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Neural networks model and adaptive neuro-fuzzy inference system for predicting the moment capacity of ferrocement members

Mohammed A. Mashrei [a] ☒, Nabeel Abdulrazzaq [b] ☒, Turki Y. Abdalla [c], M.S. Rahman [d] ☒

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Abstract

In this paper, back-propagation neural networks (BPNN) and an adaptive neuro-fuzzy inference system (ANFIS) models developed to predict the moment capacity of ferrocement members are presented. A database from tests on ferrocement members is developed from the review of literature and some new tests. The selected input variables include the width and the depth of specimens, cube compressive strength of mortar, and tensile strength and volume fraction of wire mesh. A parametric study is carried out using BPNN to study the influence of each parameter affecting the moment capacity of the ferrocement member. The results of this study indicate that both BPNN and ANFIS provide good predictions which are better than those from other available methods. These models can serve as reliable and simple predictive tools for the prediction of moment capacity of ferrocement members.

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Keywords

Ferrocement; Moment; Neural networks; adaptive neuro-fuzzy inference system