Prediction of Compressive Strength for Self- Compacting Concrete (SCC) using Artificial Intelligence and Regression Analysis

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Abstract : In this study, Regression Analysis and Artificial Neural Network models are developed to predict the fresh and hardened properties of Self-Compacting Concrete containing Fly Ash as partial replacement of cement. The data collected from the literature were used for developing the models. The mix constituents such as Cement (C), Fly ash (F), Fine Aggregate (FA), Coarse Aggregate (CA), Superplasticizer dosage (SP) and Water-Binder ratio (W/B) were taken as input parameter. The fresh and hardened properties of SCC such as Slump Flow Diameter (SFD), L-Box ratio (LB), V Funnel Flow Time (VFT) and Compressive Strength (CS) at 28 days were taken as output parameter. Models were developed using Regression Analysis (RA) and Artificial Neural Network (ANN), trained and tested. Their results from both the models were compared. Artificial Neural Network models have predicted better results than Regression Analysis models.
Keywords : Self-Compacting Concrete, Regression analysis, Artificial Neural Network, Prediction, Slump Flow Diameter, L-Box ratio, V Funnel Flow Time and Compressive Strength.

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