Abstract

Genetic algorithms (GAs) are multi-dimensional, blind & heuristic search methods which involve complex interactions among parameters (such as population size, number of generations, various type of GA operators, operator probabilities, representation of decision variables etc.). Our belief is that GA is robust with respect to design changes. The question is whether the results obtained by GA depend upon the values given to these parameters is a matter of research interest. This paper studies the problem of how changes in the four GA parameters (population size, number of generations, crossover & mutation probabilities) have an effect on GA’s performance from a practical stand point. To examine the robustness of GA to control parameters, we have tested two groups of parameters & the interaction inside the group (a) Crossover & mutation alone (b) Crossover combined with mutation . Based on calculations and simulation results it is seen that for simple problems mutation plays an momentous role. For complex problems crossover is the key search operator. Based on our study complementary crossover & mutation probabilities is a reliable approach.
Reference

of the Fourth International Conference on Genetic Algorithms, 230-236. La Jolla, CA: Morgan Kaufmann.

**Index Terms**

Computer Science  
Evolutionary Computation

**Key words**

control parameters  
genetic algorithm  
crossover  
mutation  
population sizing