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## Cross Entropy Method for Solving Generalized Orienteering Problem

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### ABSTRACT

Optimization technique has been growing rapidly throughout the years. It is caused by the growing complexity of problems that require a relatively long time to solve using exact optimization approach. One of complex problems that is hard to solve using the exact method is Generalized Orienteering Problem (GOP), a combinatorial problem including NP-hard problem. Recently, there has been plenty of heuristic method development to solve this problem. This research is an implementation of cross entropy (CE) method in real case of GOP. CE is an optimization technique that relatively new, using two main procedures; generating sample solution and parameter updating to produce better sample for next iteration. At this research, GOP problem that occurs at finding optimal route consist of 27 cities in eastern China is investigated. Results indicate that CE method give better performance than those of Artificial Neural Network (ANN) and Harmony Search (HS).

### KEYWORDS

Generalized Orienteering Problem, Cross Entropy, Combinatorial problem

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