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## Inversion of One Dimensional Electrical Resistivity Data in Anisotropic Media via Artificial Neural Networks

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There are some parameters that affect the resistivity values in the electrical resistivity method which is one of the most fundamental methods in near surface geophysics. One of these parameters is electrical anisotropy which is defined as the change in resistivity depending on the direction. The anisotropy coefficient is calculated by square root of the vertical resistivity to the horizontal resistivity of the layer. Average resistivity in anisotropic media is the geometric mean of the vertical resistivity and the horizontal resistivity of the layer. Artificial Neural Networks (ANN) is a method uses in many different areas for learning, classification, generalization and optimization etc. ANN available to estimate the thickness, vertical and horizontal resistivity values of layers. In this study, a MATLAB code was developed for the inversion of one-dimensional electrical resistivity data in anisotropic medium by using artificial neural networks. Neural Network Toolbox of MATLAB was utilized in the developed program. The code was tested on both noisy-free and five percent noisy synthetic data. Thicknesses, vertical and horizontal resistivity of the layers are estimated by using the code. The mean resistivity values and anisotropy coefficients of each layer were calculated via the estimated parameters. The estimated parameters and the parameters of the subsurface model were similar with acceptable error rates.