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## Abstract

Biogeography-Based Optimization (BBO) is a recently introduced population based algorithms which has shown impressive performance over other Evolutionary Algorithms (EAs). BBO is based on the study of distribution of biological organisms over space and time. BBO is a stochastic optimization technique, here, solutions for problem are considered as habitats whereas feature sharing, i. e. Suitability Index Variables (SIVs), among the habitats is known as migration and exploration of new SIV is accomplished as mutation. Yagi-Uda antenna design is most widely used antenna at VHF and UHF frequencies due to high gain, directivity and ease of construction. However, designing a Yagi-Uda antenna, that involves determination of optimal wire-lengths and their spacings, is a highly complex and non-linear engineering problem. In this paper, BBO algorithm is applied to optimize the lengths and spacings of nine-element Yagi-Uda antenna for maximum gain. The results obtained with this optimization technique are compared and the best results are tabulated in the ending sections of the paper.

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Computer Science

### Index Terms

Algorithms

### Keywords

Bio-geography Based Optimization (BBO) Particle Swarm Optimization (PSO)  
Genetic Algorithm (GA)

Yagi-Uda Antenna

Antenna Gain

Antenna Impedance

