Abstracts

The application of neural networks to EM-based simulation and optimization of interconnects in high-speed VLSI circuits

A. Veluswami, M.S. Nakhla and Qi-Jun Zhang. "The application of neural networks to EM-based simulation and optimization of interconnects in high-speed VLSI circuits." 1997 Transactions on Microwave Theory and Techniques 45.5 (May 1997, Part II [T-MTT]): 712-723.

In this paper, a neural network based approach to the electromagnetic (EM) simulation and optimization of high-speed interconnects is discussed. Traditional techniques used to model interconnects in high-speed very large scale integration (VLSI) circuits are based on EM-field simulation, and are thus highly demanding on central processing unit (CPU) resources. This limits their suitability for computer-aided design (CAD) and optimization techniques which are, in general, iterative in nature. Neural networks can be used to map the complex relationship between the physical and electrical parameters of interconnect structures in an efficient manner. The models, once developed, operate with minimal on-line CPU resources and are thus ideally suited for use in iterative CAD and optimization routines.

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