Artificial Neural Network-Based Bridge Weigh-In-Motion Technique Considering Environmental Conditions

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Abstract : In this study, bridge weigh-in-motion (BWIM) system was simulated under various environmental conditions such as temperature, humidity, wind and so on to improve the performance of the BWIM system. The environmental conditions can make difficult to analyze measured data and hence those factors should be compensated. Various conditions were considered as input parameters for ANN (Artificial Neural Network). The number of hidden layers for ANN was decided so that nonlinearity could be sufficiently reflected in the BWIM results. The weight of vehicles and axle weight were more accurately estimated by applying ANN approach. Additionally, the type of bridge which was a target structure was considered as an input parameter for the ANN.

Keywords : bridge weigh-in-motion (BWIM) system, environmental conditions, artificial neural network, type of bridges
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