

# Online control of enumeration strategies via bat-inspired optimization

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Constraint programming allows to solve constraint satisfaction and optimization problems by building and then exploring a search tree of potential solutions. Potential solutions are generated by firstly selecting a variable and then a value from the given problem. The enumeration strategy is responsible for selecting the order in which those variables and values are selected to produce a potential solution. There exist different ways to perform this selection, and depending on the quality of this decision, the efficiency of the solving process may dramatically vary. A modern idea to handle this concern, is to interleave during solving time a set of different strategies instead of using a single one. The strategies are evaluated according to process indicators in order to use the most promising one on each part of the search process. This process is known as online control of enumeration strategies and its correct configuration can be seen itself as an optimization problem. In this paper, we present a new system for online control of enumeration strategies based on bat-inspired optimization. The bat algorithm is a relatively modern metaheuristic based on the location behavior of bats that employ echoes to identify the objects in their surrounding area. We illustrate, promising results where the proposed bat algorithm is able to outperform previously reported metaheuristic-based approaches for online control of enumeration strategies. © Springer

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Bat Algorithm

Constraint Programming

Constraint Satisfaction Problems

Swarm Intelligence

Algorithms

Artificial intelligence

Computer programming

Constraint theory

Optimization

Social networking (online)

Bat algorithms

Constraint programming

Constraint Satisfaction

On-line controls

Optimization problems

Process indicators

Search process

Swarm Intelligence

Constraint satisfaction problems