

## **Feed Forward Neural Network and Interpolation Function Models to Predict the Soil and Subsurface Sediments Distribution in Bam, Iran**

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### **A b s t r a c t**

An application of the artificial neural network (ANN) approach for predicting mean grain size using electric resistivity data from Bam city is presented. A feed forward back propagation network was developed employing 45 sets of input data. The input variables in the ANN model are the electrical resistivity, water table as a Boolean value and depth; the output is the mean grain size. To demonstrate the authenticity of this approach, the network predictions are compared with those from interpolation methods and the same data. This comparison shows that the ANN approach performs better results. The predicted and observed mean grain size values were compared and show high correlation coefficients. The ANN approach maps show a high degree of correlation with well data based grain size maps and can therefore be used conservatively to better understand the influence of input parameters on sedimentological predictions.

**Key words:** artificial neural network, interpolation functions, grain size, electrical resistivity, Iran.