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Relation between Physical and Mechanical Properties of Concrete Paving Stones Using Neuro-Fuzzy Approach

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Abstract : This study investigates the relation between physical and mechanical properties of concrete paving stones using neuro-fuzzy approach. For this purpose 200 samples of concrete paving stones were selected randomly from different sources. The first phase included the determination of physical properties of the samples such as water absorption capacity, porosity and unit weight. After that the indirect tensile strength test and compressive strength test of the samples were performed. İn the second phase, adaptive neuro-fuzzy approach was employed to simulate nonlinear mapping between the above mentioned physical properties and mechanical properties of paving stones. The neuro-fuzzy models uses Sugeno type fuzzy inference system. The models parameters were adapted using hybrid learning algorithm and input space was fuzzyfied by considering grid partitioning. It is concluded based on the observed data and the estimated data through ANFIS models that neuro-fuzzy system exhibits a satisfactory performance.

Keywords : paving stones, physical properties, mechanical properties, ANFIS
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