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Predicting the Behavior of Concrete Dams Using Artificial Neural Networks (Case study of Dez Dam)

Large dams store a significant amount of water behind them. Therefore, their safety and stability control have a special place. Changes in temperature and hydrostatic pressure are the most important factors that affect the dam structure; And will cause shifts in the crown of the dam upstream and downstream. Therefore, the data obtained from the monitoring center should be evaluated regularly in order to analyze the behavior of the dam. Due to this issue, in this study, using artificial neural networks, a model is presented to predict the horizontal displacement of the Dez dam crown due to changes in pressure and temperature. According to the results, it is observed that the neural network has a good performance in predicting real values. The average error of the modeled network is about 4%. This indicates that the network is well trained. Using the generated network, the radial displacement changes against the reservoir water level for different temperatures are obtained, and plotted. Using diagrams, it is possible to predict the behavior of Dez dam for different temperatures and changes in reservoir water level, which can be very useful in monitoring and maintaining this dam.

Keywords: Concrete Dam, Artificial Neural Network, Dez Dam, Hydrostatic Pressure, Temperature Changes

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