7th International Conference on
BIOSTATISTICS AND BIOINFORMATICS
&
7th International Conference on
BIG DATA ANALYTICS & DATA MINING
September 26-27, 2018 | Chicago, USA

Application of artificial intelligence techniques to formulate a mathematical equation for the uniaxial compressive strength of fly ash concrete

Tamer Elsayed Ahmed Said
National Research Centre, Egypt

In this study, a multi-gene genetic programming (MGGP) and artificial neural network (ANN) techniques are utilized to create two models for prediction of concrete uniaxial compressive strength. Concrete is a highly complicated heterogeneous material and a precise model of its uniaxial compressive strength is highly nonlinear. Due to the importance of concrete uniaxial compressive strength as the most important characteristic of concrete, converting gathered experimental data from literature to a user-friendly formula is strongly needed for concrete mix design purpose and consequently structural analysis applications. The proposed mathematical expression links the concrete ingredients such as water content, super-plasticizer content, cement content, fly ash content, etc., as inputs and uniaxial compressive strength as output. The results indicated that the created MGGP model and ANN model are precisely able to predict the concrete uniaxial compressive strength in close agreement with the experimental results. Finally, the process of formulation of mathematical equations utilized in this study is a useful guideline in data fitting applications..

Biography

Tamer Elsayed has completed his PhD in the year 2014 from the faculty of Engineering Cairo University. His PhD entitled "Development of an artificial neural network to predict the concrete deterioration due to chemical attack". He is a supervisor for many MSc students. He is a member of many research projects. He has published many papers. One of his published papers entitled "Evaluation of field concrete deterioration under real conditions of seawater attack", Construction and Building Materials 119 (2016):130–144)..

sportnolt@yahoo.com

Notes: