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Genetic algorithm for traveling salesman problem with an extension of order crossover operator

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The genetic algorithm is one of the best algorithms in order to solve many combinatorial optimization problems, especially traveling salesman problem. Genetic algorithm application produces quickly convergent results when it is applied as a crossover operator to the bit of strings. There are many existing schemes for permutation representation like PMX, OX, and CX etc. In this paper, we extend the OX scheme which produces more than two healthy offspring based upon survival of the fittest theory. Comparison of the proposed operator with other ones for sixteen benchmarks TSPLIB instances vividly show its pros at the same accuracy level. Also, it requires less time for tuning of genetic parameters and provides narrower confidence intervals on the results than other operators.

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