Comparative Study of Genetic Algorithm Performed in a Single Generation for two Different Fitness Functions $f(x) = x^2$ and $f(x) = x^2 + 1$

International Journal of Computer Applications
Foundation of Computer Science (FCS), NY, USA

Volume 128 - Number 17

Year of Publication: 2015

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Abstract

A genetic algorithm is one of a class of algorithms that searches a solution space for the optimal solution to a problem. First part of this work consists of basic information about Genetic algorithm like what are Individual, Population, Crossover, Genes, Binary Encoding, Flipping, Crossover probability, Mutation probability. What is it used for, what is their aim. In this article the methods of selection, crossover and mutation are specified. In the second part of this paper providing two different fitness functions $f(x) = x^2$ and $f(x) = x^2 + 1$. Solving maximizing problems for two different fitness functions $f(x) = x^2$ and $f(x) = x^2 + 1$ using genetic algorithm in a single generation. A single generation of a Genetic algorithm is performed here with encoding, selection, crossover and mutation. In this paper shown the best string from initial population is same (identical) for two different fitness functions $f(x) = x^2$ and $f(x) = x^2 + 1$. The purpose of this paper is to present a specific varying fitness function (multiple fitness function) technique. The author of this paper was among the first that proposed the different fitness function technique used in GA for selecting the best string.
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References

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Index Terms

Computer Science

Algorithms
Keywords

Genetic algorithm, optimization, selection, crossover, mutation