Abstracts

Practical Least pth Optimization of Networks

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A new and practical approach to computer-aided design optimization is presented. Central to the process is the application of least pth approximation using extremely large values of p, typically 1,000 to 1,000,000. It is shown how suitable and reasonably well conditioned objective functions can be formulated, giving particular emphasis to more general approximation problems as, for example, in filter design. It is demonstrated how easily and efficiently extremely near minimax results can be achieved on a discrete set of sample points. Highly efficient gradient methods can be employed and, in network design problems, the use of the adjoint network approach for evaluating gradients results in greater savings in computer effort. A comparison between the Fletcher-Powell method and the more recent Fletcher method is made on the application of least pth approximation, using a range of values of p up to 1,000,000,000,000 on transmission-line transformer problems for which optimal minimax solutions are known. This is followed by filter design examples subject to certain constraints.

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