Abstracts

Reverse modeling of microwave circuits with bidirectional neural network models

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Neural networks have been been developed into an alternative modeling approach for the microwave circuit-design process. In this paper, we describe a neural network-based microwave circuit-design approach that implements the solution-searching optimization routine by a modified neural network learning process. Both the development of a microwave circuit model and the searching of a design solution can thus take advantage of a hardware neural network processor, which is significantly faster than a software simulation. In addition, a systematic simulation-based approach to convert conventional circuit models into neural network models for this design process is described. The development of a heterojunction bipolar transistor (HBT) amplifier model and its applications are demonstrated.

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