

Abstract

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Fast RC Circuit Simulation Using Artificial Neural Networks

This paper presents a new technique for modeling an RC circuit using Artificial Neural Networks. In the proposed technique, the Artificial Neural Network is trained to predict the dominant characteristics of the full order model representing an RC Tree circuit and removing the non dominant characteristics that doesn't have much influence on the system. The prediction is based on minimizing the mean square error (cost function) between the desired parameters and the actual parameters. Different RC tree circuits of orders 8,10,12 and 20 are used and the reduced model of order 2 is tested. The results are compared to the SPICE simulation program output of the full order model.