Chaskaman River located near Nasik, Maharashtra, India on WEKA tool. The study shows that deep learning techniques which use unsupervised learning to provide accurate results as compared to the techniques based on supervised learning. The comparison of results show that robustness can be achieve by denoising autoencoder and deep belief network and also successfully handle the variability in the data. Merit of the unsupervised learning algorithms are evaluated on the basis of metrics such as mean absolute error and mean square error to examine the error rate of prediction.

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Index Terms

Computer Science
Applied Sciences

Keywords

Deep Learning, Unsupervised learning, Deep belief network, Denoising auto-encoders, Restricted Boltzmann Machine