Neural networks for evaluating workability of high-performance concrete(以類神經網路評估高性能混凝土的工作度)

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摘要

In this study, an artificial neural network was established to explore the feasibility of using neural networks in predicting the slump-flow of concrete. Computational simulation of concrete slump-flow was performed using the trained neural network. The variation in concrete slump-flow was achieved by varying combinations of factors like the ratio, SP-binder ratio, and water content. The slump-flow curves under various ratios were generated by the trained neural networks developed in this study to investigate the effects of water/binder ratio, SP-binder ratio, and water content. It was found that (1) the use of a neural network for the modeling of a concrete slump-flow looks promising, (2) the water content saved by the use of SP is about 15 and 10 for every percent of SP/b, at w/b=0.4 and 0.5, respectively, and (3) an increasing SP/b ratio increased the slump-flow, while the effect was much smaller at high w/b ratio than that at low w/b ratio.

關鍵字：high-performance concrete, superplasticizer, slump-flow, workability, artificial neural networks.