

EFFECT OF CROSSOVER OPERATOR ON RUNNING TIME FOR SOLVING 10 NUMERIC OPTIMIZATION PROBLEMS WITH BINARY GENETIC ALGORITHM

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ABSTRACT

Binary genetics algorithm(BGA) constitutes technical optimization based on species evolution which actually confines natural selection that is crossover and mutation for survival. It draws an immense attention due to its capability of technical optimization or problem solving for numeric problems, especially in its development of crossover method. The research is aimed to design and create software to solve 10 Numeric Optimization Problems (NOP) through 10 crossover operator application of binary genetics algorithm. Crossover probability and mutation were employed randomly and population was limited to 20 populations and 36 chromosome each generation. Application, then, run 1000 generations each 100 times which provided 100 databases. The research comes into result that Crossover Shuffle and Uniform Crossover Operators are minimum value of 6 NOP, Precedence Preservative; Two Point Crossover is minimum value of 5 NOP, Multi Point Crossover is minimum value of 4 NOP, One Bit Adaptation, Three Parents, One Point and Partially Matched Crossover is minimum value of 3 NOP. One running time of all operators for 1000 generations was around 15-16 minutes.

Keywords: technical optimization, Numeric Optimization Problem (NOP), crossover, binary genetic algorithm, running time