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Modified Artificial Neural Networks and Support Vector Regression to Predict Lateral Pressure Exerted by Fresh Concrete on Formwork

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Abstract

In this study, a modified Artificial Neural Network (ANN) and Support Vector Regression (SVR) with three different optimization algorithms (Genetic, Salp Swarm and Grasshopper) were used to establish an accurate and easy-to-use module to predict the lateral pressure exerted by fresh concrete on formwork based on three main inputs, namely mix proportions (cement content, w/c, coarse aggregates, fine aggregates and admixture agent), casting rate, and height of specimens. The data have been obtained from 30 previously piloted experimental studies (resulted 113 samples). Achieved results for the model including all the input data provide the most excellent prediction of the exerted lateral pressure. Additionally, having different magnitudes of powder volume, aggregate volume and fluid content in the mix