

Modeling Slump of Concrete Using the Artificial Neural Networks(99年10月)

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摘要

This paper proposes the artificial neural networks (ANNs) and applies it to estimate the slump of highperformance concrete (HPC). It is known that HPC is a highly complex material whose behavior is difficult to model, especially for slump. To estimate the slump, it is a nonlinear function of the content of all concrete ingredients, including cement, fly ash, blast furnace slag, water, superplasticizer, and coarse and fine aggregate. Therefore, slump estimation is set as a function of the content of these seven concrete ingredients and additional four important ratios. The ANNs algorithm presented in this paper has the advantage of processed the complicated multi-variable HPC slump estimation. The results show that ANNs is a powerful method for obtaining a more accurate prediction through learning procedures which outperforms the traditional multiple linear regression analysis (RA), with lower estimating errors for predicting the HPC slump.

關鍵字 : artificial neural networks; slump; highperformance concrete; regression analysis.