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NEURAL NETWORK BASED DISPLACEMENT ANALYSIS OF RADIAL AND BIAS TIRES

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Abstract

The Artificial Neural Networks (ANN) has various applications which include image processing, pattern recognition, military, medicine, etc. In this work an attempt has been made to apply the artificial neural networks in the analysis of automotive tires. The evolution of pneumatic tires has been alongside the evolution of the automobiles. The demand of the modern automotive industry has been driving the tire industry to come with high performance tires. The tire construction and geometry are very complex in nature and tire design and stress analysis are also difficult. The study of tire performance and deformation are very challenging owing to the non-linearity associated with geometry as well as composition of material. The tire material is a cord-rubber composite and its properties are anisotropic in nature. In this background, the present attempt is to analyze the tire using artificial neural network. The tire deformation under various inflation pressures has been modeled. To train the network, the experimental data has been used. It has been found that the artificial neural network can effectively be used in the analysis of pneumatic tires.

Keywords: Neural network, inflation pressure, displacement, epoch, radial and bias tire.