

Abstract.

In this paper will, building new miner called intelligent miner based on twelve concentrations to predict water quality called (IM12CP-WQI). The main goal of that miner is to find water quality based on twelve types of concentrations

that cause water pollution which is: Potential Hydrogen (PH), Total Dissolved Solids (TDS), Turbidity Unit NTU, Total Hardness (TH), Total Alkalinity, Calcium (Ca), Magnesium (Mg), Potassium (K), Sodium (Na), Chloride (Cl), Nitrogen Nitrate (NO₃), and Sulfate (SO₄). IM12CP-WQI consists of four stages; the first stage related to data collection through two Seasons (i.e., summer & winter). The second stage, called pre-processing of data that include: (a) Normalization the dataset to make dataset in range (0, 1). (b) finding correlation between concentrations to know the direct or inverse correlation between those concentrations and their relationship with the water quality index WQI. The second stage involved building an optimization algorithm called DWM-Bat to find the optimum weight for each of the 12 compounds as well as the optimum number of M models for DMARS. The third phase involved building a mathematical model that combines these compounds, based on the development of MARS and drawing on the results of the previous stage, DWM-Bat. The last stage included the evaluation of the results obtained using three types of measures (R², NSE, D) on the basis of which the value of WQI was determined based on that determined if the value of the WQI is less than 25, then it can be used for the purpose of drinking either between (26–50) it is used in fish lakes, as well as (51–75) it can be used in agriculture. Otherwise, it needs a refining process and reports are produced. Also, the results of the model (IM12CP-WQI) were compared with the results of the models (MARS_Linear, MARS_poly, MARS_sigmoid, MARS_RBF) under the same conditions and environment, finally; the results shown (IM12CP-WQI) is pragmatic predictor of WQI.