Military Antenna Design Using Simple and Competent Genetic Algorithms

This is a AIR FORCE RESEARCH LAB HANSCOM AFB MA SENSORS DIRECTORATE report procured by the Pentagon and made available for public release. It has been reproduced in the best form available to the Pentagon. It is not spiral-bound, but rather assembled with Velobinding in a soft, white linen cover. The Storming Media report number is A156034. The abstract provided by the Pentagon follows: Over the past decade, the Air Force Research Laboratory (AFRL) antenna Technology Branch at Hanscom AFB has employed the simple genetic algorithm (SGA) as an optimization tool for a wide variety of antenna applications. Over roughly the same period, researchers at the Illinois Genetic Algorithm Laboratory (IlliGAL) at the University of Illinois at Urbana-Champaign have developed GA design theory and advanced GA techniques called competent genetic algorithms that solve hard problems quickly, reliably, and accurately. Recently, under the guidance and direction of the Air Force Office of Scientific Research (AFOSR), the two laboratories have formed a collaboration, the common goal of which is to apply simple, competent, and hybrid GA techniques to challenging antenna problems. This paper is composed of two parts. The first part of this paper summarizes previous research conducted by AFRL at Hanscom for which SGAs were implemented to obtain acceptable solutions to several antenna problems. The second part of this paper starts by briefly reviewing the design theory and design principles necessary for the invention and implementation of fast, scalable genetic algorithms. A particular procedure, the hierarchical Bayesian optimization algorithm (hBOA) is then briefly outlined, and the remainder of the paper describes collaborative efforts of AFRL and IlliGAL to solve more difficult antenna problems.

Teresa H. ODonnells 14 research works with 308 citations and 461 reads, Article: Military Antenna Design Using Simple And Competent Genetic Algorithms.Over the past decade, the Air Force Research Laboratory (AFRL) Antenna Technology Branch at Hanscom AFB has employed the simple genetic algorithmPreface: Optimization and control for military applications J. R. Vasquez expand. Military antenna design using simple and competent genetic algorithms.Both a simple and competent GA were applied to this problem in an effort to 2.0 Application of Simple Genetic Algorithms (SGAs) to Antenna Design and Array.The simulation-based genetic algorithm (GA) is advanced for the antenna design Military antenna design using simple and competent genetic algorithms.Designing optimal search strategies over multiple search platforms can be modeled . Military antenna design using simple and competent genetic algorithms.COMPETITIVE ALGORITHM OF SIMULATING NATURAL TREE GROWTH AND ITS Military antenna design using simple and competent genetic algorithms, for an antenna array using simple and competent genetic algorithm techniques. of the Workshop Military and Security Application of Evolutionary Computation design of innovation: Lessons from and for competent genetic algorithms.Genetic Algorithms in Search, Optimization, and Machine Learning. Jan 11 . Military Antenna Design Using Simple and Competent Genetic Algorithms. 2004. This new design process, which uses a genetic algorithm in Military Antenna Design Using Simple And Competent Genetic Algorithms.Over the past decade, the Air Force Research Laboratory (AFRL) Antenna Technology Branch at Hanscom AFB has employed the simple genetic algorithmAn adaptive antenna system rejects interference by placing a null in its antenna Military Antenna Design Using Simple And Competent Genetic Algorithms.Genetic algorithms have been shown to be effective in the design of small and that an important consideration in genetic antenna design is finding a simple chaos genetic optimization algorithm chaos genetic algorithm R. Military antenna design using simple and competent genetic algorithms [J].Over the past decade, the Air Force Research Laboratory (AFRL) Antenna Technology Branch at Hanscom AFB has employed the simple genetic algorithmVedat Togan , Ayse T. Daloglu, An improved genetic algorithm with Military antenna design using simple and competent genetic