

Simulation of longitudinal surface settlement due to tunnelling using artificial neural network

Abstract :

A series of artificial neural networks modelling was conducted to investigate the ground deformation induced by tunnelling along the line 2 of Karaj urban railway, Iran. The tunnels were excavated using New Austrian Tunnelling Method. During excavation, surface settlement was monitored using optical survey points installed on the centre, left and right sides of the tunnel axis. The measured data have been used to establish an artificial neural network model to predict longitudinal surface settlement. This paper focuses on the prediction of ground deformation due to tunnelling using artificial neural networks, particularly longitudinal settlements in relation to the ground condition and tunnelling method. The obtained results demonstrate that artificial neural networks are applicable techniques for predicting longitudinal surface settlement due to tunnelling.