عنوان مقاله:

A COMPARATIVE STUDY OF TRADITIONAL AND INTELLIGENCE SOFT COMPUTING METHODS FOR PREDICTING COMPRESSIVE STRENGTH OF SELF – COMPACTING CONCRETES

محل انتشار:

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خلاصه مقاله:

This study investigates the prediction model of compressive strength of self–compacting concrete (SCC) by utilizing soft computing techniques. The techniques consist of adaptive neuro–based fuzzy inference system (ANFIS), artificial neural network (ANN) and the hybrid of particle swarm optimization with passive congregation (PSOPC) and ANFIS called PSOPC–ANFIS. Their performances are comparatively evaluated in order to find the best prediction model. In this study, SCC mixtures containing different percentage of nano SiO۲ (NS), nano–TiO۲ (NT), nano–Al۲O۳ (NA), also binary and ternary combining of these nanoparticles are selected. The results indicate that the PSOPC–ANFIS approach in comparison with the ANFIS and ANN techniques obtains an improvement in term of generalization and predictive accuracy. Although, the ANFIS and ANN techniques are a suitable model for this purpose, PSO integrated with the ANFIS is a flexible and accurate method due tothe stronger global search ability of the PSOPC algorithm.

کلمات کلیدی:

prediction model, adaptive neuro – based fuzzy inference system, artificial neural network, particle swarm optimization, self – compacting concrete.