

عنوان مقاله:

DIFFERENT NEURAL NETWORKS AND MODAL TREE METHOD FOR PREDICTING ULTIMATE BEARING CAPACITY OF PILES

محل انتشار:

مجله بهینه سازی در مهندسی عمران، دوره 8، شماره 2 (سال: 1397)

تعداد صفحات اصل مقاله: 18

نویسندگان:

H. Harandizadeh

M. M. Toufigh

V. Toufigh

خلاصه مقاله:

The prediction of the ultimate bearing capacity of the pile under axial load is one of the important issues for many researches in the field of geotechnical engineering. In recent years, the use of computational intelligence techniques such as different methods of artificial neural network has been developed in terms of physical and numerical modeling aspects. In this study, a database of ۱۰۰ prefabricated steel and concrete piles is available from existing publications to solve issues related to pile's bearing capacity analysis. Three different artificial neural network algorithms were developed for comparing and verifying the obtained results at analyzing the bearing capacity of pile in soils. During the modeling process, the geometric properties of different piles, soil materials properties, friction angle and flap numbers (hammer blows) were selected as input parameters to the selected network and the output from the network was considered as the bearing capacity of the pile. Finally, the performance of radial base function type neural networks was compared with model tree method and predictive neural networks based on different learning algorithms such as Levenberg-Marquardt and Bayesian Regulation Back Propagation Algorithms. It was observed that the radial base neural network in some cases achieved better results from accuracy based on common statistical parameters such as correlation coefficient, mean absolute error percentage and root mean square error as compared to other stated methods and it showed the acceptable performance in modeling and predicting the desired output close to the target's results.

کلمات کلیدی:

Pile Bearing Capacity, Deep Foundation, RBF Type Neural Network, Model Tree, Levenberg Marquardt Learning Algorithm, Bayesian Regulation Learning Algorithm, Multilayer Perceptron Neural Network

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1831209>

