MODELING CONCRETE STRENGTH USING GENETIC OPERATION TREES

葉怡成,CHE-HUI LIEN,CHIEN-HUA PENG,LI-CHUAN LIEN
Information Management
Computer Science and Informatics
icyeh@chu.edu.tw

Abstract

This study proposed to employ Cross-Validation (CV) to evaluate reliability of the strength models generated by nonlinear regression analysis (NLRA), artificial neural network (ANN), and genetic operation tree (GOT), to make more sound comparisons between them. It was found that (1) the ANN was the most accurate modeling tool for the Low, Medium, and High water-binder ratio (w/b) data sets; (2) using t-statistic, under 1% of level of significance, GOT was more accurate than NLRA for the Low and the Medium w/b data sets. (3) GOT can generate creative formulas consisting with domain knowledge.

Keyword：Concrete, nonlinear regression analysis, genetic algorithms, operation trees.