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RESEARCH ARTICLE

# Memetic Algorithm with Hybrid Mutation Operator

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*Abstract: Genetic Algorithms are the biologically inspired optimization algorithms that mimic the process of natural evolution. The performance of evolutionary algorithm in finding the optimal solutions can be broadly categorized into two strategies: exploration and exploitation, but it has been clearly shown in the literature that one cannot claim that which one is better than others in all the problems or all stages of the problems. Different operators used in evolutionary approaches are either inclined towards exploration or towards exploitation but problems need the operators having the blend of both. This paper studies different mutation operators and a hybrid mutation operator has been proposed, the behavior of which is controlled by the local search. So, in the early cycle of evolution it is more like exploration and gradually it shifts towards exploitation that prevents the algorithm to stick in local optima. The experiments have been conducted using TSP oliva30 and Eil51 benchmark problems and implementation is carried out using MATLAB. Results show the improvement of memetic algorithm with hybrid mutation operator over existing genetic algorithm with simple mutation operators.*

*Keywords— Genetic Algorithm; Mutation; Selection; Memetic Algorithm*

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