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Sommario/riassunto

A thorough and insightful introduction to using genetic algorithms to optimize electromagnetic systems Genetic Algorithms in Electromagnetics focuses on optimizing the objective function when a computer algorithm, analytical model, or experimental result describes the performance of an electromagnetic system. It offers expert guidance to optimizing electromagnetic systems using genetic algorithms (GA), which have proven to be tenacious in finding optimal results where traditional techniques fail. Genetic Algorithms in Electromagnetics begins with an introduction to optimization and several commonly used numerical optimization routines, and goes on to feature: . Introductions to GA in both binary and continuous variable forms, complete with examples of MATLAB(r) commands. Two step-by-step examples of optimizing antenna arrays as well as a comprehensive overview of applications of GA to antenna array design problems. Coverage of GA as an adaptive algorithm, including adaptive and smart arrays as well as adaptive reflectors and crossed dipoles. Explanations of the optimization of several different wire antennas, starting with the famous "crooked monopole". How to optimize horn, reflector, and microstrip patch antennas, which require significantly more computing power than wire antennas. Coverage of GA optimization of scattering,

including scattering from frequency selective surfaces and electromagnetic band gap materials. Ideas on operator and parameter selection for a GA. Detailed explanations of particle swarm optimization and multiple objective optimization. An appendix of MATLAB code for experimentation.