Ideation Phase

LITERATURE SURVEY

Date	19 September 2022
Team ID	PNT2022TMID08775
Project Name	Project - Efficient water quality analysis and prediction using Machine Learning
Maximum Marks	2 Marks

There are several research works on the development of an efficient machine learning based model for the purpose of prediction and quality analysis of the water sample.

This research explore methodologies that have been employed to help solve problems related to water quality. Typically, conventional lab analysis and statistical analysis are used in research to aid in determining water quality while some analysis employ machine learning to assist in finding optimized solution for water quality problem.

Yafra Khan,Chai Soo See proposed Predicting and analyzing water quality using Machine Learning: A comprehensive model published in 29 April 2016 at IEEE Long Island Systems, Applications and Technology Conference (LISAT).This paper study is to develop a water quality prediction model with the help of water quality factors using Artificial Neural Network (ANN) and time-series analysis and uses the water quality historical data of the year of 2014, with 6-minutes time interval.

Shafi et al proposed four machine learning algo-rithms, namely, Support Vector Machines (SVM), NeuralNetworks (NN), Deep Neural Networks, and k-NearestNeighbors (kNN), for the prediction of water quality. Using single feed-forward neural networks to classify water quality,25 parameters have been included as input parameters.

 Archana Solanki, Kanchan Khare,Himanshu Agrawal proposed Predictive Analysis of Water Quality Parameters using Deep Learning .This deals to provide fairly accurate predictions for variable data and it was carried out by using the secondary data collected from a third party for Chaskaman River located near Nasik, Maharashtra, India on WEKA tool.

Sakizadeh used ANN with Bayesian regularization to estimate the water quality index (WQI). However, the radial-basis-function(RBF), a type of the ANN model, was used for the prediction and classification of water quality.

Jamie Bartram proposed Water Quality Monitoring (A practical guide to the design and implementation of freshwater quality studies and monitoring programming) published on behalf of United Nations Environment Programme .The approaches and methods for water quality

monitoring described in this handbook are based upon the experience gained, over two decades, with the design and establishment of the global freshwater quality monitoring network, GEMS/WATER.

Ahmad et al employed single feed forward neural network and combination of multiple networks to estimate WQI.They used 25 water quality parameter as input. The use of 25 parameters make their solution immodate interms of inexpensive real time system, given the price of parameter sensors.

Pete Loucks proposed Water Quality Modeling and Prediction and published in the year of 2017,deals with Water Resource Systems Planning and Management.It focuses efforts toward obtaining information and models that will reduce the uncertainty as the analysis proceeds.

S Behmel,M Damour proposed Water quality monitoring strategies(WQMS) - A review and future perspectives focuses on the use cases a watershed manager has to address to plan or optimize a WQMP from the challenge of identifying monitoring objectives; selecting sampling sites and water quality parameters; identifying sampling frequencies; considering logistics and resources to the implementation of actions based on information acquired through the WQMP.