

Application of Artificial Neural Network for Prediction of Load-Haul-Dump Machine Performance Characteristics

Authors : J. Balaraju, M. Govinda Raj, C. S. N. Murthy

Abstract : Every industry is constantly looking for enhancement of its day to day production and productivity. This can be possible only by maintaining the men and machinery at its adequate level. Prediction of performance characteristics plays an important role in performance evaluation of the equipment. Analytical and statistical approaches will take a bit more time to solve complex problems such as performance estimations as compared with software-based approaches. Keeping this in view the present study deals with an Artificial Neural Network (ANN) modelling of a Load-Haul-Dump (LHD) machine to predict the performance characteristics such as reliability, availability and preventive maintenance (PM). A feed-forward-back-propagation ANN technique has been used to model the Levenberg-Marquardt (LM) training algorithm. The performance characteristics were computed using Isograph Reliability Workbench 13.0 software. These computed values were validated using predicted output responses of ANN models. Further, recommendations are given to the industry based on the performed analysis for improvement of equipment performance.

Keywords : load-haul-dump, LHD, artificial neural network, ANN, performance, reliability, availability, preventive maintenance

Conference Title : ICCINNA 2020 : International Conference on Computational Intelligence, Neural Networks and Applications

Conference Location : San Francisco, United States

Conference Dates : June 05-06, 2020