

# A binary coded firefly algorithm that solves the set covering problem

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This work presents a study of a new binary coded firefly algorithm. The firefly algorithm is a novel nature-inspired metaheuristic, inspired by the social behavior of fireflies, which is being applied to solve many optimization problems. We test the proposed binary coded firefly algorithm solving the non-unicost set covering problem which is a well-known NP-hard discrete optimization problem with many practical applications. To tackle the mapping from a continuous search space to a discrete search space we use different transfer functions which are investigated in terms of convergence speed and accuracy of results. The experimental results show the effectiveness of our approach where the binary coded firefly algorithm produce competitive results solving a portfolio of set covering problems from the OR-Library.

Binary firefly algorithm

Metaheuristic

Set covering problem