Development of artificial neural network model in predicting performance of the smart wind turbine blade

Abstract

This paper demonstrates the applicability of artificial neural networks (ANNs) that use multiple bck-propagation networks (MBP) and a non-linear autoregressive exogenous model (NARX) for predicting the deflection of a smart wind turbine blade specimen. A neural network model has been developed to perform the deflection with respect to the number of wires required as the output parameter, and parameters such as load, current, time taken and deflection as the input parameters. The network has been trained with experimental data obtained from experimental work. The various stages involved in the development of a genetic algorithm based neural network model are addressed in detail in this paper.

Keyword: Artificial neural network; Back-propagation; Multiple back-propagation; Non-linear autoregressive exogenous model